

ENVIRONMENTAL CHANGE & SECURITY PROJECT REPORT

ISSUE NO. 8

• THE WOODROW WILSON CENTER

• SUMMER 2002

COMMENTARIES

**What is to be Done at Johannesburg?
Issues for the World Summit on Sustainable Development**



ARTICLES

**Population, Poverty, and Vulnerability: Mitigating the Effects
of Natural Disasters**

George Martine and Jose Miguel Guzman

Migration, Population Change, and the Rural Environment
Richard E. Bilsborrow

The Future of Environmental Security
Security and Ecology in the Age of Globalization
Simon Dalby

In Defense of Environment and Security Research
Richard A. Matthew

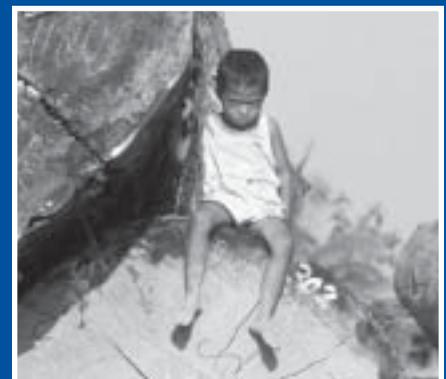


SPECIAL REPORT

**Fire and Water: Technologies, Institutions, and Social Issues
in Arms Control and Transboundary Water-Resources
Agreements**

Elizabeth L. Chalecki, Peter H. Gleick, Kelli L. Larson,
Arian L. Pregoner, and Aaron T. Wolf

**Plus: Reviews of New Publications, Official Statements,
ECSP Meeting Summaries, Organizational Updates,
and Bibliography**



e c s p



environmental change & security project

ENVIRONMENTAL CHANGE AND SECURITY PROJECT REPORT

EDITOR

Geoffrey D. Dabelko

MANAGING EDITOR

Robert Lalasz

PRODUCTION EDITOR

Richard E. Thomas

CONTRIBUTING EDITORS

Dina Abbas

Nelia Forest

Timothy Hildebrandt

Jennifer Kaczor

Ariel Méndez

Jennifer L. Turner

RESEARCH STAFF

Sharon Kim

Kurt Rakouskas

ADVISORY COMMITTEE

Thomas E. Lovejoy, Co-Chair
The Heinz Center for Science, Economics and
the Environment

P.J. Simmons, Co-Chair
Rockefeller Brothers Fund

John Bongaarts
The Population Council

Judith Bruce
The Population Council

Jose Maria Figueres
World Economic Forum

David Gergen
The Newshour with Jim Lehrer

Jack A. Goldstone
George Mason University

Thomas F. Homer-Dixon
University of Toronto

Robert L. Hutchings
National Intelligence Council

Donald Kennedy
Stanford University

Paul Kennedy
Yale University

Jessica Tuchman Mathews
Carnegie Endowment for International Peace

Lt. General E.J. Rokke (Ret.)
Moravian College

Senator Alan Simpson
Harvard University

Bruce Smart
Former Under Secretary of Commerce
for International Trade

Larry K. Smith
Business Executives for National Security

THE ENVIRONMENTAL CHANGE AND SECURITY PROJECT (ECSP)

Population growth. Water scarcity. Degraded ecosystems. Resource depletion. Forced migration. Pandemic disease. Since 1994, the Environmental Change and Security Project has explored the connections among these major challenges as well as their links to conflict, human insecurity, and foreign policy. Through its meetings, its publications, its comprehensive Web site, and the original research carried out by its staff and scholars, ECSP serves as an information clearinghouse on these issues, and creates special programming and publications and encourages dialogue among scholars, policymakers, and nongovernmental organizations. Its two annual journals, *The Environmental Change and Security Project Report* and *The China Environment Series*, are read by over 7,000 policymakers, practitioners, journalists, scholars, and interested citizens. ECSP is directed by Geoffrey D. Dabelko and is housed in the Wilson Center's Division of International Studies, headed by Robert S. Litwak.

ECSP is supported by the U.S. Agency for International Development Office of Population through a cooperative agreement with the University of Michigan Population Fellows Programs. ECSP and its China Environment Forum also receive support from the Carnegie Corporation of New York, the W. Alton Jones Foundation, the U.S. Environmental Protection Agency, and U.S. Department of Agriculture.

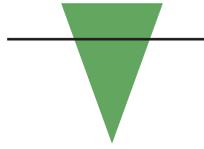
The Wilson Center, established by Congress in 1968 as a memorial to the nation's twenty-eighth president, fosters scholarship and intellectual exchange among scholars and practitioners. It sponsors an international fellows program, has an independent Board of Trustees (composed of ten citizens appointed by the President of the United States and nine government officials), is non-partisan, and does not take positions on any public policy issues. The Center is directed by the Honorable Lee H. Hamilton, and its Board of Directors is chaired by the Honorable Joseph B. Gildenhorn.

SUBMISSIONS AND CORRESPONDENCE

The *Environmental Change and Security Project Report* is sent annually free of charge throughout the world. Contact the Project at the address below to be placed on the mailing list or for instructions regarding the submission of articles. The editors also invite readers to submit items for inclusion in the *Report's* Update sections.

Environmental Change and Security Project
The Woodrow Wilson Center
One Woodrow Wilson Plaza • 1300 Pennsylvania Avenue, NW
Washington, DC 20004-3027
Tel: 202-691-4130 • Fax: 202-691-4184
E-mail: ecsp@wwic.si.edu
Internet: <http://www.wilsoncenter.org/ecsp>

TABLE OF CONTENTS



iv **Foreword**

Geoffrey D. Dabelko, Editor

1 **Commentaries**

WHAT IS TO BE DONE AT JOHANNESBURG?

Issues for the World Summit on Sustainable Development

- 1 **Overviews:** Sascha Müller-Kraenner; Hans JH Verolme; John W. Sewell
- 11 **Population/Population-Environment:** Roger-Mark De Souza; Melinda Kimble; Frederick A.B. Meyerson; James D. Nations
- 17 **HIV/AIDS:** Geeta Rao Gupta
- 18 **Water:** Alfred M. Duda; Karin M. Krchnak; Gordon Binder
- 27 **Business, Investment, and Financing:** Tony Colman, MP; Marian A.L. Miller; Jacob Park
- 33 **Environment:** Johnstone Odera Tungani
- 35 **International Environmental Governance:** William Krist; W. Bradnee Chambers; Pamela S. Chasek; Bharat H. Desai

45 **Features**

- 45 **POPULATION, POVERTY, AND VULNERABILITY:
MITIGATING THE EFFECTS OF NATURAL DISASTERS**
George Martine and Jose Miguel Guzman
- 69 **MIGRATION, POPULATION CHANGE, AND THE RURAL ENVIRONMENT**
Richard E. Bilborrow
- THE FUTURE OF ENVIRONMENTAL SECURITY**
- 95 **SECURITY AND ECOLOGY IN THE AGE OF GLOBALIZATION**
Simon Dalby
- 109 **IN DEFENSE OF ENVIRONMENT AND SECURITY RESEARCH**
Richard A. Matthew



125 Special Report

FIRE AND WATER: Technologies, Institutions, and Social Issues in Arms Control and Transboundary Water-Resources Agreements

Elizabeth L. Chalecki, Peter H. Gleick, Kelli L. Larson, Arian L. Pregonzer, and Aaron T. Wolf

135 New Publications

Peluso and Watts: *Violent Environments* (Reviewed by Colin Kahl)135

O'Brien: *Sacrificing the Forest: Environmental and Social Struggles in Chiapas*
(Reviewed by James D. Nations) 143

López: *Environmental Change, Social Conflicts and Security in the Brazilian Amazon: Exploring the Links* (Reviewed by Thomaz G. Costa) 145

Skjelsbaek and Smith: *Gender, Peace and Conflict* (Reviewed by J. Ann Tickner).....146

Klare: *Resource Wars: The New Landscape of Global Conflict* (Reviewed by Leslie Johnston)148

Conca and Dabelko: *Environmental Peacemaking* (Reviewed by Rodger A. Payne)150

Petzold-Bradley, et al.: *Responding to Environmental Conflicts: Implications for Theory and Practice* (Reviewed by Simon Dalby)153

German Federal Office: *Environment and Security: Crisis Prevention through Co-operation* (Reviewed by Alexander López)156

National Intelligence Council: *Growing Global Migration and Its Implications for the United States* (Reviewed by Kimberly Hamilton)158

Graham and Poku: *Migration, Globalization and Human Security*
(Reviewed by Steve Loneragan)160

United Nations Population Fund (UNFPA): *Footprints and Milestones: Population and Environmental Change* (Reviewed by Roger-Mark De Souza)162

Harrison and Pearce: *AAAS Atlas of Population & Environment*
(Reviewed by Jennifer Wisnewski Kaczor)165

Hunter: *The Environmental Implications of Population Dynamics*
(Reviewed by Jennifer Wisnewski Kaczor)166

Price-Smith: *The Health of Nations: Infectious Disease, Environmental Change, and Their Effects on National Security and Development*
(Reviewed by Donald L. Noah)167

Balbus and Wilson: *Human Health & Global Climate Change: A Review of Potential Impacts in the United States* (Reviewed by Jonathan A. Patz)169

Miller, et al.: *Germs: Biological Weapons and America's Secret War*
(Reviewed by Robert Wyman)171

Austin and Bruch: *The Environmental Consequences of War: Legal, Economic, and Scientific Perspectives* (Reviewed by Elizabeth L. Chalecki)173

Shambaugh, et al.: *The Trampled Grass: Mitigating the Impacts of Armed Conflict on the Environment* (Reviewed by Edmond J. Keller)176

Darst: *Smokestack Diplomacy: Cooperation and Conflict in East-West Environmental Politics*
(Reviewed by Matthew R. Auer)177

Social Learning Group: *Learning to Manage Global Environmental Risks*
(Reviewed by Ken Conca)179

Simmons and de Jonge Oudraat: *Managing Global Issues: Lessons Learned*
(Reviewed by Stacy D. VanDeveer)181

Twigg and Bhatt: *Understanding Vulnerability: South Asian Perspectives*
(Reviewed by Mike Brklacich)183

Prescott-Allen: *The Wellbeing of Nations: A Country-by-Country Index of Quality of Life and the Environment* (Reviewed by Thomas M. Parris)184





161 Official Statements

James D. Wolfensohn; George W. Bush; Gordon Brown; Paul H. O’Neill; Jacques Chirac; Thoraya Ahmed Obaid; Gro Harlem Brundtland; Chris Patten; M.V. Moosa; Paula J. Dobriansky; James Connaughton; Douglas Holtz-Eakin; Andrew S. Natsios; Klaus Toepfer; John Manley; David Anderson; Kofi Annan; E. Anne Peterson; Bill Frist, M.D.; Jesse Helms; Peter Piot; Sam Nujoma; Jacques Diouf

227 ECSP Meetings

Beyond Sustainable Agriculture: Increasing Food Production and Protecting Ecological Diversity	227
Debating the Real State of the World: Are Dire Environmental Claims Backed by Sound Evidence?	229
The Wellbeing of Nations: Developing Tools for Measuring Sustainable Development	232
Conflict: A Cause and Effect of Hunger	235
U.S. Foreign Policy and Global Health: Addressing Issues of Humanitarian Aid and Political Instability	238
The Road to Johannesburg: Setting the Agenda for the World Summit on Sustainable Development	240
“Global Problems—Global Solutions”	242
Infectious Diseases and Global Change: Threats to Human Health and Security	244
The Biotech Quagmire: Next Steps in the Genetically Modified Food Debate Between America and Europe	246
Does Population Matter? New Research on Population Change and Economic Development	249
EU Enlargement and Environmental Quality in Central and Eastern Europe and Beyond	251
<i>On the Brink</i> : A Film in the 2002 Environmental Film Festival in the Nation’s Capital	254
Transboundary Water Cooperation in Central America: A Regional Workshop of the Environment, Development, and Sustainable Peace Initiative	257
The Jo’burg Memo: Fairness in a Fragile World—A Memorandum for the World Summit on Sustainable Development	260
Investing in Health for Economic Development: Report of the Commission on Macroeconomics and Health	263
The Great North Korean Famine: Famine, Politics, and Foreign Policy	265
Finding the Source: The Linkages Between Population and Water	268
HIV/AIDS in the Ranks: Responding to AIDS in African Militaries	271

273 Organizational Updates

Academic Programs; Foundations; Nongovernmental Organizations; Governmental Activities; and Intergovernmental Activities

309 Bibliography

320 Announcements



FOREWORD

By *Geoffrey D. Dabelko, Editor*



environmental change & security project

Exploring linkages among security and policy issues such as population and environmental change has always been central to the Environmental Change and Security Project. Yet the seminal events that book-end the past year—the attacks of September 11 and this year’s World Summit on Sustainable Development in Johannesburg, South Africa—have sharpened the need to bring these linkages to the attention of policymakers. Moving from a military response to other approaches regarding today’s issues of moment should include a multi-pronged strategy—one that looks beyond the immediate and addresses the conditions that underlie human as well as national insecurity.

For some, such as World Bank President James Wolfensohn, poverty connects the disparate factors of this broad agenda. In a March 2002 address at the Woodrow Wilson Center, Wolfensohn declared: “If we want to build long-term peace, if we want stability for our economies, if we want growth opportunities in the years ahead, if we want to build that better and safer world, fighting poverty must be part of national and international security.” (See the Official Statements section of this *Report* for excerpts from Wolfensohn’s address.) To set such priorities is not to claim direct causation between grievance and terrorism. Nor will development solve all conflicts. Yet the Johannesburg Summit can become part of an effective response to September 11 by reexamining and reenergizing efforts against the deprivation that enormous numbers still endure.

This issue of *ECSP Report* offers a constructive agenda for Johannesburg as expressed by a wide variety of experts, who detail their hopes and key issues for the Summit in “What is to be Done at Johannesburg?” Next, George Martine and Jose Miguel Guzman examine critical population dynamics in light of the disastrous impact of Hurricane Mitch on Central America. As natural disasters become more frequent and their impacts more severe (especially in the developing world), Martine and Guzman offer concrete and proactive measures towards more sustainable development. Richard Bilsborrow then uncovers the dramatic environmental effects of rural-to-rural migration. While many researchers and advocates continue to focus on population movements into urban centers, Bilsborrow demonstrates that rural-to-rural population flows deserve considerable attention from demographic, environmental, and policy communities alike.

In “The Future of Environmental Security,” Simon Dalby and Richard Matthew follow by providing the latest entries in the *Report’s* ongoing forum about broadening security parameters beyond the traditional. Dalby questions the utility of the current environmental security paradigm; he argues that its continued relevance demands that researchers meaningfully incorporate issues of equity and Northern consumption as well as Southern viewpoints. Matthew counters by enumerating the successes gained by the environmental security work of the last dozen years. While he readily acknowledges the field’s shortcomings and considerable gaps, Matthew decries popular distortions of environment and security research and maintains that its work remains vibrant and of more importance than ever to policymaking.

Fresh water has long been a focus of ECSP. This issue’s Special Report features lessons from a comparison of arms control negotiations and water negotiations. Beth Chalecki and her distinguished co-authors report on the limits and the opportunities revealed through dialogue between these very different communities. We are also pleased to announce that ECSP’s work on water issues will continue in earnest with generous support from the Carnegie Corporation of New York. This fall marks the beginning of a new ECSP initiative—“Navigating Peace: Forging New Water Partnerships”—which will explore three focus areas: balancing the realities of water as both a social and economic good; water conflict and cooperation; and water-conflict resolution in the United States and China. We look forward to sharing insights from this effort in future issues of the *ECSP Report*.

For the first time since ECSP began publishing the *Report* in 1995, the journal’s Features section has been refereed by external reviewers in a double-blind process. We thank our reviewers and hope that this rigorous process will both improve the quality of the research published here and make it easier for tenure-track scholars to share their insights on these pages. As always, we call on the diverse communities working on environment, population, and security linkages to share their insights and experiences through the information clearinghouse mechanism that is *ECSP Report*.





COMMENTARIES

WHAT IS TO BE DONE AT JOHANNESBURG?

Marking the ten-year anniversary of the historic 1992 Earth Summit in Rio, the World Summit on Sustainable Development in Johannesburg, South Africa has been viewed throughout its preparations with both great hope and pessimism. Some analysts, activists, and policymakers think the Summit is the last best chance for the world to balance the three pillars (economic, social, and environmental) of sustainable development. Others are looking past Johannesburg altogether, skeptical that it can accomplish much. As of this writing in June 2002, even a clear Summit agenda remains elusive for governments and civil society alike.

ECSP asked a wide variety of experts each to highlight one or two specific issues or outcomes they thought essential for Johannesburg to address or achieve. Water, population-environment connections, development financing, and international environmental governance emerged in the contribution as key issues. We offer these 19 commentaries with full knowledge that Johannesburg and the questions and mechanisms it takes up represent only a stop along a path to sustainability—not a final destination.

Overviews	1
Population/Population-Environment	11
HIV/AIDS	17
Water	18
Business, Investment, Financing	27
Environment	33
International Environmental Governance	35

OVERVIEWS

THE NEXUS OF SECURITY, GLOBALIZATION, AND SUSTAINABLE DEVELOPMENT

By *Sascha Müller-Kraenner*

Sascha Müller-Kraenner is director of the Heinrich Böll Foundation's office in Washington, DC. He is also one of the founders of and a senior adviser to Ecologic, a non-profit center for international and European environmental policy in Berlin. From 1991 –1998, Mr. Müller-Kraenner was Director for International Affairs of the Deutscher Naturschutzring, the umbrella organization of Germany's environmental NGOs.

September 11 has made it clear that there will no longer be two global zones of security. The democratic, rich, and safe countries of the North cannot insulate themselves from lawlessness, poverty, and insecure countries in other world regions. The current effort of the United States and its allies to fight terrorism—with a mix of military, economic, diplomatic, and humanitarian instruments—should lead to a new global security architecture. This process should also gradually replace regional arrangements that have separated the world into safe and unsafe

places. The complexity of the anti-terrorism strategy and the multilateral character of the approach both imply that any new security framework will rely not on military and geopolitical components alone, but must include a broad range of reforms in governance and international cooperation.

This raises the question of whether the new global security architecture will *replace* current globalization tendencies or *be integrated* with them. The economic globalization of the last decade has been criticized for hurting the environment and the poor. Institutions



with a prominent role in globalization—such as the World Bank, the International Monetary Fund, and the World Trade Organization—have been accused of lacking democratic accountability. It is an open question whether the new emphasis on regional stability and security will either enforce current globalization trends or lead instead to a stronger focus on human development, social cohesion, and good governance in developing countries.

The Johannesburg Summit will take place nearly one year after the terrorist attacks of September 11. The Summit provides a unique opportunity to discuss globalization from a sustainable-development perspective. Whether the world accepts this perspective depends on whether we can convincingly argue that sustainable development contributes to positive economic development in all regions and to the political stability of the international system.

To outline the nexus between a new international security architecture, globalization, and sustainable development is partly an intellectual exercise. Developed-country policymakers have a vague awareness that unsustainable development patterns are intensified by globalization patterns and thereby increasingly contribute to regional instabilities. The environment and development movements must, however, develop concrete proposals and instruments for redefining this double connection.

Will the Environment Drop Off the Agenda?

For quite a while, environmental policy has not been a top concern for global policymakers. The Kyoto Protocol proved to be an exception. The final success of the Kyoto negotiations at the July 2001 Bonn climate summit also demonstrated that, in order to complete complex environmental negotiations, world leaders must pay adequate attention to the negotiations and participants must understand them within a broader political context.

When heads of government decide whether to participate in Johannesburg and whether to invest the necessary political capital to make it a success, they will make this decision based on the following questions: Is there a clear agenda? Will there be achievable results? And are the results relevant to my core constituencies?

The preparations for Johannesburg in the Commission on Sustainable Development had a slow start. But even before September 11, it was obvious that the Summit would have to address the nexus between globalization and sustainable development

to achieve political relevance. Now, in a new context, time has become an even more critical factor. Johannesburg has to advertise itself as *the* forum where world governments and civil society will discuss globalization and its unprecedented scale. The Summit must be the place where sustainable development starts to make a significant contribution to a new globalization model—one that increases security for both the North and the South.

The Johannesburg Summit could achieve the following:

- *Address poverty.* While not the immediate cause of terrorist acts, observers agree that widespread poverty in a number of world regions has provided a fertile breeding ground for radical political ideologies and movements. Poverty has also contributed to the depletion of resources and has prevented the implementation of environmental legislation in developing countries. September 11 has brought home the message that poverty matters, not only for humanitarian but also for security reasons. Johannesburg should also address the poverty-related issue of hunger. The 1996 World Food Summit set the goal of reducing global hunger by 50 percent by the year 2015. Sustainable land-use and access to clean energy and water as well as equitable distribution of those resources can make a significant contribution towards this goal.
- *Improve governance structures.* Dysfunctional states, democratic deficits, and an underdeveloped civil society in a number of countries have helped prevent achievement of Rio's sustainable-development objectives. Fragmentary and fragile governance structures also result in a lack of security, especially for those parts of the population that cannot afford private security services. Environmental governance on the national and international level is only part of a stable system of overall governance and cannot be achieved in isolation. However, environmental governance can make a valuable contribution to the democratic development of communities and the international realm.
- *Assert the value of international law.* The current U.S. administration's rejection of a number of international treaties reflects a political analysis that challenges the legitimacy and effectiveness of international law in principle. The administration's rejection of the Kyoto Protocol was just the most spectacular and controversial illustration that the



United States is now acting unilaterally—an analysis that is privately shared by governments and others in a number of countries.

- The experience of vulnerability after September 11 may lead to a reassessment among the U.S. policy elite of international law’s legitimacy and place in U.S. foreign policy. The willingness of the United States to coordinate the fight against terrorism with

document approved at the conference addresses a number of innovative financing mechanisms and concepts for development, including: (a) an international transaction tax (commonly referred to as “Tobin tax”), as well as (b) the concept of Global Public Goods (Kaul et al., 1999). Global Public Goods (GPGs) are defined as goods that can be used beyond national boundaries: they include not only peace and

The Summit must be the place where sustainable development starts to make a significant contribution to a new globalization model—one that increases security for both the North and the South.

—Sascha Müller Kraenner

an international coalition might bode well for this reassessment. The Kyoto Protocol, with its high symbolic value, offers a chance to prove this point. U.S. ratification of the agreement before Johannesburg, when the Protocol is scheduled to enter into force, is doubtful. However, the parties to the Protocol should keep the door open for the United States to join later.

- *Provide additional financial means to reduce poverty through sustainable development projects and to build functioning governance structures in Southern countries.* The March 2002 UN Conference on Financing for Development in Monterrey ended the downturn in Official Development Assistance (ODA) flows: both the EU and the United States promised to provide additional ODA funds over the next several years (Martens, 2000). Now, national governments in Europe and the U.S. Congress have to make sure that these promises materialize in their national budgets.
- The additional funds that were promised at Monterrey do not come close to the 0.7 percent-of-GDP target that had been restated by last year’s UN Millennium Summit. They also fail to achieve the additional 50 billion USD target needed to achieve the Summit’s Millennium Development Goals. But the political signal of Monterrey bodes well for the upcoming replenishment process of the Global Environment Facility—the financial instrument of the Rio Conventions—as well as for the future funding of several UN institutions that are critical for global environment and development governance.

In addition, the so-called Monterrey Consensus

security, but also an intact environment, health, financial stability, knowledge, and information. A more precise definition of GPGs has not yet been elaborated (because, among other limitations, the difficulty of deciding who gets to make the definition). But it is generally acknowledged that global markets fail to provide available GPGs in a fair and equal manner in times of ecological, social, and economic crisis. Kaul et al. call for stronger international cooperation between countries and regions as a counterbalance to the way global markets distribute GPGs.

How Will the Debate on Globalization Change?

Movements critical of globalization picked up momentum after a series of campaigns around the WTO ministerial conference in Seattle, the EU Summit in Göteborg, Sweden, and the G7 Summit in Genoa, Italy. These movements have always criticized current U.S. economic policy as contributing significantly to some of globalization’s negative aspects. The United States has also been accused of throwing its weight around in some international institutions and blocking progress in others.

But movements critical of globalization have not only criticized current U.S. policies but also willingly and unwillingly nourished an anti-American ideology. The fashionable anti-Americanism of certain parts of the anti-globalization left is mirrored by parallel developments on the extreme right. Both accuse the United States of worshipping a materialistic life that stands in stark contrast to the post-materialistic values of the globalization critics and to old traditional cultures both in Europe and in developing countries.

After September 11, this pattern of argument presents itself in a different context. Naomi Klein,

author of “No Logo,” an acclaimed overview of the anti-globalization movement, writes in *The Nation* (Klein, 2001) that “tactics that rely on attacking—even peacefully—powerful symbols of capitalism find themselves in an utterly transformed semiotic landscape.” Other activists might put it less eloquently, but the cancellation of planned protests even before the annual World Bank/IMF meeting in October 2001 was called off has shown that the anti-globalization movement is deeply unnerved. At a moment when nearly everybody states their public solidarity with the American people, it is almost impossible to paint America as a symbol for everything that is unjust in the world economic order.

Both the largely U.S.-led and-sponsored international NGO movement and the UN system will suffer if anti-globalization movements continue to crystallize around an anti-American ideology. Rejecting the ideology of anti-Americanism is a precondition for globalization’s critics to enter into a renewed democratic debate with the U.S. government on how the reduction of poverty and the erection of global governance structures can contribute both to global economic development and global security.

Will the United States Return to Multilateralism?

Many analysts have stated that, in the aftermath of September 11, the United States and others will rejoin the system of international cooperation. Such a rebirth of multilateralism could provide fertile ground for a “global deal” between environmental interests of the so-called “North” and development interests of the “South.”

However, the current cooperation of the U.S. government with the UN Security Council and the ad hoc coalition (with approximately 35 countries) to combat terrorism will not automatically inspire a stronger U.S. engagement in other multilateral processes.

There has been a debate over whether September 11 will motivate the U.S. administration to rethink its recent unilateral policies and to return to the multilateral approach of the Clinton administration. In fact, after the terrorist attacks, the United States paid its UN dues, turned to the Security Council for a mandate, and asked its allies to invoke Article 5 of the NATO treaty. However, doubts remain as to whether the current U.S. effort to build an international coalition against terrorism is more like multilateralism “a la carte.” Some say that the United States has and always will prefer the flexibility of issue-oriented bilateral arrangements to the relative inflexibility of multilateral treaties and institutions.

Certainly, average U.S. residents have rediscovered the rest of the world in the wake of the attacks. It remains to be seen whether this increased interest in other countries and in the complexities of international relations will translate either into (a) a greater willingness to help developing countries and to participate in international institutions, or (b) isolationism and a focus on increased military spending. Both internationalists in the United States and other countries have a window of opportunity to prove to the United States that international cooperation is both indispensable and capable of positively impacting its national interests. **W**

REFERENCES

Kaul, Inge; Grunberg, Isabelle; & Stern, Marc A. (1999). *Global public goods: International cooperation in the 21st Century*. New York: Oxford University Press.

Klein, Naomi. (2001, October 22). “Signs of the times.” *The Nation*. [On-line]. Available: <http://www.thenation.com/docPrint.mhtml?i-20011022&cs=klein>

Martens, Jens. (2000). “Overcoming the crisis of ODA. The case for a global development partnership agreement.” [On-line]. Available: <http://www.weedbonn.org/ffd/odafutureg.htm>



FROM RIO TO JOHANNESBURG: A EUROPEAN PERSPECTIVE

By Hans JH Verolme

Hans JH Verolme, a human geographer, is the environment attaché at the British Embassy in Washington, DC, covering global environmental policy developments. He is a Dutch national and practitioner in the field of environment and sustainable development in East Africa, South Asia, Europe, and the Americas. Mr. Verolme has previously published on biodiversity conservation and international forest policy issues as well as agricultural development and environmental change. This commentary is a personal contribution to the debate and should not be taken to represent UK government opinion.

My perspective is a European one, although one that is inevitably colored by experiences gained from living and working around the world (including, for the past five years, in the United States). But before offering that perspective, let me take a step back.

What Has Changed Since Rio?

Generally, there is little disagreement in identifying the trend that shaped the 1990s: “globalization.” What that trend exactly comprises is more complicated; but many agree that globalization needs to be harnessed in the fight against poverty. Three specific and often overlooked intellectual developments are relevant for bridging Agenda 21 with the Johannesburg outcomes.

First, the concept of sustainable development has become far more integrative. Its three pillars—environmental, social, and economic—are no longer considered separate. Building on improved empirical understanding, economists are advancing the debate by emphasizing how the five types of capital (natural, social, financial, human, and physical) that shape development are interlinked.

Second, the role of business and other nongovernmental stakeholders is no longer viewed as separate from the role of government. The Johannesburg Summit process clearly reflects this development, with its emphasis on partnerships to deliver results and to inform policymaking. These partnerships represent a major step forward when compared to Rio’s focus on getting an agreement among states.

Finally, as a practitioner, I am pleased with the revitalized debate on the linkages between poverty and environment. This debate, which now looks at sustainable development through a livelihood lens, no longer blames the poor (those with the least amount of control over their future) for the degradation of natural resources and the environment. And while local problems often require local solutions, a deeper understanding of the underlying

development process has led to smarter policies. The poor are no longer on trial, as was often the case at Rio.

Does this make our job at the Summit easier? Far from it. As a practical matter, for example, Johannesburg will have to build on (a) the fragile global consensus on development financing that was created at the Monterrey International Conference on Financing for Development, and (b) the outcomes of the 2001 WTO Ministerial in Doha. The Summit needs to project forward a powerful new vision, an expression of political will.

The Agenda

Top agenda items at the Summit should include:

- Contribute in a concrete way to the delivery of the Millennium Development Goals through coordinated implementation of existing commitments and (multilateral) agreements. Delivery of the Goals will require renewed political commitment and institutional change as well as increased levels of financing. The United Kingdom, for example, has committed to increase funding and to set specific International Development Targets. The UK Chancellor of the Exchequer, Gordon Brown, has entered the debate with a visionary paper on a Global New Deal (Brown, 2002).
- Improve governance at the domestic and international level as a necessary but insufficient precondition to sustainable development. Rio’s Principle 10 addressed (a) the need to raise public awareness and to provide access to information, (b) the opportunity to participate in decision-making, and (c) the need for effective access to the legal system. In Europe this has resulted in the Århus Convention, which has initiated some real changes in the way governments operate—for example, providing the legal basis for extensive right-to-know rights for citizens in the area of the environment.

But we can do more.

- Greatly improve resource efficiency in the OECD as a way to enlarge the cake and eat it too—delivering on the Rio promise to address unsustainable consumption and production patterns. This task cuts across all sectors and includes a commitment to expand on (a) the Kyoto promise of real reductions in greenhouse gas emissions, (b) clean energy supply and reduced demand, and (c) the effort to address the root causes of biodiversity loss—in particular, from land-use change.

The Activist Agenda

The NGO community has called for more specific measures to spread the benefits of globalization and address current inequities. Thus, Johannesburg

on fisheries and farm policy will send an important signal to the rest of the world as we prepare for Johannesburg.

After September 11, it would have seemed natural to turn inward and forget that strength is based on conviction. The coalition to fight terrorism should not dissolve without having addressed the root causes of global unrest—including persistent inequities. Thus, the Johannesburg agenda offers a timely, relevant response to current insecurity. If Johannesburg seeks to “win the peace,” to borrow a phrase from UK Deputy Prime Minister John Prescott, we have to acknowledge the United States has a credibility deficit with some people. The debate in the European press on U.S. unilateralism reflects a serious, broad-based concern. The way forward is obvious. Action speaks louder than words, and an important U.S. strength is

One lesson we did learn from Rio: implement what you pledge before pledging further. —Hans JH Verolme

Summit action items should also include: (a) smarter investments, (b) the requirement of Export Credit Agency reform, and (c) a proactive government role in improving corporate responsibility. While a consensus on these issues is not close, partnerships of (for example) like-minded G8 members could advance this consensus sooner than naysayers think.

The Role of Europe and the United States

Without wanting to promote an exclusive transatlantic debate, I wish to recognize the key role Europe and the United States will play in delivering on this agenda. In a November 2001 speech, EU Commissioner Chris Patten convincingly argued that sustainable development is a key element of global security (Patten, 2001). [See this *Report's* “Official Statements” section for excerpts from this speech.] Thus, foreign policy must align national interests with shared global ones—an attitude expressed in multilateral agreements. The

disappointing record of U.S. Senate ratification of treaties cannot go unmentioned here; but the EU is equally guilty of navel-gazing. European solidarity has long focused exclusively on other EU members. We can hope that the recent release of a report on the external dimension of the EU's Sustainable Development Strategy (EU Commission, 2002) marks a turning point for Europe on these issues. EU actions

its capacity to bring practical experiences to bear. Political commitment gets measured through action.

UK Action

What practical steps is the UK taking? If the new agenda moves beyond governmental commitment to demand a transformation of the way we do business, we need to look carefully at those who show the way and translate some of those lessons into more broadly applicable programs. Prime Minister Tony Blair laid out precisely this challenge in a speech at a World Wildlife Fund-UK conference in London on March 6, 2001 (Blair, 2001). During that speech, he also became the first head of government to announce that he will attend the Summit. The following initiatives involve UK companies and NGOs who recognize the private sector's global impact:

Forests. The UK is preparing a sectoral sustainable-development strategy taking into account its global reach as a major importer of forest products. This strategy will complement the UK government commitment to green procurement and G8 efforts to stem the flow of timber from illegal sources. We have taken a first step by signing a bilateral agreement with Indonesia to stem the trade in illegal timber.

Financial services. The “London Principles for Sustainable Finance” (Pearce & Mills, 2002), which were developed under the chairmanship of the



Corporation of London, aim to promote the provision of financial capital and risk-management products to development projects and businesses that promote (or do not harm) economic prosperity, environmental protection, and social justice. The principles, which target the mainstream financial-services industry, hope to bring new investment and to deliver on-the-ground results quickly to areas where markets function poorly such as (sub-Saharan Africa).

Tourism. International tourism has a major environmental and social impact. While certain concrete actions (such as environmentally-aware supply-chain management or increased spending by tourists in local communities as opposed to resorts) could make mass tourism more sustainable, financing is hard to obtain. The UK tourism industry is developing an action plan and setting up a Responsible Tourism Foundation to fund sustainable tourism projects.

Energy. Created in response to Tony Blair's call to action for business, the UK Business Council for Sustainable Energy seeks to develop business solutions to the challenge of a low-carbon economy through increased efficiency and a larger role for renewables. The Council also considers business responses to a shift towards distributed generation. This effort builds on, for example, work by the G8 Renewable Energy Task Force.

Water and sanitation. Safe drinking water is a crucial element of the development process. An initiative that partners UK communities with small cities in Africa aims to economically deliver this service to poor communities by using innovative financing methods and building local capacity.

A Presidential Agenda

On February 22, 2002, U.S. environmental groups and intellectuals—including Nobel Prize winner Dr. Mario Molina of MIT and Gus Speth, dean of the Yale School of Forestry and Environmental Studies—issued a Call for Action urging, among other things, President Bush to commit to attend the Summit. But does this add up to a presidential agenda? Tony Blair seems to think so. The Summit will be the largest gathering of leaders since Rio in 1992. It will not only provide a platform for these leaders to express their

political will to face the new challenges, but it will also highlight concrete innovative projects, ideas, and partnerships to deliver results. It will address real issues for real people. Why would the United States want to unnecessarily refuel a debate on its rightful role in the world come August 2002? Monterrey provided President Bush with a firm platform to step onto; he should also personally deliver the United States contribution to the Summit.

Wheeling and Dealing

The preparatory process for Johannesburg will translate the broad, emerging consensus into: (a) an agenda; and (b) specific, time-bound initiatives similar to the UK partnerships described above. These so called “Type II” outcomes, however, will not suffice. A clear role remains for governments—including multilateral governmental commitments—to jointly remove barriers to sustainable development. As Kofi Annan pointed out in a February 2002 speech at the London School of Economics (Annan, 2002), the market cannot do it all. Official Development Assistance still plays an important role—for example, in strengthening capacity and supporting improved governance in Africa.

What about the “Global Deal” (a detailed push by some European and African leaders for agreements at Johannesburg that would implement Agenda 21 principles)? In my view, aside from a short purposeful statement by leaders, the Summit should provide the space for *many* deals—big and small, between governments, between business, and between other non-governmental groups. The Summit process should encourage them to be concrete and inclusive and incorporate some element of reporting, to allow learning and sharing. One lesson we did learn from Rio: implement what you pledge before pledging further. Targets need to be designed with monitoring and verification mechanisms in mind and with an assessment of resource implications.

Many of the deliverables we seek have already been developed and simply need a more receptive audience. The integrated global agenda for the Summit seeks to cement the relationship between these partnerships and high-level political commitment. In sum, the Summit aims to provide the political space for the challenging tasks ahead.



REFERENCES

Annan, Kofi. (2002, February 25). *From Doha to Johannesburg by way of Monterrey: How to achieve, and sustain, development in the 21st century*. Speech presented at the London School of Economics, London. [On-line]. Available: <http://www.un.org/News/oss/latestsm.htm>

Blair, Tony. (2001, March 6). *Environment: The next steps*. Speech presented at a WWF-UK conference, Chatham House, London [On-line]. Available: <http://www.number10.gov.uk/news.asp?NewsId=1872>

Brown, Gordon. (2002, February). *Tackling poverty: A global new deal. A modern Marshall Plan for the developing world*. A pamphlet based on the speeches by the Rt Hon Gordon Brown MP, UK Chancellor of the Exchequer to the New York Federal Reserve on 16 November 2001 and the National Press Club, Washington DC on 17 December 2001. HM Treasury, February 2002. [On-line]. Available: <http://www.hm-treasury.gov.uk/mediastore/otherfiles/ACF711.pdf>

EU Commission Communication. (2002, February 13). *Towards a global partnership for sustainable development*. [On-line]. Available: http://europa.eu.int/eur-lex/en/com/cnc/2002/com2002_0082en01.pdf

Patten, Chris. (2001, November 29). *Sustainable development—From sound-bite to sound policy*. Speech presented at Forum for the Future, Church House, Westminster, London [On-line]. Available: http://europa.eu.int/comm/external_relations/w48/7.htm

Pearce, Brian & Mills, Simon. (2002, February 22). “The London principles of sustainable finance. The contribution of UK-based financial institutions to sustainable development” (Interim report). [On-line] Available: http://www.forumforthefuture.org.uk/new_website/documents/workshop%20report.PDF

ELIMINATING POVERTY: JOHANNESBURG’S VALUE-ADDED?

By John W. Sewell

John Sewell is a senior policy scholar at the Woodrow Wilson International Center for Scholars.

It is now widely accepted that the main threats to the environment stem from both over-consumption in rich countries and poverty in developing countries.

Recognition that overconsumption and poverty contribute to environmental degradation is not new. In particular, poverty has long been identified as one of the main causes of environmental stress. The reason is simple. Poor people have no choice but to live for the moment. The poor must consume scarce resources such as food, land, forests, and water, or they will not survive.

Poverty eradication has emerged as a critical issue in the preparatory process for Johannesburg. But the key question is whether or not the conferees will go beyond mere rhetoric and produce firm commitments by both developing and developed countries to eradicate absolute poverty in the next decades.

Fortunately, an international consensus has emerged around the necessity of eliminating poverty by diminishing the barriers that keep poor people poor. There are also some rough estimates of the external resources needed to meet that goal.

The consensus is reflected in the Millennium Development Goals, which were endorsed by 149

heads of government at the United Nations Millennium General Assembly in September 2000. The Millennium Goals include the following targets, to be achieved by 2015: (1) cutting in half the number of people living in absolute poverty; (2) ensuring that all children complete a full course of primary education; (3) reducing the gender disparity in all levels of education, and in primary and secondary education by 2005; (4) reducing child mortality by two-thirds; (5) reducing maternal mortality by three-quarters; (6) reversing the spread of HIV/AIDS and the incidence of other major diseases; and (7) reversing the loss of environmental resources. A number of countries and many development agencies are adopting and acting upon these goals.

Developing and Developed Countries: Responsibilities

Commitments by developing countries are critical to meeting these goals. Economic, political, and social development will not take place unless governments and their constituents make the tough choices to balance economic efficiency, political openness, social progress, and equity while protecting the environment. Developing countries must commit to adopt growth-



oriented economic policies, to cut wasteful military expenditures, to redirect current social programs away from the middle class, and to transfer resources to poor people and poorer areas. Actors in the developed world—whether governments, international institutions, or nongovernmental organizations—need to encourage and support these commitments and encourage developing-country leaders to undertake and implement difficult and controversial policies.

But commitments by developed countries are equally critical. First, these nations must remove the high barriers in their markets to products for which developing countries have a comparative advantage. Developed-country tariffs and subsidies cost developing countries far more than the annual foreign aid these countries receive from the industrial countries. The trade liberalization discussions scheduled to open late this year in Geneva offer an excellent opportunity for the developed world to remove these market barriers.

The developed world should also strengthen the international financial architecture to mitigate the financial volatility of recent years that has slowed (and in some cases reversed) development progress, resulting in greater impoverishment in developing countries.

Financing Needed

Developed countries should also provide the financing needed to help countries meet the Millennium Goals. Money matters if poverty is to be eliminated. Currently, the total flows of official development assistance (ODA) from the developed countries to the poorer countries are totally inadequate to support the programs and policies needed to meet the Goals. ODA flows in 2000 totaled U.S. \$53.7 billion, the equivalent of just over 2/10ths of 1 percent of the OECD countries' gross national income. (The official target, honored by only a few OECD countries, is 7/10ths of 1 percent).

Recent estimates show that achieving the Goals will require an additional \$50 billion a year in ODA (UN General Assembly, 2001; Devarajan, Miller, & Swanson, April 2002). Based on those estimates, a growing international campaign is attempting to persuade the governments of industrial countries to commit to such an increase in financial support. Several have done so.

Unfortunately, the governments at the March 2002 Monterrey UN Financing for Development Conference were not persuaded. The United States,

in a welcome reversal of past trends, pledged to increase its ODA by \$10 billion over a three-year period beginning in 2004. But even this increase will leave U.S. ODA far below the percentage of national wealth the United States contributed in any year from 1946 to 1995. And while European Union members pledged an additional \$7 billion by 2006, the total developing-country ODA increase still falls far short of what most analysts agree will be needed to achieve the Millennium Goals.

Johannesburg offers an opportunity to revisit the issue of financing. Adequate financing is necessary to enable those in poverty to acquire the basic capacities—literacy and better health—to deal with a globalized world. Making commitments *now* will be important to encourage governments to make the tough policy choices that the Goals require. More widespread commitment will also support those governments already on board.

Reform the Aid Business

But additional money will not achieve the desired goals unless donor countries change the way they give aid. *How* the money is spent matters as much as *how much* money is available. The aid “business” needs reform. The current system has too many countries trying to do too many things in too many places.

One example illustrates the problem. In Tanzania there were more than 40 donors and 2000 projects in the 1990s alone (Van de Walle & Johnson, 1996). Managing the large number of donors and projects takes an inordinate amount of time for officials in the developing world, who already are hard-pressed and understaffed. This bottleneck often leads to less-than-optimal development results.

A great deal has been learned over the last forty years about ensuring that aid programs effectively support the development choices of countries and people. Ideally, a new approach drawn from the lessons of the past would marry two essential elements. First, it would give responsibility for forming and implementing development strategies to the recipient country. Second, this approach would enable donors to judge recipients' development strategies according to donor criteria and to make *country* (but not program or project) choices.

One proposal which meets those criteria calls for a “Common Pool” approach (Kanbur & Sandler, 1999). Under this approach, donors would put money into a common pool which, combined with a country's own resources, would finance development plans that

reflected the country's choices and preferences. There undoubtedly are other approaches (Birdsall & Williamson, 2002; World Bank, 2000). Most importantly, any approach must give program responsibility to the recipient countries while providing donors with transparent and full information about national development strategies and how the funds are used.

International Public Goods for Sustainable Development

Finally, the conferees at Johannesburg will advance the debate if the Summit's final agreement makes a clear distinction between (a) the importance of

the developed-country patterns of industrialization (based on fossil fuels), global environmental damage will grow to a point of irreversibility. In these cases, environmental, health, and development professionals have a common interest in promoting development programs that build rural-based health-care systems or develop alternate sources of energy.

But in other cases, the link between IPGs and development assistance is less clear. For instance, countries can either purchase global satellite network access or conventional aid to help them finance it. With other IPGs (such as developing a vaccine for HIV/AIDS), rich countries can supply the IPG through their well-funded research establishments. Financing,

The aid “business” needs reform. The current system has too many countries trying to do too many things in too many places.

—John Sewell

addressing poverty, and (b) the provision of International Public Goods (IPGs) for sustainable development. Both issues are important and closely related, but not the same.

Simply put, IPGs are activities or products created to address problems that spill across the borders of two or more countries. Examples of IPGs include: (a) vaccines for new and old diseases (HIV/AIDS is the prime but not only example); and (b) the reduction of CO₂ emissions. Because the benefits of public goods are available to more than one country and because of the difficulties of pricing those goods, the need for IPGs is often greater than the supply. As environmental problems multiply and globalization leads to the rapid spread of new and old diseases, interest in the provision of IPGs has risen.

In recent years, there has been a tendency to use the growing need for IPGs as a new rationale for additional development assistance. In some cases, a close link does exist between IPGs and poverty. HIV/AIDS and carbon emissions are good examples: a vaccine for HIV/AIDS or a slowing of the growth of carbon emission are public goods that will benefit a large number of countries and people. Furthermore, poverty has helped cause both problems, and poverty-oriented development is a part of their solutions. HIV/AIDS spread because people were not educated about the problem and because preventative healthcare systems are weak or nonexistent in many of the affected countries. Similarly, if poor countries follow

however, will be needed to enable poorer countries—and particularly poorer people—to purchase the vaccine at the lowest possible cost. In these cases, however, the financing to supply the IPG will be competing for always-scarce resources that will be needed for development programs aimed at meeting the Millennium Development Goals.

Finally, in still other cases such as water, the problem is not global but regional. Affected states will have to devise the solutions in these situations, although external resources may be needed to support the costs of participation and implementation by poorer countries.

A Chance for Concerted Action

The links between IPGs and poverty are real, but not the same in all cases. Therefore, the discussions at Johannesburg must clarify these links. Above all, Summit conferees must ensure that the final agreement gives equal priority both to poverty and to the need to provide IPGs for sustainable development. Through this equal weighting of priorities, Johannesburg would have the promise of creating an important alliance between those seeking to end poverty and those who want to protect and improve the environment. Such an alliance does not yet exist. Both groups acknowledge the other's concerns, but remain focused narrowly on their own issues. As a result, both groups are missing opportunities for influence that would flow from a combined effort. For developed and developing



countries to create and implement a set of agreements to meet both important goals, poverty-alleviation activists *and* environmentalists must work together to

influence the political agenda in both rich and poor countries. **W**

REFERENCES

- Birdsall, Nancy & Williamson, John. (2002). *Delivering on debt relief: From IMF gold to a new aid architecture*. Washington, DC: Center for Global Development and the Institute for International Economics.
- Devarajan, Shantayanan; Miller, Margaret J.; & Swanson, Eric V. (2002, April). "Development goals: History, prospects and costs." Policy Research Working Paper 2819. Washington, DC: World Bank.
- Kanbur, Ravi & Sandler, Todd (with Morrison, Kevin M.) (1999). *The future of development assistance: Common pools and international public goods*. Policy Essay No. 25. Washington, DC: Overseas Development Council.
- United Nations General Assembly. (2001, June 26). *Report of the high-level panel on financing for development (The "Zedillo" report)*. Document A/55/1000. New York: United Nations. [On-line]. Available: www.un.org/esa/ffd/a55-1000
- Van de Walle, Nicholas & Johnson, Timothy A. (1996). *Improving aid to Africa*. Policy Essay No. 21. Washington, DC: Overseas Development Council.
- World Bank. (2000). *World development report 2000/2001: Alleviating poverty*. New York: Oxford University Press.

POPULATION/POPULATION-ENVIRONMENT

POPULATION AT THE SUMMIT

By Roger-Mark De Souza

Roger-Mark De Souza is the technical director of the Population, Health, and Environment Program at the Population Reference Bureau (PRB). He directs PRB's overall activities on population, health, and environment linkages and designs as well as implementing policy research, policy communication, capacity building, technical support, and outreach activities.

It is very important to clarify some misconceptions about the role and meaning of population issues for the Johannesburg Summit. First, however, we need to understand what population means and what role it has in sustainable development.

1. **The meaning of population.** Discussions on population and environment linkages often refer to population in three different ways. First, *population dynamics*—which refers to population size, growth, density, migration, urban/rural distribution, age/sex structure, ethnicity, and vital rates (fertility, mortality, morbidity, nuptiality, etc). Second, *family planning and reproductive health*—which includes family planning and reproductive-health services, women's health and status, pre- and post-natal care, contraceptive prevalence, and unmet need. Finally, population often refers to *people*—meaning society, population participation, and equity. Before discussing the role of population at the Summit, we

must clarify which definition we are using.

2. **The elements of sustainable development and the role of population dynamics within discussions on sustainable development.** At a December 2002 ECSP Wilson Center meeting, Dr. Crispian Olver, the Director-General of the South African Department of Environmental Affairs and Tourism, presented South Africa's goals for the Summit under the slogan "People, Planet, and Prosperity." His presentation and responses to questions clearly showed that the Summit organizing committee is not referring to the first two definitions of population. Instead, it is focusing on what is often referred to as the "three legs of the stool" of sustainable development: equity, environment, and economics.

This emphasis, however, misses the point that population dynamics and reproductive health are key to all of these components of sustainable development.



The Summit's discussions should include these key components and must convey the complexity of the linkages. Without a doubt, a number of intervening variables affect the population and environment linkage (such as economic status, education, technology, institutional and policy arrangements, and cultural/historical factors). But demographics do matter. Human well-being relies on improved reproductive health for men and women. Providing voluntary family planning for men and women, combined with investments in education for girls, assures the equitable distribution of societal benefits and the well-being of families. It also increases economic output and improves environmental conditions.

Today's recognition of the importance of population dynamics is also driven by a more sophisticated understanding that it is no longer a question of people versus the environment, but a question of how people and the environment affect each other. In addition, we are witnessing a greater acceptance of the unprecedented human impact on the environment and of the transboundary nature of many of these issues. Four trends brought these issues to the attention of policymakers: (1) international trends and indicators suggested

the scale and complexity of the issues; (2) champions and coalitions helped bring the issues to the attention of key policymakers; (3) key events, especially the past decade's UN conferences, generated attention; and (4) policy alternatives for addressing these issues are now being proposed.

3. International consensus and the need for policy action. At the 1992 Rio Summit, there were clear hopes that the all countries will become more environmentally conscious. If Johannesburg is to examine these hopes in the context of sustainable development, population issues must be part of the discussion. At the International Conference on Population and Development in Cairo in 1994, international consensus recognized that population policy must work towards improving social conditions and providing individual choice. These themes of social improvement, choices, environmental conditions, human well-being, and population are inseparable. Policy action must address key questions of population movement that include urbanization, population momentum and population growth, and sustainable-development paths. 

THE IMPORTANCE OF CAIRO

By Melinda Kimble

Melinda Kimble became the senior vice president for programs at the UN Foundation in May of 2000, overseeing program areas concerning health, population, the environment, and peace/human rights. Prior to joining the Foundation, she served as a U.S. State Department foreign service officer, attaining the rank of minister-counselor. She served in policy-level positions in the State Department's Bureau of Economic and Business Affairs (overseeing multilateral development issues and debt policy) and in its Bureau of Oceans, International Environment and Scientific Affairs (OES), leading environmental negotiations such as the Climate Change Conference in Kyoto, Japan, 1997.

In the 1990s UN conference cycle, the United Nations used its convening power to encourage member governments, civil society, and a variety of nongovernmental organizations to implement Agenda 21—the visionary action plan of the 1992 Earth Summit. These meetings developed concrete implementation measures around the key elements of sustainability. Among the meetings convened in the wake of Rio, the 1994 International Conference on Population and Development (ICPD) figured prominently. Yet the ICPD's message has been lost in the ongoing social controversy surrounding the health services that might be provided to women and men

seeking to maintain the size of their families while protecting their health.

In Rio, participants recognized the family as the basic unit of society as well as the need for its protection and respect. Rio also confirmed that the goals of environmental protection, economic growth, and social development were interdependent and must be attained in balance to achieve sustainable development. The Cairo process reaffirmed the pledge to strengthen and support the family as the basic unit of society; it also underscored that health-care services provided to a country must harmonize with the laws, traditions, and cultural practices of that country.



At the same time, Cairo recognized that a growing number of couples throughout the world want to have healthy children and reduce family size. If all of these couples gain access to reproductive health services by 2005, the resulting population growth trends will reflect a reduction of fertility in many developing countries as global population moves towards an equilibrium point. Such a trend in population growth will reduce pressures on land, water, resources, and entire ecosystems. This trend would improve efforts to increase sustainability and preserve resources for future generations. To achieve this goal, however, these individuals need access to information, health services, and the availability of appropriate reproductive health supplies as part of a primary health services package that provides prenatal, pre-pregnancy, infant, and adult care to the entire family.

The spread of HIV/AIDS further compromises women's and girls' health globally. In societies where women and girls have limited access to education and reproductive health care, HIV/AIDS rates are soaring rapidly, particularly in Africa. To protect their lives and those of their children, we must prioritize access to health care—particularly reproductive health care that incorporates prevention strategies for HIV/AIDS.

I believe that the HIV/AIDS pandemic in Africa is undermining the options for sustainable development. Without addressing and containing the spread of HIV/AIDS, many African states will have their budgets—and their most valuable human resources—consumed by managing the disease for the next decade. This is a particular challenge when

infection rates are soaring among adolescents as well as adults. Sustainable development depends on a healthy society and economy, and HIV/AIDS holds the potential to compromise both.

For societies with large populations and limited government resources, the most important goal is to reduce poverty. Reducing poverty requires not only expanding employment opportunities, but also improving the population's health and education. Countries that devoted 15 to 20 percent of their resources to health and education since the 1960 development decade are generally better off today than those countries that did not make that choice. An investment in people through education and health care brings lower fertility rates, healthier and more successful children, and economic growth.

A key component in efforts to address poverty—the goal of the UN's sustainable-development agenda—must be supporting healthy and sustainable families. The goal of healthy families requires an active commitment to the Millennium Development Goals and a donor effort to ensure demand for reproductive health services and supplies is fully met. A reaffirmation of the Cairo commitments at Johannesburg would be an important step in ensuring the implementation of the Cairo Plan of Action and the broader goal of eliminating poverty. These commitments can then set the stage for reducing poverty throughout the world and creating the conditions for sustainable development. Given the importance of the ICPD program to global progress towards sustainability, its implementation should be a key commitment of the Summit. **W**

SIDESTEPPING POPULATION, ENVIRONMENT, AND REPRODUCTIVE HEALTH AT JOHANNESBURG

By Frederick A.B. Meyerson

Frederick A.B. Meyerson is an ecologist and demographer at Brown University and a 2001-2002 American Association for the Advancement of Science Fellow at the National Science Foundation. His research focuses on international population policy and interactions among population, environment, climate change, and biodiversity. The views expressed herein are solely his own.

Human population is arguably the single most important determinant of environmental change, and it deserves a central role at the Johannesburg Summit. Unfortunately, the Summit appears to be on a path to repeat mistakes made at the 1992 Rio and 1994 Cairo (population) conferences, which separated environment and development issues

from population and reproductive health under the questionable rationale that the two meetings should not cover the same ground. As a result, the population-environment relationship was deferred and left unaddressed by both conferences.

As of this writing in May 2002, the Summit negotiation text also contains no substantive



acknowledgment that human population size or growth is a determinant of sustainable development or environmental quality. And despite the fact that it is hard to imagine sustainable development without adequate reproductive health care, the negotiation text mentions reproductive health only once—and even this reference has been vigorously opposed by the United States, the Vatican, and a few other countries.

and well-being in this century.

One of the greatest global environmental threats is the loss of biodiversity, an issue that the current Summit text does cover in several places through references to the Convention on Biological Diversity (another Rio by-product that as yet has failed to meet expectations). The leading cause of species extinction is the loss of habitat, particularly as a result of tropical

The location, density, and movement of people are critical components of sustainable development and biodiversity conservation.

—Frederick A.B. Meyerson

The current opposition to linking population and reproductive health with environment and development at the Summit has primarily religious roots. However, this stance also fits into a broader “divide, obfuscate, dilute, and conquer” strategy employed by those parties who simply oppose strong or enforceable international agreements. Despite our rapidly expanding scientific and technological capacity to view and manage global environmental and human systems as an interconnected whole, there are unfortunately many political reasons for segregating population from environment and development (and segregating particular issues within those topics from each other).

Whatever the motives, the process and results for Johannesburg have thus far been frustrating, inefficient, and balkanizing. Enough diplomatic sand has already been willfully thrown into the machinery of the Summit that its chairman Emil Salim remarked in May 2002 that most people expect Johannesburg to be the last global conference of its kind. That result would be a tragedy, because the 21st century will provide not only the most severe environmental, climate, and human-development challenges we have ever faced, but also the greatest array of sensory and analytical tools to understand and address those challenges.

I will briefly focus on two critical, ongoing environmental issues—biodiversity loss and climate change—whose causes and solutions are inextricably linked to demographic change and policy. While most demographers project that global human population will peak some time in the 21st century, the size and timing of that peak are debatable, and population will greatly affect and be affected by both development and environmental policy. Geographical location, migration, age structure, and consumption patterns will also be major factors affecting human development

deforestation. Some analyses, including my own research, have demonstrated a strong correlation between increasing human population density and decreasing forest cover at local and regional scales (Meyerson, 2001). Other related studies indicate that most tropical forests can sustainably support only a very low population density (one to two persons/square kilometer) without significant ecosystem alterations and biodiversity loss. Therefore, the location, density, and movement of people are critical components of sustainable development and biodiversity conservation.

Many tropical forests are in areas with high population-growth rates, poverty, and low access to reproductive health services. The understandable historical tendency of family-planning service providers to focus on urban areas first (because of efficiencies of scale and limited funds) has often left the agricultural and forest frontier with under-served populations. One attractive, achievable, and relatively inexpensive solution is to greatly expand existing pilot programs that integrate conservation and reproductive health efforts.

Human population and greenhouse gas emissions continue to rise, but global average per capita emissions have been essentially level since 1970—a trend that is also true for U.S. per capita emissions. Although the causal relationship is complex, population and emissions growth are thus strongly correlated at both scales. Several studies have concluded that assuring access to voluntary reproductive-health care (which often results in lower fertility rates) is one of the most cost-effective means of reducing greenhouse gas emissions in the long run—and with them, the rate of climate change. However, Summit negotiations to date have largely avoided discussing either climate-change policy or population separately or together.



To adequately address population and environment, Johannesburg and the upcoming Cairo+10 conferences should be better integrated than their 1990s predecessors. But the current structure of negotiations for Johannesburg makes broad progress on population-environment issues unlikely. And almost no preparations are underway for a Cairo +10 population conference in 2004. Indications are that it either will occur only in a diminished form or not at all.

Part of the problem with the Johannesburg Summit is an inherent drawback of UN negotiations, which are about the rights and interests of *nations*—not the interests of humanity as a whole, the environment, or the earth (including its people). The interests of nations generally involve jockeying for position to capture as much as possible of whatever prize is at stake. In the case of Johannesburg, the stakes have been chiefly defined not in environmental terms but in monetary ones—in issues such as trade versus aid, governance, and capacity building. This emphasis has inevitably shifted the Summit’s focus toward tensions between donor and recipient countries and away from underlying development and environmental concerns.

While financial and management issues are important, they do not get to the heart of the difficult choices that must be made to ensure progress on sustainable development. Population-environment issues ultimately involve trade-offs between individual human rights and collective human rights, between

present and future generations, and occasionally between the survival of humans and those of other species and ecosystems. The environmental and human rights movements have tried with some success to blur these inherent tensions in order to create coalitions. But environmental groups cannot always be Robin Hood and the protectors of Sherwood Forest at the same time. Protecting the environment and other species often involves some restriction of individual human behavior with respect to resource use. Johannesburg and similar conferences should place these trade-offs on the table in plain sight and plain language. Otherwise, both the debate and resulting sustainable development policy will remain fuzzy and even self-defeating.

Despite these challenges, excellent opportunities exist at every geographical scale for synergy between the family planning/reproductive health and conservation communities. Family size and migration decisions—which are critical to local and global environmental and development goals—are made one person and family at a time. Both family-planning and conservation organizations have an interest in ensuring that these decisions are voluntary, well-informed, and with full access to reproductive choices. Therefore, collaboration between conservation and reproductive health projects (on a local scale and in the broader context of the Cairo, Rio, and Johannesburg agreements) offers the best opportunities for population-environment progress. **W**

REFERENCES

Meyerson, F.A.B. (2001). “Human population density, deforestation and protected areas management: A multi-scale analysis of Central America, Guatemala, and the Maya Biosphere Reserve.” *Proceedings of the International Union for the Scientific Study of Population, XXIV General Population Conference*, Salvador, Brazil, 2001. Author.



ACKNOWLEDGING THE OBVIOUS AT JOHANNESBURG

By James D. Nations

James D. Nations is Conservation International's Vice President for Development Agency Relations in Washington, DC.

During a recent television documentary on global environmental change, commentator Bill Moyers noted that “sometimes the most difficult decision is whether or not to acknowledge the obvious.”

As thousands of heads of state, government officials, NGO leaders, and civil-society groups prepare for the upcoming Johannesburg Summit, my concern as a conservationist is whether or not the assembled leaders will focus on the difficult but obvious questions. Or will they instead continue to dance around the difficult issues because those issues are too contentious, too frightening, and too difficult to deal with?

Many of the world's development agencies are focused now on funding “poverty alleviation” at the expense of financing the survival of the biological foundation for life on earth. But the focus on poverty creates a situation in which we promise jobs and economic growth in an increasingly degraded global environment. The obvious question is: can we demonstrate direct links between environmental degradation and poverty?

More to the point, can we demonstrate direct links between environmental degradation, poverty, and population growth? We know that the global biodiversity hotspots—the most endangered ecosystems on earth—are also population hotspots, the regions where human populations are growing most rapidly. These are the same regions in which economic and governmental institutions seem least prepared to address these challenges. What does this portend for human society and biological diversity, and what should we do about it?

On February 6, 2002, Director of Central Intelligence George Tenet testified before the U.S. Senate Select Intelligence Committee that “demographic trends tell us that the world's poorest and most politically unstable regions, which include parts of the Middle East and sub-Saharan Africa, will have the largest youth populations in the world over the next two decades and beyond” (Tenet, 2002),

He might well have been thinking of a recent meeting held by the Environmental Change and

Security Project (“Young men and war,” 2001), which noted “an uncanny correlation between the ratio of young men in a society and that society's involvement in conflict.”

Here again we are talking about the same regions of the earth (think Chiapas, Guatemala, Somalia, Rwanda, Cambodia, the Philippines)—places we might call the environmental/population/human conflict hotspots. Should we dismiss this correlation as a conundrum?

Finally, the grotesque disparity between the developing and developed world in wealth and consumption of resources has pushed us into a 21st century of “a relatively small number of rich, satiated, demographically stagnant societies and a large number of poverty-stricken, resource-depleted nations whose populations stand to double within 25 years” (Connelly & Kennedy 1994, page 69).

How long will the developed world remain in control of this situation? As the deputy secretary of Singapore's Foreign Ministry pointed out in 1993: “Simple arithmetic demonstrates Western folly. The West has 800 million people. The rest of the world make up five billion [as of 1993]. No Western society would accept a situation where 15 percent of its population legislates for the remaining 85 percent.” (Connelly & Kennedy 1994, page 76).

Is sustainable development the answer to this challenge? What is the role of development assistance, education, women's empowerment, family planning, armies and smart bombs, and environmental protection?

Meanwhile, rather than await direction from the leaders of the Johannesburg Summit, reproductive health and conservation organizations can pursue beneficial collaborations—demonstrating a viable, positive path toward Rio+20 and thereafter.

Successful examples of this type of collaboration have already occurred. We have learned over the past five years that conservation organizations can partner with family planning/reproductive health groups to deliver information, new attitudes, and needed services to families eager for such services in the biologically-rich regions of the planet. This partnership builds on



both groups' strengths. The conservation organizations have access to these regions and the cooperation of local communities. They speak the languages, know the leaders, and understand the linguistic, cultural, and political nuances of the social environment. The reproductive health organizations have the medical and scientific expertise as well as decades of on-the-ground experience in urban areas and large rural communities. Partnership brings us the capacity to deliver these services to dispersed rural families on the edge of the agricultural frontier in high biodiversity hotspots. We should put together partnerships in as many places as possible.

In addition, both groups have recognized a common methodology. By improving the economic

status of women, educating children (especially girls), and eliminating poverty in the communities we work in, both groups achieve their goals. Educated, empowered populations who lift themselves up from the poverty level are more likely to protect the natural resources upon which they themselves depend. The fact that this methodology of achieving conservation goals also has the corollary—and voluntary—effect of dampening population growth is a happy circumstance.

If this concilience of interests—conservation, family planning, and poverty alleviation—could top the agenda at Johannesburg, the Summit would be a conference to remember. 

REFERENCES

Connelly, Matthew & Kennedy, Paul. (1994, December). "Must it be the rest against the West?" *Atlantic Monthly*, 61-91.

Tenet, George J. (2002, 6 February). "Worldwide threat—Converging dangers in a post 9/11 world." Testimony before the U.S. Senate Select Committee on Intelligence. [On-line]. Available: http://www.cia.gov/cia/public_affairs/speeches/dci_speech_02062002.html

"Young men and war: Could we have predicted the distribution of violent conflicts at the end of the millennium?" *ECSP Report* 7, 230-1. [On-line]. Available: <http://ecsp.si.edu/PDF/ECSP7-meetingsummaries-3.pdf>

HIV/AIDS

HIV/AIDS AND JOHANNESBURG

By Geeta Rao Gupta

Geeta Rao Gupta is president of the International Center for Research on Women (ICRW), which is based in Washington, DC and conducts research, provides technical assistance, and advocates women's full participation in economic and social development. She is a social psychologist and a leading expert on women and HIV/AIDS in developing countries.

The global HIV/AIDS epidemic poses the single greatest threat to the goals of sustainable development. Since the epidemic began, over 22 million people have died of AIDS, and more than 40 million people are currently infected. Rates of infection in some cities in Southern Africa range near 30 percent; life expectancy rates in many African countries are plummeting by as much as 30 years; and infection rates in Asia, the Caribbean, Central America, and Eastern Europe are rising.

By far the most catastrophic implication for future

sustainable development is the impact of HIV/AIDS on youth. Currently, 12 million young women and men between the ages of 15 and 24 live with HIV/AIDS, with an additional 7,000 new infections in young people each day. Young women in particular are several times more likely than young men to contract HIV. In sub-Saharan Africa, 12 to 13 women are infected with HIV for every 10 men. In nearly 20 African countries, young women have an infection rate of 5 percent or more. Thus, any plans for sustainable development must give serious thought to how to empower young

people—particularly young women—to protect themselves against HIV infection.

Young women are biologically more vulnerable to HIV infection; but economic, social, and sexual systems also create an imbalance of power that increases the risk of young girls acquiring HIV/AIDS. Gender inequality and lack of power in sexual relations mean that men have greater control over when, how, where, and with whom sex takes place. For young women, this often means vulnerability to infection, sexual coercion, and violence. Girls who lack opportunities for education and employment are (a) more likely to exchange unprotected sex for money or survival, (b) less likely to be able to negotiate protection with their partners, and (c) less likely to leave sexual relationships that they perceive to be risky. The norms of virginity for unmarried girls, paradoxically, increase their risk of infection by restricting their ability to ask for information about sex out of fear that they will be thought to be sexually active. Strong norms of virginity also put young girls at risk of rape and sexual coercion in high-prevalence

countries because of the erroneous belief that sex with a virgin can cleanse a man of infection.

Thus, in an era of HIV/AIDS, to achieve the goals of sustainable development, policies and programs must provide young women with access to livelihoods; eliminate violence; promote education, skill development, and employment; and eliminate social, political, and economic discrimination.

As a critical step in this direction, leaders at the Johannesburg Summit must reaffirm the goals established at the UN General Assembly Special Session on HIV/AIDS—to reduce HIV prevalence among men and women age 15 to 24 in the most affected countries by 25 percent by the year 2005, and by 25 percent globally by 2010. In addition, leaders at the Summit must commit to comprehensive integration of the concerns of youth into sustainable development policies and programs.

Without these commitments and the actions that would result, HIV/AIDS's assault on youth will dramatically weaken our link to the future, thereby undermining the very notion of sustainability. **W**

WATER

**TRANSBOUNDARY WATER ISSUES AT THE SUMMIT—
LOST OR FOUND?**

By Alfred M. Duda

Alfred M. Duda is a senior advisor with the Global Environment Facility Secretariat. In the 1980's, he served as chief of mission for the U. S. Department of State and director of the Great Lakes Regional Office of the International Joint Commission (U.S. and Canada) under the Boundary Waters Treaty and the Great Lakes Water Quality Agreement, as Revised.

Many very important preparatory meetings over the last year assembled the usual long list of priorities for both March's Monterrey International Conference on Financing for Development and August's Johannesburg Summit. Even the Millennium Development Goals (MDG) have been included. But missing from this list is the urgent need for improved management of transboundary freshwater basins and shared marine ecosystems.

Yet what is more basic to both security and development than balancing competing demands for water resources so that those resources can be sustained for our children? What is more fundamental to poverty alleviation, food security, and guaranteed livelihoods

than ensured access to the goods and services water ecosystems provide? To develop sustainably, both North and South must reverse the growing degradation of transboundary freshwater systems and the depletion of coastal oceans. Johannesburg can be a first step toward developing the site-specific, resource-management partnerships to ensure the sustainable use of these large, multi-country water systems.

Gloomy Arithmetic Reduces Human Security

Sector by sector, development of freshwater basins has resulted in unprecedented degradation of the water ecosystems on which entire nations depend. River pollution and flow depletion now cross national borders and reach downstream coastal zones—



resulting in irreversible saltwater intrusion and coastal ecosystem degradation. Destructive overfishing is now depleting coastal ocean areas. These dynamics are creating future flashpoints over conflicting uses of river basins and marine ecosystems. Indeed, conflicts between competing sectoral uses of water are becoming more common and are threatening the

withdrawal would trigger massive ecosystem collapse, social unrest, and tension among nations.

Coastal regions face an even more critical situation. Through the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP), the United Nations has described the collapse of coastal and marine ecosystems around the

Conflicts between competing sectoral uses of water are becoming more common and are threatening the internal and external security of many nations.

—Alfred M. Duda

internal and external security of many nations. Nothing less than the economic security of nations and the social viability of inland and coastal communities is at risk.

The arithmetic is gloomy for freshwater basins and the people living in them. The World Commission on Water (2000) described the water crisis as not a shortage of water but a crisis of policies, institutions, and lack of investment. While the population of our planet tripled over the last century, water use increased six-fold. Currently, 2.4 billion people lack access to basic sanitation, and 1.1 billion lack access to safe water sources. While nearly two billion people live with water scarcity today, the number is expected to rise almost four billion—half the planet—by 2025 unless radical reforms emerge. Lack of sewage treatment will also make longer stretches of international rivers unusable for downstream countries. The World Commission noted that addressing these problems will require an extra \$100 billion in investments annually.

Existing water withdrawals and pollution loading have already created an unprecedented environmental disaster by degrading the world's aquatic biodiversity. One-half of our planet's wetlands have already been lost, much of it converted to agriculture. (Indeed, agriculture—much of it subsidized with wasteful irrigation—is responsible for over 70 percent of water use globally.) Rivers, lakes, and deltas have already dried up because of deforestation and water overuse, and poorly treated or untreated human sewage fouls most major rivers and coastal ecosystems. Using conservative assumptions, the World Commission projects that demand for water withdrawals will likely increase 40 percent by 2025 in order to meet increased demand in irrigation, industrial activity, and human water consumption. Such an increase in water

world (GESAMP, 2001). Not only has pollution from sewage, mud, and nitrogen from fertilizers degraded these ecosystems, but the conversion of coastal wetlands (such as mangroves) to short-lived, high-profit aquaculture facilities that can produce foreign exchange has worsened the degradation.

In addition, massive overfishing of marine ecosystems has resulted in their global collapse. According to official statistics, almost every world fishery is at its limit, collapsed, or in recovery. More recent assessments show that fishery and biodiversity depletion of the oceans is much worse than originally thought, with existing systems having only a small fraction of the biomass and diversity of previous years (Jackson et al., 2001). Consequently, marine ecosystems are now unable to support projected increases in population the way they could have decades ago. This fishing frenzy is driven by \$15 billion in annual subsidies from governments, which lead to even more depletion and strip-mining of the oceans.

Restoration of the marine biomass is essential for the economy of all nations. Such phenomena as: single-species management in isolation; bilateral access agreements with foreign fleets; illegal, unregulated, or unreported fishing; discarded by-catch; habitat destruction from factory trawlers; government subsidies; and ineffective fisheries governance all combine to degrade our coastal and marine systems. The resource is not properly managed to reflect that many nations compete for the same resource (just as they compete for the same water in river basins). Adverse impacts to the livelihoods of poor coastal communities will worsen if the recovery of coastal and marine biomass can not be accelerated or if the sustainability of coastal ecosystems cannot be secured.

A New Imperative for Jointly Managing Transboundary Systems

Sixty percent of the water in our planet's rivers, half the Earth's land area, and 43 percent of its population is located in 261 transboundary freshwater basins. And 95 percent of the global fisheries' catch comes from "large marine ecosystems" that parallel the continental shelves and potentially represent multi-country, ecosystem-based management units for reversing the accelerated depletion of resources.

A valiant attempt was made in Bonn in December 2001 at the International Conference on Water to raise these concerns for attention at Johannesburg. But transboundary issues were the most contentious of any at Bonn and were quietly tucked away. Instead of looking at these multi-country water ecosystems and adjacent land as: (a) catalysts for cooperation on sustainable development, or (b) opportunities to pursue joint, multi-country development that collectively benefits all participating countries, some nations remain wary of basin-specific collaboration.

Johannesburg could spur the regional partnerships and collective action among nations that share transboundary basins or large marine ecosystems to deal with these issues. It could also foster new commitments to action that are needed: (a) under the UN Convention on the Law of the Sea for meeting Chapter 17 goals of Agenda 21, and (b) under the UN Convention on the Law of the Non-Navigable Uses of International Watercourses for meeting Chapter 18 goals. The ecosystem-based partnership between Canada and the United States on the North American Great Lakes-St. Lawrence River Basin serves as an example of the implementation of such integrated approaches. The Great Lakes-St. Lawrence basin was the first large transboundary system in which a joint management regime and collective national actions undertook to balance uses for social, economic, and environmental sustainability. The Great Lakes partnership illustrates two important points: (1) transboundary conflicts and disputes often trigger needed national reforms that are applicable nationwide, and (2) the partnership can mature over time into collaboration for mutual economic benefit and ecosystem security (Duda & La Roche, 1997). The Rhine River basin, the North Sea, and the Baltic Sea represent other globally-significant partnerships moving towards such reform and cooperation.

Reforms Needed in Both the North and the South

But the momentum set by these Northern

examples must move to the Rio Bravo and Colorado basins, to other transboundary rivers in Europe, and most of all to fishing fleets (European, North American, and Asian) that are depleting marine ecosystems of the South. Northern consumption and government subsidies drive overfishing. With international fisheries trade exceeding \$50 billion annually, governments of the North are stakeholders in the marine ecosystems of the South. Both should work toward sustainable use of this resource.

Without commitment of the South to: (a) stem corruption, (b) reform resource-management institutions and enforcement, and (c) enter into basin-specific or large marine ecosystem-specific partnerships for joint management, there will be no economic, social, or environmental security. And without Northern commitment to reform and to finance, transboundary ecosystem degradation in the South will continue. The North spends one billion dollars each day on agricultural subsidies that are damaging Southern ecosystems; it spends less than one-seventh of that on development assistance. The phase-out of environmentally-damaging agricultural and fishery subsidies could create tens of billions of dollars that could build developed/developing country partnerships toward sustainable development and use of transboundary ecosystems.

Pricing reforms for water-service delivery as well as national legal reforms will be essential for freshwater conservation. As Duda and El-Ashry (2000) have noted, no investment without such reforms will be sustainable. International finance institutions must play their roles as well by (a) fostering these reforms with their client countries, and (b) placing a priority on investments. Technical assistance could aid basin-by-basin management; it could also help balance land and water-resource use-patterns that can sustain communities with full participation by stakeholders. Pricing and other legislative reforms must also encourage public-private sector partnerships for investments—otherwise, from where will come the extra \$100 billion annual investment recommended by the World Commission?

For coastal and marine systems, an ecosystem-based approach to management would require codification in national law to support integrated coastal management, improved fisheries management, participation in joint management institutions, and removal of damaging subsidies. Investments in marine protected areas and development of ecosystem-based regional conventions that represent country



commitments to these partnerships are also critical, as is the reduction of nitrogen pollution-loading from fertilizers and sewage. We must coordinate and sequence support from international finance institutions rather than allowing it to remain fragmented.

In addition, fragmented, thematic, single-purpose agency programs simply do not harness stakeholders sufficiently to drive reforms. But the political momentum for such reforms could be driven by national commitments to joint management regimes

with international capacity building and support. Will the Johannesburg agenda meaningfully address transboundary collective action on specific water-related ecosystems? Will these issues be lost at Johannesburg? Or will they be found, perhaps renamed as essential partnerships for sustainable development? The social, economic, and environmental costs of inaction on transboundary water issues—and the resulting loss of security—is much too steep a price for the South to pay and the North to overlook. **W**

REFERENCES

Duda, Alfred M. & La Roche, David. (1997). "Joint institutional arrangements for addressing transboundary water resources issues—lessons for the GEF." *Natural Resources Forum* 21(2), 127-137.

Duda, Alfred M. & El-Ashry, Mohamed T. (2000). "Addressing the global water and environmental crises through integrated approaches to the management of land, water, and ecological resources." *Water International* 25, 115-126.

IMO/FAO/UNESCO-IOC/WMO/WHO/IAEA/UN/UNEP Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection) and Advisory Committee on Protection of the Sea. (GESAMP). (2001). "Protecting the oceans from land-based activities—Land-based sources and activities affecting the quality and uses

of marine, coastal, and associated freshwater environment." [On-line]. Available: <http://gesamp.imo.org/no71/index.htm>

Jackson, Jeremy B.C.; Kirby, Michael X.; Berger, Wolfgang H.; Bjorndal, Karen A.; Botsford, Louis W.; Bourque, Bruce J.; Bradbury, Roger H.; Cooke, Richard; Erlandson, Jon; Estes, James A.; Hughes, Terence P.; Kidwell, Susan; Lange, Carina B.; Lenihad, Hunter S.; Pandofi, John M.; Peterson, Charles H.; Steneck, Robert S.; Tegner, Mia J.; Warner, Robert R. (2001, 27 July). "Historical overfishing and the recent collapse of coastal ecosystems." *Science* 293, 629-638.

World Commission on Water. (2000). *A water secure world—Vision for water, life, and the environment*. Commission Report, World Water Council. London: Thanet Press.

A FRESHWATER ACTION AGENDA FOR JOHANNESBURG

By **Karin M. Krchnak**

Karin M. Krchnak is program manager for the National Wildlife Federation's Population & Environment Program. As an environmental attorney, she has worked for the American Bar Association Central and Eastern European Law Initiative, Science Applications International Corporation, and the Environmental Law Institute.

Although there are countless issues that need to be discussed at Johannesburg, none may be as critical as water. There is no more water on earth now than there was 2,000 years ago. But the limited supply of fresh water must meet the needs of a human population that has tripled in the last century and continues to grow at almost 80 million people per year. With this growing population has come increased demand for water to support industrialization, agricultural development, urbanization, and sprawl. Population growth and rising water-use have put the squeeze on available resources, causing wildlife and freshwater ecosystems to

disappear at alarming rates. Water stress and contamination are severe worldwide and the cause of widespread disease.

The Summit affords the world an opportunity to develop an action agenda on fresh water to ensure that this generation and future ones—and the species with whom we share the earth—have healthy freshwater resources. By addressing water, world leaders can make significant inroads in reducing poverty, improving human health, empowering women, and restoring ecosystems.

Other sectors will also benefit. New approaches to water conservation can help reduce energy needs



and the impacts of agriculture on the environment. Stakeholders—including nongovernmental organizations, women, youth, indigenous groups, industry, farmers, the scientific community, and trade unions—can also come together to reduce corruption in decision-making processes and improve equitable access to freshwater resources. Water is an issue that can help build alliances across communities, regions, countries, and international borders.

projects multiple scenarios for our future global population. The three scenarios—high (10.9 billion), medium (9.3 billion), and low (7.9 billion)—are designed to highlight a range of possible outcomes by 2050. All three of these scenarios—even the highest variant—assume continued declines in fertility (the number of children a woman will have in her lifetime). However, if we continue on our current path and fertility rates do not decline, the world will have 13

The Summit affords the world an opportunity to develop an action agenda on fresh water.

—Karin M. Krchnak

Water is also an issue on which substantial work has been done to establish principles for policy development and implementation. The United Nations Water Conference in 1977, the International Conference on Water and the Environment in 1992, and the Earth Summit in 1992 laid out principles for sustainable water management. The first World Water Forum in 1997 in Marrakesh called for a World Water Vision. Through a participatory process, the World Water Council led the development of a number of Water Vision documents. Recognizing the urgency of addressing freshwater conservation, the United Nations set targets in its Millennium Declaration (adopted in September 2000) to (a) reduce the proportion of people who are unable to access or to afford safe drinking water, and (b) to stop the unsustainable exploitation of water resources.

The key to success will be turning the vision and targets into action. The International Conference on Freshwater held in Bonn, Germany in December 2001 produced—through a multi-stakeholder dialogue—a set of Recommendations for Action that could be the basis for Summit development of a freshwater action agenda.

The Problem

Population and consumption will increase in coming decades, thereby straining our limited freshwater resources further and undermining the integrity of freshwater ecosystems.

As stated earlier, world population more than tripled in the 20th century—from two billion in 1927 to six billion in 1999. And population growth continues: with an annual growth rate of 1.2 percent, our population expands by approximately 77 million people every year (UNPD, 2001). The United Nations

projects multiple scenarios for our future global population. The three scenarios—high (10.9 billion), medium (9.3 billion), and low (7.9 billion)—are designed to highlight a range of possible outcomes by 2050. All three of these scenarios—even the highest variant—assume continued declines in fertility (the number of children a woman will have in her lifetime). However, if we continue on our current path and fertility rates do not decline, the world will have 13 billion people by the middle of the 21st century. The path of our population growth within this range of possibilities will be determined by the decisions made by today's young people and by the services and information made available to them.

Currently, humans use 54 percent of all accessible, renewable fresh water contained in rivers, lakes, and shallow underground aquifers. Population growth alone could push this percentage to 70 percent by 2025. If global water withdrawals continue to rise, humans could be expropriating over 90 percent of all available fresh water within 30 years (Postel et al., 1996).

Our increasing human numbers and our thirst for water are already impacting our freshwater resources in many ways. Industrial and agricultural development and urban sprawl are destroying freshwater ecosystems. Globally, the world has already lost half of its wetlands, with most of the destruction having taken place in the last 50 years (not coincidentally, as human population has grown the most). Human misuse of water resources is causing drastic drops in water tables around the world. In Texas, for example, ground water withdrawals from the Ogallala aquifer are occurring faster than rainfall can recharge it. Ever-increasing water withdrawals mean vulnerable conditions for humans and wildlife. Diversion and damming of water are reducing flow rates that can impact fish, birds, and mammals thousands of miles away and displace people from their homes. Agricultural, industrial, and urban pollution is degrading water quality and threatening the survival of species. Introduction of invasive species is causing a decline in freshwater biodiversity.

Caught between limited and increasingly polluted water supplies and rapidly rising demand from population growth and development, many countries face difficult choices. The World Bank warns that a



lack of fresh water is likely to be one of the major factors limiting economic development in the decades to come. Nature is losing its capacity to provide fresh water for both the growing human population and wildlife.

Recommendations

Address Population Growth. To find a balance among population, water, and wildlife, we must address population growth. Even if the coming decades see a slowing of the growth rate, some population growth will occur. With increased population comes more agricultural and urban run-off, damming and diversion of waters, and industrial and municipal pollution. To slow population growth and allow freshwater ecosystems to sustain people and wildlife, we must increase funding for voluntary international family-planning assistance through programs such as the ones run by the U.S. Agency for International Development (USAID) and the United Nations Population Fund (UNFPA). This funding increase will allow us to follow through on commitments made at the International Conference on Population & Development in Cairo in 1994.

Studies show that fertility rates drop most rapidly where there are improved child survival rates, higher education levels (particularly for women and girls), and workable voluntary family-planning policies. Girls who learn to read and write tend to live longer and have healthier children, and are also more likely to postpone parenthood and have fewer children, thereby helping to break the cycle of poverty.

Develop a Common Global Agenda on Freshwater Management. The global nature of freshwater problems is increasingly recognized both because water flows across international boundaries and because the problems are so pervasive throughout the world. Water stress and contamination are severe in many developing countries and of rising concern everywhere, resulting in widespread disease and death. Pollution from unsanitary household conditions as well as from industrial and agricultural sources lead to the spread of water-borne diseases, killing mainly women and children. With population pressures intensifying throughout the world, watershed basins cannot meet the increased demands of agriculture, leading to widespread hunger and malnutrition. Avoiding conflicts over freshwater resources requires global cooperation.

The United States should play an active role in international summits on sustainable development. It

should also make and keep commitments to develop a multilateral action plan to address water stress, to help conserve freshwater resources, and to provide equitable access globally. The plan should include gap analysis, prompt initiation of pilot projects and steps for broader action, benchmarks for progress, and reports on results. Many UN agencies are already working together and collecting data for release of the World Water Assessment Report at the Third World Water Forum in Japan in March 2003. The report, and others to follow, should serve as a baseline for the action plan and help countries assess progress on a regular basis. Further, it is critical to mobilize the world's resources to ensure that sound water-management strategies are implemented to produce results. At Johannesburg, world leaders should commit to establishing a Global Water Trust Fund. In this way, they will ensure that those that follow in their footsteps will look back upon the Summit as a hallmark event.

As part of this global agenda on fresh water, governments should provide citizens with access to water-related information. With little information available on the water requirements of flora and fauna, resource management fails to take into account the needs of aquatic species and wildlife. The Second World Water Forum, held in The Hague in March 2000, launched research projects to obtain data on the interdependence of water cycles and ecosystems. These data should be publicly available so that all citizens can participate in water decision-making processes.

Adopt National and Local Smart Water Management: National and local initiatives (as well as those at the international level) are crucial for turning a global vision on water conservation into reality. Policymakers at all levels must be educated on the links between population and water and the critical need for preserving healthy freshwater ecosystems and biodiversity. Policymakers also need to learn from experience the combination of methods—including appropriate market mechanisms—that will best fulfill in a balanced way the multiple water needs of wildlife, ecosystems, and human communities. Planning (urban, suburban, and rural) must take into account the needs of freshwater ecosystems and the wildlife that depend on them. This will help demonstrate that such costly and often destructive projects as dams and diversions should be avoided.

Water management also requires institutional and legal structures that are responsive to the needs of watersheds and river basins. National, regional, and local governments should promote enforcement of

principles, including: requiring polluters to pay; sound investments in water conservation; the reduction of subsidies that encourage water-intensive agriculture; and the pricing of water resources to encourage equitable access to and efficient use of water for all uses, including the maintenance of natural water flows and levels essential for wildlife and ecosystems.

Follow a Personal Water Conservation Ethic. Ensuring clean and plentiful water for humans and wildlife depends on the involvement of each and every person. Each person should follow a water conservation ethic that recognizes the finiteness of fresh water and the dependence of humans and wildlife on healthy waters.

Conclusion

The tragic events of September 11 brought to the forefront the necessity of creating a more secure world and the relationship of security to sustainable development worldwide. A water-short world is an

unstable world. The potential for conflict increases with rapid population growth, as do incidences of water-related diseases.

The long-term solution to finding harmony between people and nature requires a worldwide recognition of the vital links among rapidly growing populations, escalating resource demands, and shrinking supplies. Recognition, knowledge, and concern can help build the political will and behavioral changes necessary to avert a worldwide water crisis. We can develop the commitment needed to assure that humanity's short-term use and waste of fresh water does not exhaust the world's finite water supply, leaving nothing for wildlife or for the future and destroying the ecological balance upon which human life depends. The message is clear—we must understand the threats to freshwater ecosystems and make choices to help preserve Earth's most precious resource. **W**

ACKNOWLEDGEMENTS

The author would like to thank Don Hinrichsen and Katie Mogelgaard for their collaboration in preparing the report *Population, Water & Wildlife: Finding a Balance*, upon which this commentary is based. The full report is available at www.nwf.org/population/waterreport.html.

REFERENCES

Postel, Sandra; Daily, Gretchen; & Ehrlich, Paul. (1996). "Human appropriation of renewable freshwater." *Science* 271(5250), 785-788.

United Nations Population Division (UNPD). (2001). *World population prospects, The 2000 revision*. New York: UN Population Division.

WATER AND JOHANNESBURG: OPPORTUNITIES FOR PROGRAMS

By Gordon Binder

Gordon Binder works with Aqua International Partners, equity investors in the water sector in emerging markets. He is also a senior fellow at World Wildlife Fund and consults to Aspen Institute's Congressional Program, organizing international environment conferences for members of Congress. Mr. Binder was chief of staff to U.S. EPA Administrator William Reilly from 1989-93.

The Johannesburg Summit is about new possibilities for addressing a sobering set of long-standing problems. Water is among the most important: few issues affect the daily well-being of people more than the availability of quality water.

Experts have taken to speaking of the gloomy statistics in this field: one billion people without access to safe drinking water; up to three billion with no sanitation; tens of millions of illnesses and several million deaths annually (including many children)

caused by diseases associated with polluted water. Solutions to these problems would require spending tens of billions of dollars more annually than is currently allocated to water concerns.

The drivers behind water demand and supply aggravate this already difficult situation. Growing populations, urbanization, economic growth, and food production will each continue to claim large amounts of water. And the supply side faces serious constraints. Freshwater supplies are not always where people live,



and in some places these resources are polluted. Too often groundwater is extracted unsustainably. And the potential for climate change to disrupt familiar precipitation patterns is all too real.

Challenges and Competing Goals

Johannesburg offers the chance to take stock again of these circumstances. Water was on the agenda at the 1992 Rio Earth Summit—principally in Agenda 21, which spoke to the management of freshwater and marine resources as well as the lack of environmental infrastructure in settlements throughout the world. But Rio mostly focused on climate change, biological diversity, and the need for more development aid.

No one should hold illusions about how much the Summit can accomplish. Drinking water and sanitation, however important, are not the only water issues on the agenda. Integrated watershed management, marine pollution, coastal decay, flooding and droughts, and the needs of wildlife and natural systems are also critical. And the gamut of water issues will vie for attention with other compelling problems—from HIV/AIDS and health to development, land degradation, energy, agriculture, and governance.

Participants should also keep expectations modest. Leading international institutions, from the World Health Organization to the United Nations Development Programme, have had only limited success in grappling with unmet water needs. The 1980s saw some progress, thanks to efforts undertaken when this period was designated the International Decade for Drinking Water Supply and Sanitation. Yet the statistics underscore that meeting water needs remains a daunting challenge.

Perhaps most difficult for the Summit is the question of how an *international* gathering of thousands, relying on declarations and forums, can realistically address such a quintessentially *local* set of issues as water supply and sanitation. The ability of municipalities or towns to finance and provide water services is certainly affected by national laws and policies on such issues as water-resource management, pricing, and pollution control. These national efforts deserve attention in Johannesburg. But laws and policies are still steps away from actually delivering water or sanitation to people locally.

A Chance to Make Progress

What can we expect from Johannesburg that will make a difference? While the Summit can and should

raise awareness and reaffirm the connection between water and the health of people, economies, and the environment, I see three opportunities at Johannesburg and beyond for progress in the water sector.

First, examine the record of private-sector involvement in water. Public-private sector partnerships have emerged as one viable model for meeting water and sanitation needs. These partnerships draw on private-sector capital and management skills. Yet some politicians, labor unions, nongovernmental groups, and others remain wary of private involvement for a variety of reasons (Gleick et al., 2002). The recent civil protests in Cochabamba, Bolivia, ostensibly over dramatic water tariff increases, a signal event in the eyes of some water experts for such partnerships (Finnegan, 2002).

Ironically, the private sector may not be all that sanguine about the commercial opportunities for water services in developing countries. At a recent World Bank lecture, J.F. Talbot, the chief executive of Saur International (a large international water operator), offered a somber assessment on the prospects for such commercial endeavors. Talbot said that, absent significant change in the financial, contractual, and technical arrangements of developing countries, fewer and fewer opportunities will offer viable or attractive business propositions for the handful of remaining private international water operators (Talbot, 2002).

Talbot explained that the 1990s had seen a marked increase in risks (country, contractual, regulatory, and currency) coupled with excessive, unrealistic expectations about what the private sector could actually deliver. As a consequence, operators who were once interested in developing-country markets now see only low and diminishing returns. These operators, said Talbot, are looking more to developed countries, which offer greater returns at lower risk. Investors, meanwhile, are moving to other, more remunerative sectors.

The Summit would do well to examine the private sector's current and potential role in meeting water needs. About 100 examples of private-sector participation in water service and sanitation have occurred over the last decade. The record of this participation in Buenos Aires, Jakarta, Manila, and elsewhere offers lessons and insights. Consider Buenos Aires, where the private sector has:

- Rehabilitated water services, which cut water losses from about 40 to 25 percent;
- Increased water access to 10 percent more of the city's population without tapping new water

sources;

- Increased sewerage service by eight percent; and
- Charged tariffs that, despite a recent increase, are still lower than those charged by the public utility before privatization (Prime Minister's Council, n.d.)

According to the World Bank, 1.5 million more people (mostly poor) in the Buenos Aires area have gained access to piped water since 1993, and 600,000 have sewerage connections (World Bank, 2002, p. 6). The Bank or a similar institution could provide a great service by presenting rigorous analyses of these experiences so others may learn.

Invariably, a focus on private-sector involvement in water leads to consideration of the context it takes to assure this model can work effectively and benefit those intended. Thus, good governance (including transparency, accountability, public participation, anti-corruption, and dispute-resolution measures) constitutes an essential element in realizing the potential from private involvement in the water sector.

Second, showcase new technologies. These include: stand-alone, smaller-scale water treatment systems; solar-powered water pumps; point-of-use and point-of-entry purification devices; ultraviolet disinfection units; and smart meters and payment cards. These and other technologies offer new possibilities to help address unmet water needs. Opportunities also are emerging to use the Internet to disseminate information and make procurement more efficient. Improved and expanded technology-certification

regimes also can help people sort through the growing array of possibilities.

Third, focus on finance. From where will come the billions of dollars needed to expand service and repair broken systems? Development-assistance programs today seldom build costly infrastructure. Foreign investors and banks can and do provide some funding. But developing countries will likely have to finance most of the local water projects themselves. Outside of the advanced industrial countries, there are few functioning domestic capital markets. Although it is no small task to create such a market, Johannesburg could explain the rationale and help lay the groundwork.

Tariffs are a critical part of the solution to the financing challenge. Ideally, a tariff would be set at a level that would recover costs. Not only would it then support expanded coverage, maintenance, and repairs, but it would also induce conservation and efficient use. In addition, well-set tariffs would provide the returns necessary to attract more private capital (both domestic and foreign) as well as to spur innovation. While it is not always possible to set tariffs at an ideal level, it is possible to designate different rates for different users, targeting subsidies for those who really need them in a far more transparent manner.

Johannesburg and follow-on efforts will examine a long list of urgent needs. Amidst all the competing priorities at the Summit, no single issue will easily stand out. But a focus on new possibilities in the water sector just might offer hope to more people. **W**

REFERENCES

Finnegan, William. (2002, April 8). "Leasing the rain." *The New Yorker*, 43-53.

Gleick, Peter H; Wolff, Gary; Chalecki, Elizabeth L.; & Reyes, Rachel. (2002). *The new economy of water—The risks and benefits of globalization and privatization of fresh water*. Oakland, CA: The Pacific Institute for Studies in Development, Environment, and Security.

Talbot, J.F. (2002, February). *Is the international water business really a business?* Paper presented at the World Bank Water and Sanitation Lecture Series. Washington, DC: Author.

Prime Minister's Council on Trade and Industry (India). (n.d). "Urban water and sewerage." In Special Subject Group on Infrastructure, *Report on infrastructural development* (Chapter 8). [On-line]. Available: <http://www.nic.in/pmCouncils/reports/infra/welcome.html>

World Bank. (2002, January). *Water resources sector strategy: Draft for discussion with CODE*. Washington, DC: World Bank.



BUSINESS, INVESTMENT, AND FINANCING

JOHANNESBURG: TACKLING THE ISSUES HEAD ON

By **Tony Colman, MP**

Tony Colman is a UK Member of Parliament. He sits on the International Development Select Committee and Globe UK. His interests include international development, global and local environmental issues, and working to encourage corporate social responsibility.

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” (“Our common future,” 1987)

What are the key issues the Johannesburg Summit should concentrate on so that we meet present needs without impairing future sustainability?

First, we need to recognize the need for greater global investment. While the world may be on course to meeting the Millennium Summit target to halve global poverty by 2015, this achievement stems mainly from improvements in India and China. Other regions have not benefited from globalization, and some have even found themselves marginalized. In particular, many parts of Africa have stagnated and even regressed in terms of income per capita, service provision, and security. Indeed, nearly half of Africa’s 600 million people live on less than one dollar per day. Many of them also live in conditions of conflict and insecurity. This situation is indefensible in a civilized world.

It will take a new level of dedicated partnership between African leaders, donor countries, and private investors to ensure that Africa’s economic marginalization is reversed. This partnership will involve (a) new commitments to good governance and democratization from African leaders, coupled with (b) increased funding from the West to remove the obstacles to sustainable African development. We must channel our improved and expanded aid into vital areas such as conflict resolution, post-conflict reconstruction, infrastructure development, investment in human capital, and health provision.

Aid on its own, however, will never lead to a globally sustainable future. Africa also needs greater engagement in the global trading system, and it must create the environment necessary for foreign direct investment. African leaders should be allowed a greater voice in trade negotiations, as was seen at the WTO meeting in Doha. They must also make long-term

commitments to creating a stable investment climate in their countries.

There is also scope to use the export credit agencies of countries and multilateral agencies—such as the Export-Import Bank—to concentrate on underwriting exports and projects that meet sustainability criteria. The Export Control Bill currently under consideration in the UK Parliament for the first time includes the issue of sustainable development. Likewise, the OECD agreement on environmental considerations for all export credit agencies (which still requires ratification) could be used to channel foreign direct investment and exports in a more globally responsible direction.

The core issues of sustainable development to be addressed in Johannesburg center on the reduction of poverty and the provision of basic services to both the rural and the ever-increasing urban populations of the developing world. But poverty reduction and basic-service provision must be accomplished in a *sustainable and appropriate* way.

While a global health fund has been established to tackle the massive problems of HIV/AIDS, malaria, and TB, we have no such equivalent for the core services of water and sanitation which are, in fact, preconditions for basic and sustainable health. While less likely to make headlines, providing sustainable water and sanitation systems to expanding populations is one of the most challenging and important tasks facing this generation. These systems should also run on renewable energies. The entire effort will require both funding and better management.

The recent International Conference on Financing for Development in Monterrey has brought an almost unprecedented awareness of the need to increase sustainable development funds—which increases the feasibility of ideas such as the Tobin Tax.¹ It is imperative that the Summit continue this momentum and emphasize how global sustainability is closely linked to development financing. Following the UK Chancellor of the Exchequer Gordon Brown’s call



Commentaries

for a doubling of overseas development aid, the World Bank has announced similar recommendations. Johannesburg will provide the perfect opportunity to

push this agenda forward, for the sake of what the World Commission on Environment and Development so aptly termed “our common future.”



NOTES

¹ The Tobin Tax was first proposed in 1978 by James Tobin, a Nobel prize-winning American economist. Tobin proposed a very small tax on foreign exchange transactions to deter short-term currency speculation. The Tobin Tax would be a multilateral financial transfer tax to reduce currency speculation, provide increased fiscal and monetary autonomy for nations, and to generate substantial revenue to fund social development and environmental protection.

REFERENCES

“Our common future: The report of the World Commission on Environment and Development.” (1987). [On-line]. Available: <http://www.un.org/esa/sustdev/agreed.htm>

THE SUMMIT SHOULD FOCUS ON CORPORATE ACCOUNTABILITY

By *Marian A. L. Miller*

Marian A. L. Miller is an assistant professor of political science at the University of Akron. Her research interests include environmental politics and the politics of development. Recent publications include “The Third World in Global Environmental Politics.” She is associate editor of Global Environmental Politics, a journal published by MIT Press.

Agenda 21 was intended to be the basis of a global partnership for sustainable development, but the realities of world politics and economics undermine the possibility of authentic partnership roles for many developing countries. States of developed countries as well as corporate actors determine today’s global economic, political, and environmental agendas, in the process constraining developing countries’ environmental policy options. Increasingly, transnational corporations (TNCs), with the assistance of influential states, are undermining the prospects for equity—an important prerequisite for sustainable development.

The documentary output of the 1992 United Nations Conference on Environment and Development (UNCED) did not encourage the regulation of TNCs, regarding them as just another set of the partners and stakeholders in sustainable development. But this concept was unrealistic from the beginning. In fact, the exclusion of regulations for

corporate activity reflected corporate influence on the UNCED process.

The profitability of many corporations depends on the successful promotion of harmful products and processes. TNCs do not consult with their developing-country partners, and they do not try to achieve consensus. Indeed, in the decade since UNCED, corporations have concentrated their efforts on institutional changes meant to eliminate or reduce the regulation of their activities. These efforts have served to emphasize conflicts of interest among corporate, state, and citizen actors over issues related to sustainable development.

A desirable outcome of the Summit would be a move toward regulations that would make corporations accountable not only for the economic impacts of their activities, but also for the environmental and social consequences of those activities. Voluntary corporate social responsibility mechanisms are inadequate because corporations do not operate in the public





interest. In many cases, governments are not effective countervailing forces to corporations; they fail to adequately support the rights of citizens and workers in the face of corporate power.

Such a move toward regulating corporate activity would buck the trend toward establishing global rules to facilitate corporate activity—a trend that is essentially making national and local standards and regulations irrelevant. Governmental concessions have fed corporate power, and that power could be decreased if some of those concessions were withdrawn. At the Summit, states could start the process of taking power back from corporations: in the language to implement Agenda 21, they could insist that TNCs be accountable to the communities in which they operate. Bland,

ambiguous language about corporate environmental impacts will not be useful.

But any useful initiatives coming out of Johannesburg would represent only one prong of a multi-pronged effort to limit corporate power. In order for regulations established at the Summit to be effective, other international institutions need to take similar actions to support these regulations. Regulating corporations would have significant impacts in policy areas such as trade and investment, land use, food and nutrition, technology transfer, intellectual property rights, economic justice, and equity. These policy areas all have significant implications for the economic, environmental, and social pillars of sustainable development. **W**

PRIVATE INTEREST, PUBLIC RESPONSIBILITY: MANAGING BUSINESS AND SUSTAINABLE DEVELOPMENT IN A GLOBALIZING ECONOMY

By Jacob Park

*Jacob Park is an assistant professor of business and public policy at Green Mountain College in Vermont and a fellow of the Environmental Leadership Program. He is also co-editor of *The Ecology of the New Economy: Sustainable Transformation of Global Information, Communications and Electronics Industries* (Greenleaf Publishing, 2002).*

On the surface, it is hard to imagine why a charity group might protest the efforts of the United Nations-backed Global Alliance for Vaccines and Immunizations (GAVI) initiative. Launched with great fanfare at the annual meeting of the World Economic Forum in 2000, GAVI is a public-private partnership designed to increase the immunization rate in 74 of the world's poorest countries. GAVI's partners include some of the world's prominent companies, foundations, international organizations, and nongovernmental groups. The Bill & Melinda Gates Foundation has already donated \$750 million to start a vaccine fund that will act as a financing arm of the GAVI initiative.

But according to the U.K.-based NGO Save the Children, GAVI risks becoming a "marketing vehicle" for the private-sector representatives on the GAVI board. "If members of the GAVI board are also involved in the development and supply of the very vaccines promoted by the fund, there is clearly a conflict of interest," argues Annie Heaton, a researcher at Save the Children. "We must ensure that this initiative does not become a marketing vehicle for the pharmaceutical companies by increasing demand for expensive new

vaccines without the promise of long-term funding" (UN Wire, 2002).

There are some obvious conflicts-of-interest when private-sector participants in an NGO's activities are in a position to benefit materially from that NGO's global philanthropic objectives. But Save the Children's criticism also aptly illustrates a broader and seemingly intractable global debate over the role the private sector—particularly multinational corporations—can or should play in mainstreaming sustainable development.

Virtually all stakeholders in the sustainable-development debate—including governments, international organizations, civil society groups, and private companies—now agree that the business sector needs to play a more meaningful role in the global governance of sustainable development. But defining what would constitute such a "meaningful role" remains a problem. Should we focus on vigilantly regulating those corporate actions defined by civil-society groups as "unethical" or "irresponsible"—particularly in the petroleum, mining, and other extractive industrial sectors? Or should the stress be on identifying and implementing more effective

models of public-private partnerships, as many governments and private actors argue? Unfortunately, the favored “solution” to the problem varies greatly depending on which aspect of the emerging corporate governance and accountability debate one wishes to emphasize.

The current unilateral orientation of American foreign policy and the continuing political divide between the industrialized and developing countries continue to receive the bulk of media attention. But the real threat to progress at Johannesburg may be the breakdown in global consensus on what role the business sector can and should play in what Crispian Olver, South Africa’s Director-General for Environmental Affairs and Tourism, calls the “new global deal” on sustainable development (Lalasz, 2001). This commentary examines how and under what circumstances the private interests of the business sector can be operationalized toward achieving this “global deal” on sustainable development. The commentary first explores how private-sector issues were addressed at the 1992 Rio UN Conference on Development and Environment (UNCED) as well as which of those issues are likely to be discussed ten years later at the Johannesburg Summit. It then analyzes whether the goals of business and sustainable development can be complementary or are fated for collision.

Business & Sustainable Development: From Rio to Johannesburg

Despite an increased private-sector emphasis on environmental issues that had begun in the 1980s, antagonism between the business community and environmental/civil society groups remained strong and heated at the time of the 1992 Rio Summit. This continuing antipathy persuaded Maurice Strong, Rio Summit’s secretary-general, to try to stimulate business interest in the UNCED process. Out of these efforts developed The Business Council for Sustainable Development (BCSD), an international group of 50 business leaders. The Council sponsored a number of workshops and released *Change Course*, a book that offered an industrial perspective on global environmental and development issues (Schmidheiny, 1992).

As a result, Rio’s Agenda 21 highlighted the importance of “business and industry, including transnational corporations, [in playing] a major role in the social and economic development of a country” (UN, 1992). Agenda 21 also recommended priority

actions to: (a) encourage responsible entrepreneurship; (b) promote clean production systems; and (c) develop a partnership between governments, business, NGOs, and other sectors of society toward the goals of sustainable development. In addition, the BCSD issued its own declaration stressing (a) the relationship between economic growth and environmental protection, (b) the linkages between sustainable development and open-trade policies, and (c) the diffusion of environmentally sound technologies.

Unlike at Rio, however, the business sector is now widely considered a key actor—along with local authorities, women, youth, indigenous peoples, trade unions, and others—in the multi-stakeholder dialogue process leading up to Johannesburg. Indeed, business has been asked to contribute its views to the overall Summit policy agenda during the Summit’s lengthy preparatory process. Under the auspices of the International Chamber of Commerce and the WBCSD, different companies and business organizations have banded together for Johannesburg under the theme of the “business case for sustainable development.” Sir Mark Moody-Stuart, the former Chairman of the Royal Dutch Shell Group and the head of Business Action for Sustainable Development (a business-sector advocacy group), argues that “our message going into the Earth Summit in 2002 is that business is part of the solution to sustainable development.”¹

UN Secretary-General Kofi Annan also brought the business sector into the drive for sustainable development with his efforts to develop the Global Compact initiative. Announced by Annan at the 1999 annual meeting of the World Economic Forum in Davos, Switzerland, the Global Compact calls on companies to embrace nine principles in the areas of human rights, labor standards, and the environment. Although voluntary, the Global Compact is designed to provide a new institutional framework from which to build a more inclusive and equitable international marketplace as well as to give, in Annan’s words, “a human face to the global market.” By the end of 2002, 100 major multinational corporations and 1,000 other companies in different corners of the world are expected to participate in the Global Compact process.²

Competing Visions of Corporate Responsibility

If one of the important goals achieved at Rio was the recognition of the business sector as a legitimate policy actor in global governance, then a major objective at Johannesburg has to be reconciling the differences between the aforementioned competing



visions of corporate responsibility. Many individuals and companies in the business community see the creation of a strategic framework for managing environmental and social impacts of business activity as the major contribution the private sector could make to sustainable development. While this framework would remain voluntary, companies would be encouraged to undertake business practices that promote the value of corporate citizenship and go beyond existing regulatory compliance. John Ruggie of Harvard's Kennedy School of Government (and

companies help design and enforce rules that govern their behavior in a wide range of environmental and social settings. For example, much of what passes for regulatory regimes governing the use of the Internet and information and communication technologies—including the Internet Engineering Task Force, W3 Group, and Internet Corporation for Assigned Names and Numbers (ICANN)—is largely nongovernmental in terms of organization and operates outside the traditional state-based regulatory framework. These models of policy stewardship have so rapidly become

**A major objective at Johannesburg has to be reconciling the differences
between competing visions of corporate responsibility.
—Jacob Park**

the former chief advisor for strategic planning to UN Secretary-General Kofi Annan) suggests that the Global Compact may be a way to embed global market forces in shared values and institutional practices, and to “weave universal principles into global corporate behavior” (Ruggie, 2001).

But to many civil-society groups,³ initiatives like the Global Compact and the involvement of the business sector in the Johannesburg Summit’s multi-stakeholder process represent nothing more than an intrusion of multinational corporations whose goals are completely at odds with the public interest. CorpWatch, a U.S.-based corporate accountability group, argues that many companies participate in voluntary forums like the Global Compact mostly as a public relations exercise as they systematically ignore the principles of environment, labor, and human rights. NGOs like the Third World Network, Friends of the Earth, Sierra Club, and others want to move beyond voluntary frameworks and focus on developing legally-binding agreements to govern corporate behavior at the international level. Kenny Bruno of CorpWatch argues that “the Johannesburg Summit is framed by the question of whether governments can take action to re-direct corporate behavior in more sustainable directions... Voluntary corporate responsibility, while potentially positive, can become an obstacle when used as a diversion from attempts to hold corporations accountable” (Bruno, 2002).

But the competing visions of corporate responsibility advocated by the business and NGO communities ignore emerging models of “beyond-compliance” policy stewardship. In these models,

critical features of global governance that their effectiveness has not been fully examined.⁴

And while many people in the United States and other developed countries take for granted that industrial facilities should at a minimum disclose their levels of pollution releases, a systematic environmental review of industrial facilities would not be possible today without the 1986 Emergency Planning and Community Right-to-Know Act. Developed as a response to the toxic gas leak that killed 2,000 people in Bhopal, India in 1984, this law helped develop a pollution-disclosure system—called the toxic release inventory (TRI) in the United States and the pollutant release and transfer registers (PRTR) in Japan, UK, Mexico, and elsewhere—that is credited with large-scale reductions in industrial pollution all over the world. Administered by the U.S. Environmental Protection Agency, the TRI system has helped reduce toxic releases by 46 percent over the past 11 years (Graham & Miller, 2001) and serves as the key information backbone of a wide range of anti-pollution advocacy networks, including the Environment Defense’s Scorecard project.

Because of the growing complexity of managing environmental dilemmas (such as persistent organic pollutants like dioxin and PCBs) in the 21st century, the only effective long-term solution may be one which is (a) economically sustainable, (b) guided by local community input, and (c) adaptable to the constant changes and uncertainties of environmental science and public health. Despite its drawbacks and limitations as a policy tools, TRI has ratcheted up the prevailing standards for transparency and information feedback to community groups that have existed only in

rhetoric in the traditional command-and-control regulatory system. Moreover, the success of TRI in opening up the information gateway has spawned both national and international corporate transparency initiatives like the Global Reporting Initiative, the Corporate Sunshine Working Group, and others. In a post-TRI world, self-regulatory corporate governance mechanisms in which companies help design and implement the solutions is still likely to be the norm. However, these norms are likely to be ineffective (if not outright rejected) without some form of input and assurances from community groups and/or relevant government agencies.

Traditional regulatory regimes in which the state plays a central role in the regulatory life cycle—as advocated by the NGO community—still have a role to play in the global economy. However, the NGO community cannot simply demand that the UN, WTO, or other international organizations monitor corporations and hold the business sector accountable. Corporate accountability and monitoring lies outside the mandate of these international organizations, and no country—particularly the United States—is likely to easily give up its traditional sovereign power to regulate its domestic industries.

The international NGO community also cannot wish away the current situation in which neither government nor civil society is in a position to enact a global sustainable-development agenda without the voluntary cooperation of the private sector. The exploding flows of private capital to emerging economies, coupled with declining official development assistance in the 1990s, illustrate that the public sector cannot by itself shoulder the burden of financing sustainable development or pro-poor economic policies. More than \$125 billion in “new and additional financial resources” (as outlined in Rio Summit’s Agenda 21) has gone from industrialized to developing countries—but from private, not public, sources (Gentry & Esty, 1997). The success of agreements made at the UN Conference on Financing for Development in Monterrey, Mexico may depend on public- and private-sector cooperation to ensure that private capital flows can be made complementary

with the goals of sustainable development.

Toward a New Sustainable Development Dividend

Will business engagement produce a sustainable development dividend at Johannesburg? The answer may depend on whether the Summit can properly address three questions. First, can the business community move beyond “profitable green ventures” to support sustainable-development projects that may not meet that community’s usual standard of financial returns?

Second, can civil-society groups overcome their traditional mistrust of the private sector and form effective public-private partnerships to further sustainable-development goals? The number of NGOs taking the partnership route and not adhering strictly to the anti-business activist camp is growing. Conservation International’s Center for Environmental Leadership in Business, the Pew Center on Global Climate Change’s Business Environmental Leadership Council, the Worldwide Fund for Nature’s alliances with the private sector in forestry and marine-conservation issues, and even Greenpeace’s research and development of environmentally-friendly refrigerators all reflect this important shift.

Third (and arguably most important), can corporate responsibility be realized and the public interest protected in a global economy that gives so much weight to multinational corporations? This is essentially what Save the Children asked when questioning the legitimacy of private-sector representation on the GAVI board. This question, however, is further complicated by the fact that a nearly one-billion-dollar contribution from the Gates Foundation made the GAVI initiative possible. Given that this money comes from a “private” source recycled institutionally in the form of a foundation, does it really make sense to question the legitimacy of private-sector participation? Should Ted Turner be lauded or criticized for giving away one billion dollars to various UN causes? Ironically, Save the Children has an active corporate-support program that specializes, among other activities, in “cause-related marketing.” 



NOTES

¹ A wide assortment of speeches and discussion papers can be found at the Business Action for Sustainable Development Web site: (<http://www.basd-action.net>)

² Background information on the Global Compact can be found at the group's Web site at <http://www.unglobalcompact.org>

³ Just as there is not one uniform view of the business sector, one has to be cautious in not attributing one uniform

perspective to the widely divergent NGO community. But this commentary is focused on more activist-oriented groups such as Global Exchange and not the more research and partnership-oriented organizations such as the World Resources Institute, Conservation International, and The Nature Conservancy.

⁴ There are some excellent works on this subject, including: Haufler (2001); Garcia-Johnson (2000); and Gunningham & Grabowsky (1999).

REFERENCES

Bruno, Kenny. (2002). *The UN's Global Compact, corporate accountability, and the Johannesburg Summit*. San Francisco: CorpWatch.

Garcia-Johnson, Ronie. (2000). *Exporting environmentalism: U.S. multinational chemical corporations in Brazil and Mexico*. Cambridge, MA: MIT Press.

Gentry, Bradford & Esty, Daniel. (1997). "Private capital flows: New and additional resources for sustainable development." *Bulletin 101: Bridges to sustainability: Business and government working toward for a better environment*. New Haven: Yale Center for Environmental Law and Policy.

Gunningham, Neil & Grabowsky, Peter. (1999) *Smart regulation: Designing environmental policy*. New York: Oxford University Press.

Haufler, Virginia. (2001) *A public role for the private sector: Industry self-regulation in a global economy*. Washington, DC: Carnegie Endowment for International Peace.

Lalasz, Robert. (2001, December 4). "The road to Johannesburg: Setting the agenda for the World Summit on Sustainable Development." Summary of an Environmental Change and Security Project meeting at the Woodrow Wilson International Center for Scholars, Washington, DC. [On-line]. Available: <http://ecsp.si.edu/johannesburg.htm>

Ruggie, John. (2001). "Global_Governance.Net: The Global Compact as learning network." *Global Governance* 7, 4.

Schmidheiny, Stephan (1992) *Changing course: A global business perspective on development and the environment*. Cambridge, MA: MIT Press.

UN. (1992). *Earth Summit: Agenda 21*. [On-line]. Available: <http://www.un.org/esa/sustdev/agenda21.htm>

UN Wire. (2002, January 15). "Vaccines: Group says U.N.-backed plan risks becoming marketing vehicle." [On-line]. Available: <http://www.unfoundation.unwire>

White, Allen. (1999). "Sustainability and the accountable corporation." *Environment* 41, 8.

ENVIRONMENT

THE NEED FOR A BALANCE BETWEEN ENVIRONMENT CONSERVATION AND HUMAN DEVELOPMENT

By **Johnstone Odera Tungani**

Johnstone Odera Tungani is the adaptive research coordinator for SACRED Africa, a Kenyan-based NGO that deals with sustainable agriculture for research, extension, and development. He holds a BSc. in Forestry and an MSc. in Soil Science from Moi University, Kenya.

The major question that should be in the back of every stakeholders' mind for the Johannesburg Summit is: to what extent have

the governments and other organizations that participated in Rio adhered to its agenda? And if Rio did not achieve much, can we expect more significant

achievements after the Johannesburg Summit?

Johannesburg participants need to seriously consider this issue because of the importance of sustainability to every activity involving environment conservation and human development. Non-adherence to the 1992 Rio resolutions affects developing countries most severely because of their strained economies, wars, famine, drought, susceptibility to natural disaster, and bad governance.

Governments, especially those in developing countries, must seek ways to inform and involve all stakeholders—including the ordinary citizen—in issues concerning human development and

soils along with crop and animal husbandry skills. Unfortunately, the high rate of population growth in the developing world has hindered agriculture by reducing farm sizes, forcing farmers to adopt unsustainable land-use methods. The situation is worsened by poor post-harvest management of farm produce and a preference for exotic rather than indigenous crops (which are more suited to local conditions). Climatic uncertainties have also made farming a risky venture. To improve farming practices, communities need to learn about appropriate and sustainable agricultural technologies and find ways of using non-rain fed agriculture.

**Governments, especially those in developing countries, must
seek ways to inform and involve all stakeholders
beginning at the grassroots level.
—Johnstone Odera Tungani**

environmental conservation beginning at the grassroots level. These local issues will eventually build up to become global issues. In Kenya, for example, we have the Kenya Nongovernmental Organizations Earth Summit 2002 Forum, where information on environment conservation and human development is collected using a bottom-up approach. Stakeholders (working at community levels) gather information at the grassroots, which is then put together to form district, provincial, and finally national information. This information will be the basis for Kenya's agenda at Johannesburg. Private organizations and nongovernmental organizations (NGOs) ought to work together with governments in this way to ensure sustainable utilization of resources. Sustainable development efforts should also be redirected to marginalized areas in order to ensure balanced growth.

In another workshop held in August 2001, Kenyan NGOs identified seven key issues which developing countries ought to address during the forthcoming Summit. These were: HIV/AIDS; water quality; food security; management of soil fertility; genetic (biodiversity) erosion; loss of indigenous knowledge; and forest management. What follows is a brief look at two of these issues:

Food Security and Nutrition: Food is essential for human survival, and ensuring food supply and providing balanced nutrition requires sustainable agricultural production. Farmers need good seed (propagation material), good water supply, and fertile

Forestry: Forests and other vegetation play a major role in environmental conservation and human development. Humans have relied on forests and forest-related products for many needs, including fuel, fruits, food, timber, fodder, shade, and beauty. But high population growth and inadequate forest management policies have led to an alarming rate of forest depletion in some parts of the world. In some countries, forest land has been cleared and developed without care for the impact on the environment. Consumerism has in fact been placed above conservation in many countries.

To address this issue, local communities should be sensitized to the value of natural forests, while governments must reinforce these new attitudes with sound forest management policy. Communities could adopt agro-forestry and social forestry practices to save the natural forests. Eco-tourism could provide an alternative income source for individuals who currently rely on the direct exploitation of forests for their living. Most countries have in place sound extension strategies in their agriculture departments where farmers can access local experts to advise them on appropriate crop/animal husbandry technologies. Similar strategies must be employed in national forestry departments. Experts on sustainable use of our natural forest resources ought to be stationed close to the community level—especially to those communities that live next to critical natural-resource areas and that need guidance on how to harmonize with their environments.



Current levels of population growth, especially in most tropical countries, have led to the need for more land for settlement, agriculture, and other development. One of the options for creating more land has been encroaching on existing forestland. This encroachment might be a quick solution to land shortage, but its sustainability is questionable. For example, forests play a major role in rain catchment, and over 70 percent of the world's agriculture is rain-fed. Uncontrolled forest clearing leads to reduced rains with unreliable patterns, resulting in reduced agricultural production. There is a significant correlation between forest destruction and food insecurity.

All deliberations at the Summit must strive to strike a sustainable balance between conservation and consumerism for the nations of the earth. Some of the measures that ought to be taken at the Johannesburg meeting should include:

- Effectively educating people at the community level—especially in developing countries—on technologies that promote sustainable use of our natural resources.
- Halting the destruction of our natural forests and allowing natural regeneration. Instead of encroaching on natural forests, we must put marginal lands to productive use. Communities must also be trained and encouraged to practice agroforestry so that they can have the trees they need on their own farms instead of harvesting them from natural plantations.
- Subsidies and credit facilities should be offered to rural farmers in developing countries, who often are not able to afford most of the inputs for their farming up front. This will boost food production and ensure food security. Rural farmers also need help marketing their produce to avoid waste and exploitation.



INTERNATIONAL ENVIRONMENTAL GOVERNANCE

BRINGING ORDER TO GOVERNANCE OF MULTILATERAL ENVIRONMENTAL AGREEMENTS

By *William Krist*

William Krist is a senior policy scholar at the Woodrow Wilson International Center for Scholars, where he directs the Trade and Environment Forum in the Center's Environmental Change and Security Project. He also has worked in a leading high tech trade association and at the Office of the U.S. Trade Representative.

Multilateral Environmental Agreements (MEAs) have accomplished a great deal in recent decades. Examples of notable accomplishments include (a) reducing depletion of the ozone layer, and (b) protecting a number of endangered species and forests. That's the good news. Unfortunately, the bad news is that the MEAs as a whole are not adequately dealing with current global environmental threats.

The Johannesburg Summit gives the world's leaders a chance to strengthen the international structure for sustainable-development governance to better address global problems—including linking environmental processes with social and economic ones. The November 2001 WTO Ministerial Conference in Doha provided both a model and a challenge for this task. Leaders at Doha launched a process to strengthen the trade regime through a "round" of negotiations that will address a number of

issues over the coming three years. The Doha summit set objectives and a negotiating process that allow a broad range of potential tradeoffs to be explored. This model could be copied at Johannesburg to strengthen the MEA system.

Further, Doha set as a goal negotiations on the relationship between the trade rules and the specific trade obligations set out in MEAs. This challenge needs to be met by the environmental community at Johannesburg. How do we strengthen the coherence of the MEA system so that it can be a full partner in the system of international rules and obligations?

The current MEA system is entirely too ad hoc. Some of the roughly 300 MEAs have more members than the WTO, and have clearly-articulated rules and procedures and a track record of proven effectiveness. Others, however, are not well-defined, do not have clear procedures, and have only a few members.

In addition, individual MEAs are headquartered



in many cities, including Toronto, London, Tokyo, Geneva and Nairobi. Some are free-standing agreements; others are linked to United Nations Environmental Programme, the Food and Agricultural Organization, or other bodies. Some have first-class Web sites to provide information on their activities to the public; others do not. And there are no clear-cut definitions to distinguish between MEAs and other agreements that, while dealing with the environment, really only regulate social or economic processes. For

To improve the way the international trade and environmental regimes mesh, the timelines for this environmental governance round should parallel the Doha trade round, which specified a three-year negotiation. While these two negotiations should proceed in parallel and communicate closely with one another, they should not be formally linked since they are separate and each is important in its own right.

The first phase of a Johannesburg environmental governance round should be to clearly define the

How do we strengthen the coherence of the MEA system so that it can be a full partner in the system of international rules and obligations? The Johannesburg Summit needs to meet the challenge posed at Doha.

—William Krist

example, most international fisheries agreements could appropriately be characterized as “commodity” agreements. Only a few seek to manage fisheries in an ecosystem context. As the Worldwatch Institute and The Center for International Environmental Law (CIEL) have written, “the current international environmental regime reflects a lack of coordination, insufficient funding and, in some instances, inadequate authority or mandates. As a result, the international community has realized that a more coherent international environmental framework must be established” (Worldwatch Institute & CIEL, 2002).

To address these problems, some experts have advocated negotiation of a world environmental organization. Regardless of whether this is a good idea or not, there is currently no political will to consider developing such a new entity.

Instead of a grand scheme, what we need are specific incremental steps to improve the governance of this ad hoc MEA structure. Such an incremental process, of course, has been followed by the World Trade Organization (WTO) and its predecessor the GATT in a series of eight “rounds” since creation of the GATT.

The Johannesburg Summit provides a perfect venue to launch a similar “round” to bring more coherence to the MEA structure. As a meeting that gathers heads of state, the Johannesburg Summit can launch a process with timelines and a specific mandate that will encompass all the MEAs. Greater coherence in the MEA system, including strengthened dispute settlement mechanisms and governance, will better enable the environmental system to work with the trade system on a basis of equality.

problems and begin to develop a consensus on the approach to deal with the problems. All interested stakeholders will need to be involved in this effort.

Similar to the Doha trade round, this Johannesburg round must pay particular attention to the problems of developing countries. These countries are the least able to implement their MEA commitments—and yet they are the key battleground in forest and species preservation.

While these negotiations will need to build a comprehensive agenda, following are some ideas of some specific outcomes that could emerge from this process:

1. *More action, less reporting.* Highly effective MEAs, such as the Montreal Protocol, emphasize capacity-building to help countries comply with their obligations. Tools used by MEAs in capacity-building include: analysis and reporting of a country’s situation to the agreement’s parties; technical assistance in the form of training and written materials; and financial support to meet the MEAs’ requirements.

Currently, however, each MEA does its own thing. Several require their own country reports, which are duplicative in a number of areas. Technical assistance is not coordinated. And many MEAs do not have resources to provide meaningful financial support. While such problems create difficulties for countries like the United States, they cripple the participation of many developing countries. Governments in these countries often have only one official responsible for implementing all its responsibilities for the MEAs to which it is a party.

In short, the current MEA system entails *too much*



reporting—not enough action. MEAs need to be focused on achieving results that will make a measurable difference in fulfilling their objectives—not on process, which is too often the case today.

Negotiations to strengthen the MEAs with regard to capacity-building might start with an exchange of information among the MEAs on best practices. The negotiations should agree on a single coordinated report from any one developing country that would fulfill the reporting needs of all the MEAs to which that country belongs. The negotiations should also develop a program of coordinated and pooled technical assistance, focused on the needs of that developing country. A fellowship program to train promising individuals from developing countries could also be implemented. And additional funding should be provided, if justified; developed countries, in fact, might be more willing to provide such funding if they knew it would result in maximum bang for the buck.

2. *Location, location, location.* MEA meetings are scattered over the world, with little thought given to trying to coordinate them so that meetings in a specific subject area—such as species preservation or atmosphere—are held sequentially in the same location. There is absolutely no way that developing countries can attend the meetings that they need to attend under the current structure.

Heads of state and government meeting in Johannesburg have the authority to order that this ad hoc system be ended. These negotiations should lead to a better grouping of relevant MEAs and development of a system for coordination among them. UNEP has been hosting a series of meetings to begin such coordination. The Johannesburg Summit could give this effort muscle and ensure broad participation by the MEAs.

3. *An information clearinghouse.* Many in the environmental community have argued that the MEA secretariats all be headquartered in the same city. While desirable, this move may not be politically feasible at this time. However, there could be one overall MEA Web site that (a) links to other MEA sites, and (b) contains a place for referencing those MEAs without sites.¹

Information on MEA documents and meetings should all be available on the Internet, comparable to the first-class WTO site. Such transparency is particularly critical for MEAs because these agreements

must be implemented by a broad spectrum of players in member countries.

Special provisions should be given to developing countries. While every country has access to the Internet, the bandwidth of Internet systems in many developing countries is very small, making it extremely difficult to download relevant documents. These countries could be given a satellite dish and computers to enable them to participate electronically in MEA implementation electronically at very low cost. Additionally, key people in the least developed countries—specifically those ministries responsible for implementing MEAs—may need training on using the Internet and information technology.

4. *Trade and resource management.* This process should work closely with negotiators in the Doha Trade Round. For example, trade negotiators plan to try to eliminate subsidies that contribute to the problem of overfishing. Many others have argued that subsidy elimination would be most effective if implemented with a coordinated plan to better manage the world's fish resources. The environmental community needs to meet challenges such as this one by developing a plan for better managing the world's fish resources; the environmental community also should work with the trade negotiators to identify harmful subsidies.

Similarly, negotiators hope to eliminate trade barriers on goods and services that have a positive environmental impact. Again, the environmental community should be part of identifying such products and services.

In conclusion, the Johannesburg Summit needs to meet the challenge posed by Doha. The ball is in our court. Over the next few years, it is possible to make significant practical moves to bring better coherence to the international environment governance structure. We must take advantage of this opportunity. 

NOTE

¹ An excellent, privately maintained Web site (by the Center for International Earth Science Information Network, or CIESIN) provides general information on MEAs as well as texts of the basic treaties. The official Web site proposed here would be for the official papers on meetings, policy developments, and key documents for each MEA, which would be posted in a timely manner.

REFERENCES

Heinrich Boll Foundation (2001). "Trade and environment, the WTO and MEAs: Facets of a complex relationship." Papers presented at a March 29, 2001 conference cosponsored by the Heinrich Boll Foundation, the Woodrow Wilson International Center for Scholars, and the National Wildlife Federation. Washington, DC: Heinrich Boll Foundation.

Center for International Earth Science Information Network (CIESIN). (1996-2001). "Environmental treaties and resource indicators (ENTRI)." [On-line]. Available: <http://sedac.ciesin.org/entri/>

United Nations Conference on Trade and Development. (2000). *Achieving objectives of multilateral environmental agreements: Package of trade measures and positive measures* (Veena Jha & Ulrich Hoffmann, Eds.). New York: United Nations.

World Trade Organization (WTO). (2001). "Ministerial declaration." WT/MIN(01)/DEC/W/1. WTO Ministerial Conference, Doha, November 9-14, 2001. Geneva: WTO.

Worldwatch Institute & CIEL. (2002, February). "The need for new international environmental governance." [On-line]. Available: http://www.ciel.org/Tae/Johannesburg_Call_Back1.html.

UN REFORM IS THE KEY
By W. Bradnee Chambers

W. Bradnee Chambers is head of the United Nations University Institute of Advanced Studies Programme on Multilateralism and Sustainable Development. These are his personal views.

Since the last world summit in 1992 in Rio, environmental issues have all but dropped off the radar screens of politicians. The environment has steadily worsened. Badly-needed global responses to combat serious threats such as climate change and biodiversity loss continue to lack meaningful support of major countries—including the United States. How can we rebuild the kind of support and interest that can revitalize the international response to environmental issues?

Most agree that the key to putting the environment back on political agendas is a successful Johannesburg Summit. These summits, which have taken place since 1972 and attract hundreds of heads of state, business interests, and major media attention, have in the past been important catalysts for the worldwide environmental movement. The last two summits alone were responsible for creating most of today's international environmental treaties as well as Agenda 21, the world's primary blueprint for environmental action. Preparations for Johannesburg unfortunately have started late and as of this writing have failed to pick up the kind of issues that will engage decision-makers for a positive outcome. The tragic and unforeseen events of September 11 have also impeded preparations and made it difficult to push other global issues when the world's focus is on fighting terrorism.

What is needed to put the Summit back on track is a focus on the key barriers—inadequate financing, poverty, and weak environmental institutions—that

have stalled sustainable development and environmental protection. The first two issues are daunting challenges and require tremendous international cooperation and work. Wealthier countries have not come close to meeting their pledge of giving 0.7 percent of GNP to assist developing nations. Poverty alleviation has become intertwined with the complexity of globalization, a phenomenon that continues to widen the gap between the world's rich and the poor. But the third issue—strengthening of environmental institutions—could be a manageable (and politically feasible) outcome for the Summit.

Strong institutions are a precondition for building any kind of international cooperation. Yet global institutions for the environment are perhaps amongst the weakest and most poorly coordinated. In 1945, when the UN Charter was signed, the environment was not a concern. UN organizations and treaties evolved and were created in an impromptu manner out of the necessity to solve environmental issues that had no boundary. More than fifty years later, we have hundreds of institutions working on the environment within a weak and ineffectual global organizational system.

For example, there are over 300 environmental treaties in effect that address highly-interrelated issues in the natural ecosystem—such as water, soil, atmosphere, and forests. But the secretariats of these treaties are spread around the world and cooperate only superficially; and governments implement the



treaties separately at the national level. The United Nations Environment Programme (UNEP), which is supposed to be the premier UN body on the environment, is still not a full-fledged UN agency, and has a smaller budget and staff than many national ministries of environment.

UN regional institutions, which one would expect to be able to work on the ground at a practical level, are also weak. The UN coordinates its environmental action through UN social and economic regional organizations created in the late 1940s—long before the environmental movement began. Take, for example, the Economic and Social Commission for Asia Pacific (ESCAP), which encompasses over sixty members from Turkey to the Solomon Islands. These country members represent nearly two-thirds of the world's population and have some of the most diverse ecosystems on earth. Yet they are supposed to cooperate under the aegis of ESCAP to address “shared” environmental problems. How are mountainous countries such as Nepal supposed to prioritize their environmental concerns with some of the world's lowest-lying nation-states, such as Tuvalu? Or how can biodiversity-rich countries such as Malaysia find common environmental priorities with arid and desert countries such as Mongolia? The answer, obviously, is they cannot.

During the Asia Pacific Regional Summit Prepcom in November 2001 in Phnom Penh, this diversity and these difficulties were on full display. Environmental

ministers and senior officials from the 61 ESCAP countries were asked at this Prepcom to agree on a regional platform as an input to the Summit. But the countries found little in common, and took three days and two all-night sessions just to agree on a watered-down document that has no real regional flavor or sense of regional priority.

ESCAP, like many of the UN's older organizations, has not been reformed to reflect modern environmental priorities. A far better approach would be to work through sub-regional organizations (such as ASEAN or the South Pacific Regional Environmental Programme—SPREP) that address issues common to a given region. In regions where these types of organizations do not exist, smaller UN organizations could be created that comprise countries sharing common bioregions (such as a major river basin or a mountain system) or flora and fauna. This approach makes much more sense than the current one.

Strong institutions are a key to solving the world's most pressing concerns. But to address modern environmental challenges, we must create better-coordinated and more-effective institutions that (a) reflect in their organizational structure the natural interlinkages between environmental issues, (b) build stronger regional organizations that work on common environmental priorities, and (c) reform and reinforce global organizations such as UNEP. 

BEYOND JOHANNESBURG: ADVANCING THE SUSTAINABLE-DEVELOPMENT AGENDA

By **Pamela S. Chasek**

Pamela S. Chasek is the co-founder and editor of the Earth Negotiations Bulletin, a reporting service on United Nations environment and development negotiations. She is currently an assistant professor and director of international studies at Manhattan College.

Every time the United Nations decides to hold a world conference, summit, or special session of the General Assembly, the international community focuses intensely on the topic at hand—HIV/AIDS, children, social development, human settlements, women, or sustainable development. Then, after months of furious and frantic preparations and the conference itself, the chosen topic tends to disappear from the top of many policymakers' agendas. The challenge, therefore, is ensuring that the issues addressed in Johannesburg *remain* at or near the top

of international and national agendas.

The latest reports on the state of the environment show alarming findings. Climate change is more dramatic than previously expected. Soil erosion, other land degradation, and forest loss continue at a rapid pace. Many species of plants and wildlife are becoming extinct. And water resources are diminishing in many regions of the world. But sustainable development is not only about the environment. The scourge of hunger and extreme poverty is still a bitter reality for more than a billion people. The gap between rich and poor

has widened. Some countries are completely losing touch with the world economy and are excluded from the benefits of globalization. Ten years after the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, the world is still confronted with the challenges of endemic poverty, unsustainable lifestyles, and environmental degradation.

As the Secretary-General's report on *Implementing Agenda 21* states:

The outcomes of Rio project a vision of development balanced between humanity's economic and social needs and the capacity of the earth's resources and ecosystems to meet present and future needs. This is a powerful, long-term vision. However, ten years later, despite initiatives by governments, international organizations, business, civil society groups and individuals to achieve sustainable development, progress towards the goals established in Rio has been slower than anticipated and in some respects conditions are worse than they were ten years ago (United Nations, 2001).

How can the international community ensure that we will not be reading the same words in 2012?

The Need for Institutional Reform

Governments can pave the way for greater progress towards the goals established in Rio and Johannesburg through institutional reform at both the international and national levels. Many of the present international system's weaknesses in dealing with sustainable-development issues arise from a compartmentalized institutional approach; and this compartmentalization reflects *national* decision-making structures and representation in international governing bodies. The result is both overlapping mandates of secretariats and multiple guidelines for operational activities at the national and local levels. Compounding the problem is the complexity of governing structures, differences in membership, and different decision-making processes (United Nations, 2001). Coordination is nearly impossible.

There is also broad recognition that the United Nations Commission on Sustainable Development (CSD), which was established by the General Assembly in 1992 and charged with UNCED follow-up, has not been as successful at pushing the sustainable-development agenda as many had hoped. It does not

have any enforcement powers; it lacks true coordination capacity across the UN system; and it has not been able to attract attention from ministries other than environmental.

As a result, the preparatory committee for the Summit is discussing the concept of "sustainable development governance." Delegates are currently debating just how to strengthen the intergovernmental process in the United Nations system for the coordination of sustainable-development work and implementation of Agenda 21. A number of different proposals have emerged, including:

- Further integrating the three pillars of sustainable development (environmental, economic, and social) into the work of the UN Regional Economic Commissions, which could effectively transform themselves into *regional sustainable-development commissions* (UN, 2001).
- Strengthening the *UN Economic and Social Council* so that it can play a role as a global strategic forum for social, economic, and environmental issues. The Council should have the capacity to bring together governments, the UN system, and representatives of civil society and the private sector to address issues of sustainable development from an integrated perspective (Eid, 2001).
- Enhancing and strengthening the *United Nations Environment Programme* while simultaneously enhancing the economic, social, and developmental capacities of other UN institutions and the UN overall. Such enhancements will require a corresponding *strengthening of the capacity and role of the CSD* so that it can better perform its integrative function (Third World Network, 2001).
- *Making the CSD* either (a) a subsidiary body of the General Assembly instead of a subsidiary body of the United Nations Economic and Social Council (ECOSOC), or (b) an "Earth Council" that would report directly to the General Assembly.

Regardless of the outcome in Johannesburg, it is important to remember that any intergovernmental organization is only as strong as its member governments want it to be. When governments created the CSD, they purposely kept the organization weak (i.e., a subsidiary body of ECOSOC) so that they would not be creating a monster that would force Agenda 21 implementation. Are governments ready to strengthen the CSD and give it or its replacement body the ability to monitor and assess progress toward such



implementation? Are governments ready to allow the use of sustainable-development indicators? Progress in these areas at the Summit would demonstrate a true commitment to sustainable development.

Nations Matter, Too

International-level commitments such as the ones proposed above must also be met by similar commitments at the national level. Representatives of nongovernmental organizations from both developed and developing countries complain about the lack of national action to integrate the three pillars of sustainable development. Each year there are criticisms that the CSD attracts only environment ministers—not ministers of finance, agriculture, fisheries, development, or energy. While the nature and working methods of the Commission may be at fault, national governments must share in the blame.

National governments are sectoral or compartmentalized by nature. In many cases, the weaknesses in intergovernmental bodies such as the CSD reflect the lack of coordination between national ministries. In the cases of developing countries, these weaknesses reflect a lack of capacity in the areas of national-policy analysis, design, and management. Most developing countries have a “hollow negotiating mandate,” whereby lack of capacity and understanding of complex issues handicaps negotiators and forces them to fall back on making general statements and rhetorical remarks (Gupta, 1997, p. 133). Many developing countries also come to meetings of intergovernmental bodies without substantive national positions because (a) the issues under negotiation at the international level have not captured their public’s popular imagination, (b) officials have not considered

the issue between sessions, or (c) the issue is not considered a priority by the countries’ ministries of foreign affairs. In some cases, developing countries do not even have the human and financial resources to send a delegation at all.

Ministries of foreign affairs are responsible for most of the work at the UN in New York, and their officials dominate the New York missions. Sustainable-development issues are not a priority in these ministries. Among developing countries, only six have even a full-time official at their mission to deal with sustainable development.

But the cross-sectoral nature of sustainable development demands such coordination. Therefore, another positive outcome from Johannesburg would be a series of proactive recommendations for national governments that would encourage greater “pollination” between those ministries responsible for the implementation of Agenda 21 at the national and local levels. Strengthening coherence and consistency at the national level will both advance the sustainable-development agenda and strengthen its governance internationally.

The success or failure of the Summit rests on the political will of governments. If governments are truly committed to integrating environment and development, they must make important structural changes to both international and national governance. These changes will not take place overnight. But the mechanisms for institutional reform must be put in place at Johannesburg if there is any hope of making real progress on sustainable development before yet another international conference reviews the implementation of Agenda 21. 

REFERENCES

- Eid, Uschi. (April, 2001). *Perspectives from the German Ministry for Economic Cooperation and Development*. Paper presented at a conference, “The Road to Earth Summit 2002,” sponsored by the Heinrich Boll Foundation. Washington DC: Author.
- Gupta, Joyeeta. (1997). *The Climate Convention and developing countries*. London: Kluwer.
- Third World Network. (2001). *International environmental governance: Some issues from a developing country perspective*. Penang, Malaysia: Third World Network.
- United Nations (UN). (2001). *Implementing Agenda 21: Report of the Secretary-General*. New York: United Nations.



THE FUTURE OF INTERNATIONAL ENVIRONMENTAL GOVERNANCE

By **Bharat H. Desai**

Bharat H. Desai is an associate professor in international law and international environmental law and institutions at the International Legal Studies Division of the School of International Studies at Jawaharlal Nehru University in New Delhi.

The UN system is now gearing up for another major global conference at the Johannesburg Summit. In addition to taking stock of the progress during the ten years since the UN Conference on Environment and Development at Rio, the Summit is also expected to take concrete action towards an institutional architecture for international environmental governance (IEG).

Analysts and policymakers now recognize the need for a centralized environmental authority that can provide overarching guidance to national governments. But although a wide variety of views prevail on the issue of IEG, no ideal model yet exists. Several elements—such as the political confidence of the states, effectiveness of the institutional mandate, and reliable funding—will ultimately hold the key to the emergence of a concrete blueprint.

After a year of tortuous negotiations, an official intergovernmental forum, referred to as an “Open-ended Intergovernmental Group of Ministers or their Representatives on International Environmental Governance” (IGM), concluded its final meeting in Cartagena in February. The United Nations Environment Programme's Governing Council (UNEP GC) established the forum to conduct a comprehensive assessment of: (a) weaknesses in existing environmental governance; and (b) future needs and options for strengthened international environmental governance, including UNEP financing (UNEP GC, 2001).

This intergovernmental initiative is the most important to date on the future of IEG. Along with the annual Global Ministerial Environment Forum (GMEF), it represents a bold step towards reviving the sagging fortunes of UNEP and regaining environmental policy coherence in the wake of fragmentation and a multiplicity of institutions. The UN General Assembly (in Resolution 53/242) has also endorsed proposals to establish an Environmental Management Group (EMG) to enhance UN-wide interagency coordination on issues in the field of environment and human settlements (UN GA, 1999). In addition, the IGM process has also focused attention

on the linkage, synergy, and coordination among multilateral environmental agreements (MEAs).

Issues of overlapping jurisdiction, waste of resources, and turf wars have marred the performance of many of the existing institutional structures and have in particular reduced UNEP's effectiveness. Thus, a central task of GMEF was to provide an action plan to revitalize UNEP as the global environmental authority. But as various international institutions have entered the environmental scene, UNEP's authority to set the global environmental agenda has diminished.

The three GMEF sessions since May 2000 have set the agenda for Johannesburg concerning IEG. A broad range of proposals from these sessions has included these specific options: (a) a new mandate to the UN Trusteeship Council on environment protection and global commons; (b) enhancing UNEP's status from a program to a “specialized agency”—in effect, making it a new world environmental organization; and (c) continuation of the existing UNEP with secure and predictable funding as well as proper coordination of MEAs (UNEP & IGM, 2001). In a way, the recommendations of the IGM process have already set the tone for realizing a greatly-strengthened environmental institutional structure.

Several developed countries (such as France and Germany) have voiced their support for a new environmental organization. In the course of the final deliberations in Cartagena, however, several other states (including the United States, Russia, and China) have expressed reservations about this proposal or even the conversion of UNEP into a specialized agency. But such an enhanced status would bring UNEP (a) greater institutional standing within the UN system as a global environmental authority, and (b) an assured funding base through the UN scale of assessment tied to realistic budget estimates. UNEP is the environmental conscience of the UN, and it has proven its worth (in spite of several handicaps and organizational problems) in the past 30 years. States need to place their political confidence in it.

Keeping in mind the nature of intergovernmental



deliberations so far, one does not expect dramatic results to emerge at Johannesburg. Still, it would be an achievement if the states gathered at the Summit seriously considered strengthening UNEP-taking into account its competences in international environmental lawmaking processes as well as in the assessment, monitoring, and collection of scientific data on the global environment. (The GC/GMEF could then formalize UNEP's enhanced status after

Johannesburg.) The states at the Summit should also reaffirm UNEP's location in Nairobi, which hosts the only major UN institution in the developing world. The task is large, and the process will be evolutionary. As such, the future direction of international environmental governance will be dictated by the political will of the states and by how willing they are to translate their international environmental commitments into action. **W**

REFERENCES

UN General Assembly (UN GA). (1999, August 10.) *Report of the Secretary-General on environment and human settlements*. Doc. A/RES/53/242. [On-line]. Available: <http://www.un.org/documents/ga/res/53/a53r242.pdf>

UNEP & IGM. (2001, November 16). *International environmental governance: Report of the executive director*. Doc. UNEP/IGM/4/3. Montreal: UN.

UNEP Governing Council (UNEP GC). (2001). *Decision 21/21 international environmental governance*. Nairobi: UNEP. [On-line]. Available: www.unep.org/gc_21st

New Publication From ECSP

FINDING THE SOURCE: THE LINKAGES BETWEEN POPULATION AND WATER



Population and fresh water are widely recognized as two of the most important issues facing humanity. Yet too few policymakers are aware of the close links between these two phenomena as well as their ramifications for livelihoods, economic productivity, and political and regional stability.

Finding the Source: The Linkages Between Population and Water takes an important step towards increasing knowledge about these interconnections. Its three articles highlight some of the most critical issues facing environment and development policy today. *Finding the Source* is also a step towards amplifying Southern voices in these policy discussions: by design, the author-team for each of these articles includes one Southern and one Northern writer. Each paper also features substantial treatment of developing-country cases (the Philippines, India, and sub-Saharan Africa). The common message is unmistakable: global water problems are still soluble—but only with concerted international action that includes efforts to address population growth.

Table of Contents

"The Coming Freshwater Crisis is Already Here"

Don Hinrichsen and Henrylito Tacio

"Urbanization and Intersectoral Competition for Water"

Ruth Meinzen-Dick and Paul P. Appasamy

"Exploring the Population/Water Resources Nexus in the Developing World"

Anthony R. Turton and Jeroen F. Warner

For more information about *Finding the Source*, see the summary of the rollout meeting in this issue of *ECSP Report* or visit the ECSP Web site at <http://ecsp.si.edu/population-water.htm>. To request a copy, please email ecspwwic@wwic.si.edu.



CHINA ENVIRONMENT SERIES: ISSUE 5

ECSP's China Environment Forum has published its fifth issue of the *China Environment Series* (CES). An annual journal for policymakers, researchers, educators, and environmental nongovernmental organizations (NGOs), CES features articles, commentaries, and meetings summaries that examine environmental and energy challenges facing China and explores creative ideas and opportunities for governmental and NGO cooperation.



Feature Articles

China's "Go West" Campaign: Ecological Construction or Ecological Exploitation?
Elizabeth Economy

Searching for Energy Security: The Political Ramifications of China's International Energy Policy
Philip Andrews-Speed, Xuanli Liao, & Roland Dannreuther

Pesticides in China: A Growing Threat to Food Safety, Public Health, and the Environment
Jessica Hamburger

New Partners or Old Brothers? GONGOs in Transnational Environmental Advocacy in China
Fengshi Wu

Commentaries/Notes From the Field

Looking into a Microcosm of China's Water Problems: Dilemmas of Shanxi—A High and Dry Province—Jih-Un Kim

Networking for Development of Legal Assistance to Pollution Victims in China—Kenji Otsuka

Xinjiang: A Trip to the New Territory—Wen Bo

China's Nature Reserves: Protecting Species or Generating Profits?—Lawrence Glacy

The Yunnan Great Rivers Project—Ou Xiaokun

Environmental Action as Mass Campaign—Jane Sayers

Spray-Painting Change? Beijing's Green Olympics, NGOs and Lessons Learned from Sydney—Timothy Hildebrandt

Brick by Brick: Improving the Energy and Environmental Performance of China's Buildings—Robert Watson & Barbara Finamore

Lean and Green: Boosting Chinese Energy Efficiency through ESCOs—Pam Baldinger

CES 5 includes summaries of China Environment Forum meetings as well as an updated and expanded "Inventory of Environmental Projects in China," which describes projects conducted by U.S. government agencies, U.S. universities, professional associations, and NGOs. This year's Inventory includes a significantly longer section on Chinese NGOs and environmental initiatives by other governments in China.

To obtain a copy of *China Environment Series* Issue 5 or inquire about contributing to future issues, please contact ECSP Senior Project Associate Jennifer L. Turner by email at chinaenv@erols.com or phone at 202/691-4233. Copies may also be downloaded from the ECSP Web site at <http://ecsp.si.edu>.



POPULATION, POVERTY, AND VULNERABILITY: MITIGATING THE EFFECTS OF NATURAL DISASTERS

By *George Martine and Jose Miguel Guzman*

Abstract

Hurricane Mitch was one of the most destructive natural disasters of recent times, and it exposed the underlying vulnerability of the Central American region, where poverty magnifies the threat of natural hazards. International assistance for national disasters tends to focus on short-term recuperation rather than on long-range prevention. Policymakers need to pay greater attention to the role of population dynamics within necessary prevention efforts. This article analyzes the relationships between demographic dynamics and Hurricane Mitch in Central America, and extracts from that experience lessons that can help reduce vulnerability to natural disasters in the long run. Specifically, it centers on three aspects: How did demographic processes condition the area's vulnerability prior to Mitch? What are Mitch's consequences for population dynamics in the short- and long-term? How must population dynamics change in order to mitigate the effects of future natural disasters? Systematic use of such information could help blunt natural-disaster impacts in three important ways: planning of spatial organization, reproductive health needs, and design of adequate information systems.

Mitch is considered to be the most powerful hurricane to have hit Central America and the Caribbean in the last two centuries as well as one of the most destructive natural disasters of recent times. Its passage exposed the underlying vulnerability of this region and threatened the very fabric of the societies affected. Not only did it test these societies' capacity to face critical issues, but it also brought into question their social, economic, and political structures.

Mitch, however, was not an isolated incident. Central America and the Caribbean are perennially exposed to natural hazards of a physical, geological, or meteorological nature. Table 1 portrays the deaths resulting from the region's recent vulnerabilities and various natural hazards. During the last 30 years, Central American natural disasters have caused more than 56 million deaths and \$22.45 billion dollars of economic damage. Such destruction has contributed to the deterioration of the region's living conditions as well as to a reduction in its rates of economic growth (ECLAC & CCAD, 2002).

Natural hazards become disasters because Central

America is extremely vulnerable. Social factors (high levels of poverty), economic factors (failure to consider natural disasters in the location and characteristics of economic activity), and environmental factors (inappropriate land use on steep slopes, deforestation, erosion, inappropriate location of settlements, and occupation of watersheds) all compound this vulnerability (SICA, 1999).

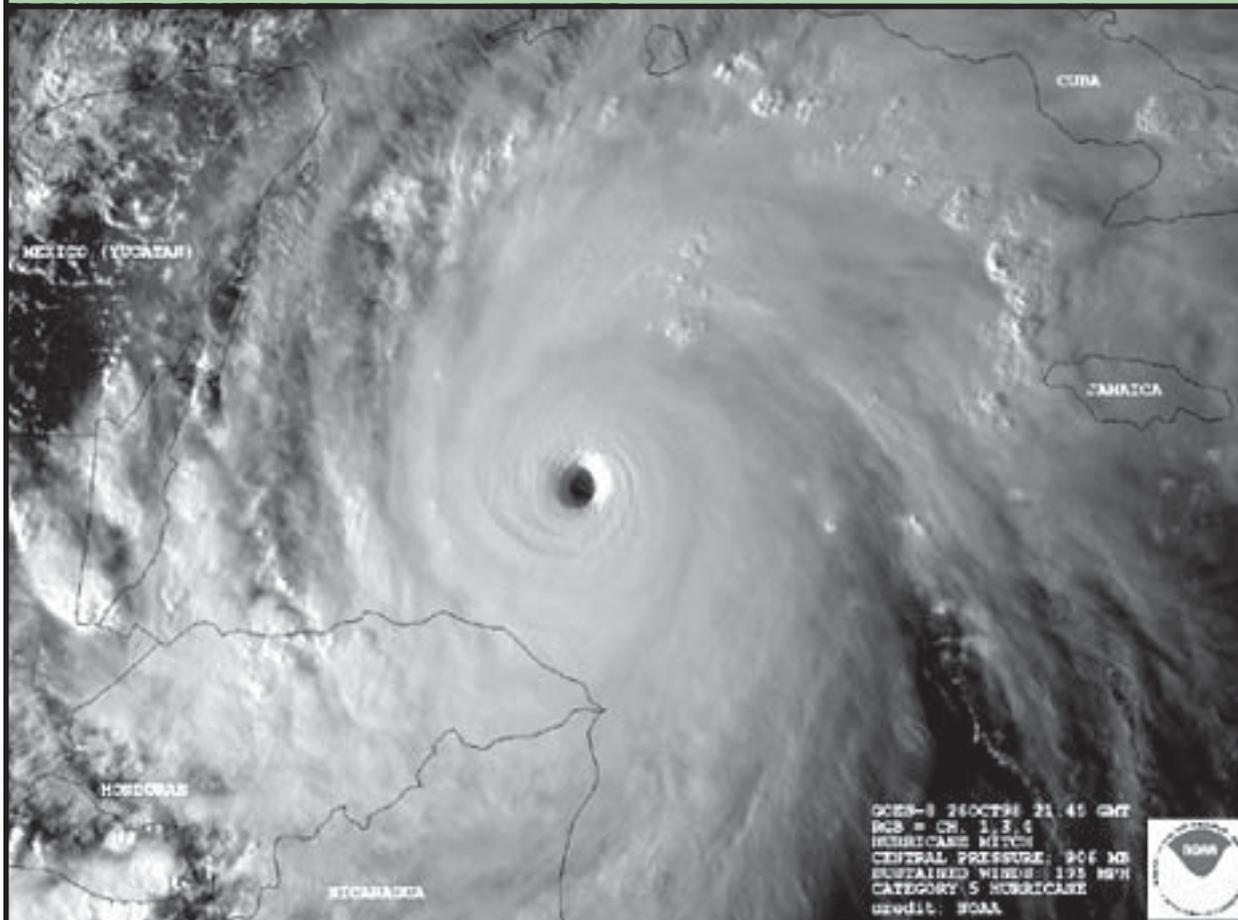
Given this blend of natural and social conditions in the region, the recurrence of Mitch-type events can be expected in Central America and the Caribbean. Unfortunately, global attention to such threats tends to wane quickly, with international assistance focusing principally on issues of short-term recuperation rather than on medium- and long-range prevention. A critical lesson from past disasters has not yet been put into practice: more effective contributions require a long-range preventive approach directed to structural issues rather than short-term remedial actions.

Within this perspective of longer-range prevention, policymakers need to pay greater attention to the role of population dynamics. It would seem obvious that demographic factors such as settlement

George Martine is director of the UNFPA Country Support Team for Mexico.

Jose Miguel Guzman is population affairs officer in the CELADE/Population Division of the Economic Commission for Latin America and the Caribbean (ECLAC) in Santiago, Chile.

Hurricane Mitch on 27 October 1998



Source: U.S. National Oceanic and Atmospheric Administration

patterns and migration are fundamental to the nature and gravity of natural-disaster impacts. Yet these factors are rarely taken into account. Even the UN International Decade for Natural Disaster Reduction¹ paid scant attention to population dynamics in its campaign. True, policymakers and specialists alike routinely assert that population growth and rapid urbanization increase the negative effects of natural occurrences. However, this truism does not lead to effective action. The relationship among natural disasters and development patterns, population growth, and spatial distribution has been rarely identified with clarity. At most, policymakers express a vague wish for reduced population growth or an end to rural-urban migration. This approach is largely ineffective, since the underlying rationales for people's demographic behavior tend to be overlooked.

This article (a) analyzes the relationships between demographic dynamics and Hurricane Mitch in Central America, and (b) extracts from that experience

lessons that can help reduce vulnerability to natural disasters in the long run. Specifically, it centers on three aspects: How did demographic processes condition the area's vulnerability prior to Mitch? What are Mitch's consequences for population dynamics in the short and long term? How must population dynamics change in order to mitigate the effects of future natural disasters?

As seen from Table 2, every Central American country was affected by Mitch. Honduras and Nicaragua were the worst hit. Although the frame of reference for this article is the entire region, many of the illustrations below are taken from Honduras, the country most affected by this hurricane.

1. SOCIO-DEMOGRAPHIC CONDITIONERS OF VULNERABILITY

The capacity to survive and recover from the effects of a natural disaster is the result of two factors: the

Table 1: Important Natural Disasters in Central America and the Caribbean Since 1970

Year	Country	Type of Hazard	Deaths	Total Population Affected
1972	Nicaragua	Earthquake	10,000	400,000
1974	Honduras	Hurricane Fifi	7,000	15,000
1976	Guatemala	Earthquake	23,000	1,200,000
1978	Honduras, Belize	Hurricane Greta	5	...
1979	Dominica	Hurricane David	38	81,000
1979	Dominican Republic	Hurricane David/Frederic	1,400	1,200,000
1980	Haiti	Hurricane Allen	220	330,000
1982	Nicaragua	Hurricane Alleta	69	...
1986	El Salvador	Earthquake	1,100	500,000
1987	Dominican Republic	Hurricane Emily	3	50,000
1988	Jamaica	Hurricane Gilbert	45	500,000
1988	Nicaragua	Hurricane Joan	116	185,000
1989	Antigua, Guadalupe	Hurricane Hugo*	56	220,000
1991	Costa Rica	Earthquake	51	19,700
1992	Nicaragua	Tsunami	116	13,500
1993	Nicaragua	Tropical Storm Gert	13	62,200
1993	Honduras	Tropical Storm Gert	103	11,000
1995	Nicaragua	Heavy Rains	32	1,343
1996	Costa Rica	Hurricane Cesar	26	...
1996	Nicaragua	Hurricane Cesar	9	...
1996	Nicaragua	Eruption Madera Volcano ***	50	1,550
1998	Dominican Republic, Haiti	Hurricane George	294	296,637
1998	Honduras, Nicaragua	Hurricane Mitch **	19,800	1,300,000

* Also affected Monserrat, Virgin Islands, and Saint Kitts
 ** Also affected Guatemala, Costa Rica, Belize, and El Salvador
 *** Ometepe Island (Landslides)

Sources: OPS/OMS (1994); CEPAL (1999); OPS/OMS (2002); NCDC (1999).

Feature Articles

physical magnitude of the disaster in a given area, and the socioeconomic conditions of individuals or social groups living in that area. Vulnerability (the degree to which a society or group is threatened by the impact of natural hazards) is differentiated by social groups in almost all natural disasters. Altogether, it is estimated that 90 percent of victims and 75 percent of all economic damages from natural disasters are in developing countries (Thouret & D'Ercole, 1996, p. 409).

As aptly stated by UN Secretary General Kofi Annan (1999b), "...poverty and population pressure force growing numbers of poor people to live in harm's way—on flood plains, in earthquake-prone zones and on unstable hillsides." In Central America, the relationship between socio-economic conditions and

the impact of natural disasters can generally be expressed as follows: economic constraints force the poor to live in precarious homes, made of flimsy, non-durable materials, on the least-valued plots of land. The poor build their shacks on steep hillsides; on floodplains; in fragile ecosystems and watersheds; and on contaminated land, right-of-ways, and other inappropriate areas. Even government housing and urban-development policies tend to overlook environmental constraints and lack adequate information for land-use planning. Inappropriate location invites serious social and environmental problems, which are aggravated by deforestation as well as by inadequate management of rainwater and wastes. During disasters, inadequate services and infrastructure further complicate survival efforts. Health risks are similarly

Table 2. Population Affected by Hurricane Mitch

Country	Population in Shelters	Directly Affected (not in shelters)	Total Population Affected	Deaths Plus Missing	Total Population Estimated 31 December 1998
<i>Absolute Numbers:</i>					
Honduras	617,831	...	5,371,368	13,715	6,231,434
Guatemala	54,725	106,000	750,000	389	10,945,053
Nicaragua	65,271	368,261	867,752	4,015	4,872,553
Costa Rica	5,411	9	3,886,222
El Salvador	55,864	28,452	346,910	259	6,092,190
<i>As a Percent of the Total Population (31 December 1998):</i>					
Honduras	9.9	...	86.2	0.220	100.0
Guatemala	0.5	1.0	6.9	0.004	100.0
Nicaragua	1.3	7.6	17.8	0.082	100.0
Costa Rica	0.1	0.000	100.0
El Salvador	0.9	0.5	5.7	0.004	100.0
Source: Population affected: ECLAC (1999) (Various country reports) Estimated Population: Based on CELADE (1999)					

accentuated. By comparison, the homes of the upper and middle classes are built with hardier materials on more stable terrain, and their residents enjoy better services. These classes also have more resources with which to rebound from disasters. ²

In short, poverty is a central component of vulnerability—a centrality dramatically demonstrated by Hurricane Mitch. A task force formed by INCAE (Instituto Centroamericano de Administración de Empresas) and by Harvard University’s Institute for International Development concluded that “the conditions of poverty in Central America are the fundamental cause of their vulnerability in the face of natural disasters” (Hernández, 1999, p. 8). In Nicaragua, Hurricane Mitch most significantly affected those municipalities with the highest levels of poverty, especially in rural zones (UNDP, 1998). In Guatemala, Vice President Luis Flores Asturias affirmed that “the tragedy highlighted accumulated needs and deficiencies as well as shoddy handling” (Hernández, 1999, p. 8). And in Honduras, although the damage spread to all social strata, “there is no doubt that the greatest number of victims emerged from the most humble communities such as those of the Municipality of Choloma, La Lima and El Progreso, its towns and banana fields” (Hernández, 1999, p. 8).

In turn, demographic processes impact the makeup and persistence of poverty. Population growth and distribution result from the interaction between three variables: fertility, mortality, and migration. Levels and patterns of these three variables together define a region’s vulnerability, including the size and spatial location of population in given social and economic contexts. Even though the path of natural phenomena such as tropical storms is difficult to anticipate, the

occupancy and utilization of a given territory greatly conditions the gravity of natural disasters. Similarly, varying reproduction patterns among different social groups determine the relative size of their families and, to a certain extent, their levels of poverty, housing characteristics, crowding, access to services, infrastructure, and other elements. These predestine not only these groups’ susceptibility but also their capacity to handle natural disaster. The following analysis of demographic processes and their relation to vulnerability in the case of Hurricane Mitch will illustrate this phenomenon.

The three Central American countries most affected by Mitch are, coincidentally, those characterized by the highest fertility levels in the region: Honduras, Guatemala, and Nicaragua. However, fertility levels among social groups differ significantly in each of these countries, with the poorest sectors showing much higher levels. These fertility patterns reflect the fact that the poorest have the least capacity to exercise their reproductive preferences. As shown in Table 3, surveys conducted among the female population show that women from the lowest socioeconomic level in Honduras have twice as many children as they would like.³ Their inability to exercise their reproductive rights is the starting point for a vicious circle centered on the intergenerational transmission of poverty. Poor women have limited information and resources to limit the number of births. They also tend to have less power in decision-making on many topics, including sexuality and reproduction. Forced to rear many children, these women have greater difficulty in obtaining paid employment, leading to a lower per capita income for their families. Their children have fewer educational opportunities,

Table 3. Honduras: Ideal Number of Children⁴ and Total Fertility Rate According to Socio-Economic Level

Socio-economic level	TFR*	Ideal number of children	Difference
Low	6.9	3.4	3.5
Middle	4.1	2.9	1.2
High	2.7	2.7	0.0

*TFR: Total Fertility Rate
 Source: ENESF (1996)

Feature Articles

and when these children begin their sexual life—often at an early age—they too will have little reproductive health information or resources, thus reinitiating the poverty-high birth rate cycle.

Mortality levels also clearly differ by socioeconomic strata. According to the 1996 ENESF Survey in Honduras, a child's probability of dying before the age of five is 64 per 1,000 in strata defined as "low," compared to 38 per 1,000 in children in the "high" strata. These statistics demonstrate that the factors behind differential mortality prior to Mitch—malnutrition, lack of access to services, poor water and sanitation, and so forth—also condition differential susceptibility to disaster.

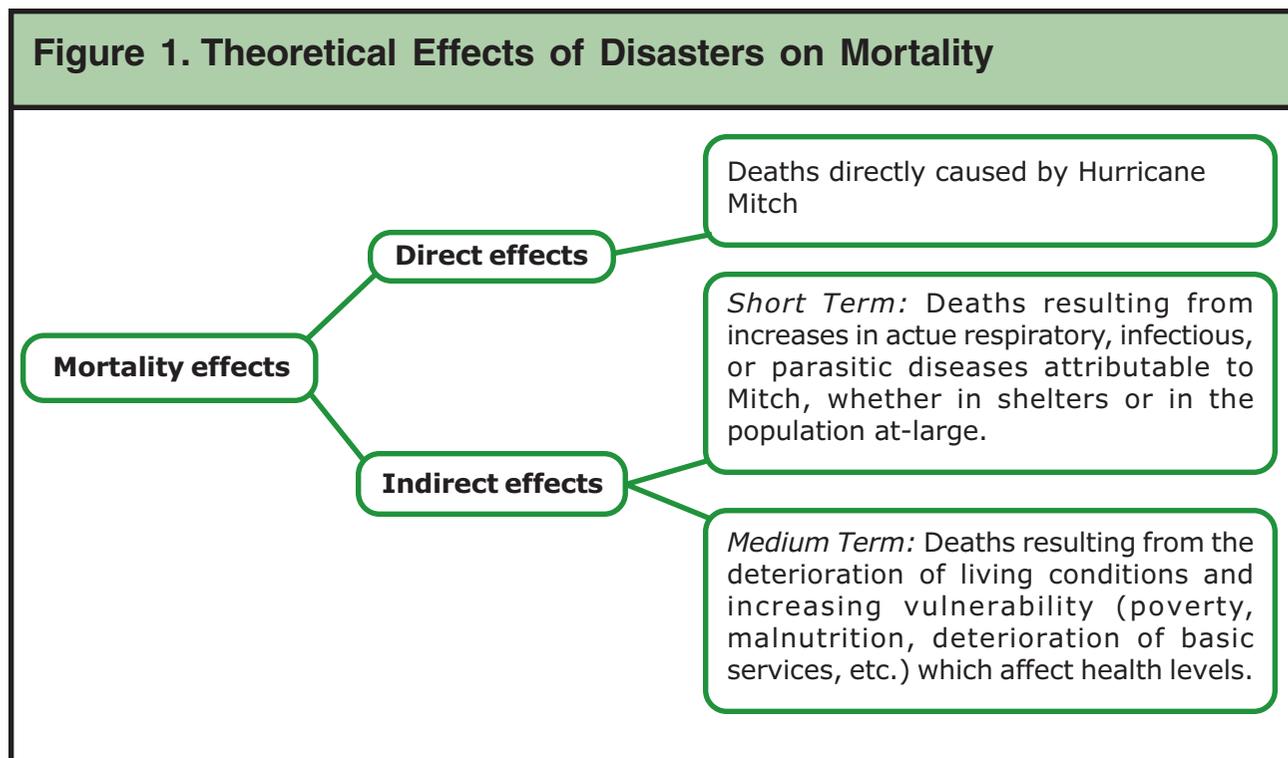
But perhaps the most visible and direct relation between demographic dynamics, poverty, and vulnerability relates to patterns of spatial redistribution of the population. Rural-urban migration and urban growth, which partly result from poverty, also aggravate and heighten the impact of natural disasters. Over the last decades, all Central American countries have experienced migration that has increasingly concentrated their populations in urban areas, particularly in the most important cities. In Honduras, during the five years leading to that country's 1988 census, a majority of its internal migrants went to the northern and north-central part of the country—the provinces of Cortés and Francisco Morazán. Although

these provinces did not endure the worst of Hurricane Mitch, they did—according to an ECLAC report (1999a), have the greatest number of people directly or indirectly affected by Mitch.

Migration currents in Central America have also varied by gender. Women primarily migrate to urban centers, while men move proportionately more to agricultural areas. The sweatshop manufacturing industry concentrated in San Pedro Sula and Puerto Cortés has particularly attracted female labor. These migration patterns are consonant with those repeatedly observed throughout Latin America during the last 50 years.

Rural-urban migration results from factors of both expulsion and attraction. In rural areas, agricultural demand for workers does not keep up with demographic growth. Despite some migration to frontier areas, rural areas have a surplus of workers. Concomitantly, cities attract migrants with a greater relative availability of jobs (whether real or perceived), higher incomes, and easier access to services. The concentration of population in the cities has resulted in a scarcity of housing alternatives for migrants. As capricious market factors determine spatial utilization and access to land, cities cannot accommodate the throng of recently arrived poor migrants. Considering the probability that rural-urban (as well urban-to-urban) migration will continue to increase, urban marginality can be expected to grow significantly.

Figure 1. Theoretical Effects of Disasters on Mortality





Vulnerability will also expand unless specific measures are taken to counter current trends.

According to an ECLAC report on Mitch's effects, Honduras' capital, Tegucigalpa, faces the same situation as other Latin American cities, where there is

inappropriate territorial occupation and utilization with a lack of regulations for urban organization and construction. These factors, coupled with urban growth and a high incidence of poverty, result in conditions which could imply that a significant part of the population of this city may be exposed to serious risks as experienced with Hurricane Mitch (ECLAC, 1999a).

2. SOCIO-DEMOGRAPHIC EFFECTS OF HURRICANE MITCH

A series of questions related to the specific effects of Mitch on the socio-demographic dynamics of the region are worth raising. How has Mitch impacted demographic trends and levels of mortality, fertility, and migration? How are the dynamics of the demographic transition affected in the short and long term? How has reproductive health been affected? To what extent do demographic factors determine a poor population's level of vulnerability to disasters?

Quantifying the demographic effects of disasters is a complex task. The effects may be direct or indirect, immediate or longer-term. Long-term effects may be difficult to perceive and may themselves result from interaction between demographic variables and a number of other factors also affected by disasters, such as changes in the structure of production, in infrastructure, in communications, or in access to basic services. The effects of these changes may go in different directions, depending on the nature and effectiveness of actions taken following the disaster.

In addition, concrete data (beyond the number dead or missing due to Mitch) are difficult to obtain. The lack of baseline information hinders the establishment of detailed and reliable estimates of direct or indirect and short- or long-term effects. In spite of such difficulties, a simple model of possible relations and effects of Hurricane Mitch on demographic variables—and on population dynamics in general—provides interesting leads. The exercise in this case focuses on Honduras. (see page 62 for a map of Honduras'd departments.)

Effects on demographic variables

Mortality

Figure 1 shows the theoretical effects of Hurricane Mitch on total mortality rates in Honduras. The only concrete data available refer to *direct effects*. If we add the number declared missing to that of the confirmed dead, Mitch caused an estimated total of 13,567 deaths.

These figures imply a 42 percent increase in the number of deaths for the year, using as a baseline the total number of deaths expected in the country under normal circumstances in 1998 (32,000). A similar impact on total deaths (42 percent) may be applied to the crude death rate (i.e. the number of deaths per 1,000 population in a year). The mortality rate, however, was greater in some of the larger provinces such as Gracias a Dios and the Islas de la Bahía, where deaths caused by Mitch exceeded the average annual death total by close to 400 percent.

Only fragmentary data are available in relation to *short-term indirect effects on Honduran mortality*—that is, deaths resulting from hurricane-related deterioration of health conditions. Health authorities confirm an increase in infectious and respiratory diseases, which suggests a likely increase in the number of deaths (particularly if, as can be expected, the lethality levels of these diseases increased). These factors could have a particularly severe impact on children and the elderly. Although vital statistics do not reveal the magnitude of these short-term effects, figures provided by the Honduran Ministry of Health show a 20 percent increase in the incidence of diarrhea in the under-15 population as well as epidemic outbreaks of leptospirosis and conjunctivitis, skin diseases, and acute respiratory infections (Ayes Cerna, 1999). No reliable quantitative data exists, however, regarding the extent of the latter epidemics. Residual after-effects of a more permanent nature can also be expected because of lack of access to drinking water and sanitation as well as the deterioration of conditions in health centers.

Indirect medium-term effects of Mitch on Honduras have been even more difficult to identify. Nevertheless, the magnitude and direction of these effects likely depend on whether or not the damage has motivated (a) the reactivation of economic activity, and (b) the reduction of social and economic vulnerability in important segments of the population. Levels of international assistance and the post-Mitch expansion of sectors such as the construction industry (as well as the intensification of anti-poverty actions) impact on

Feature Articles

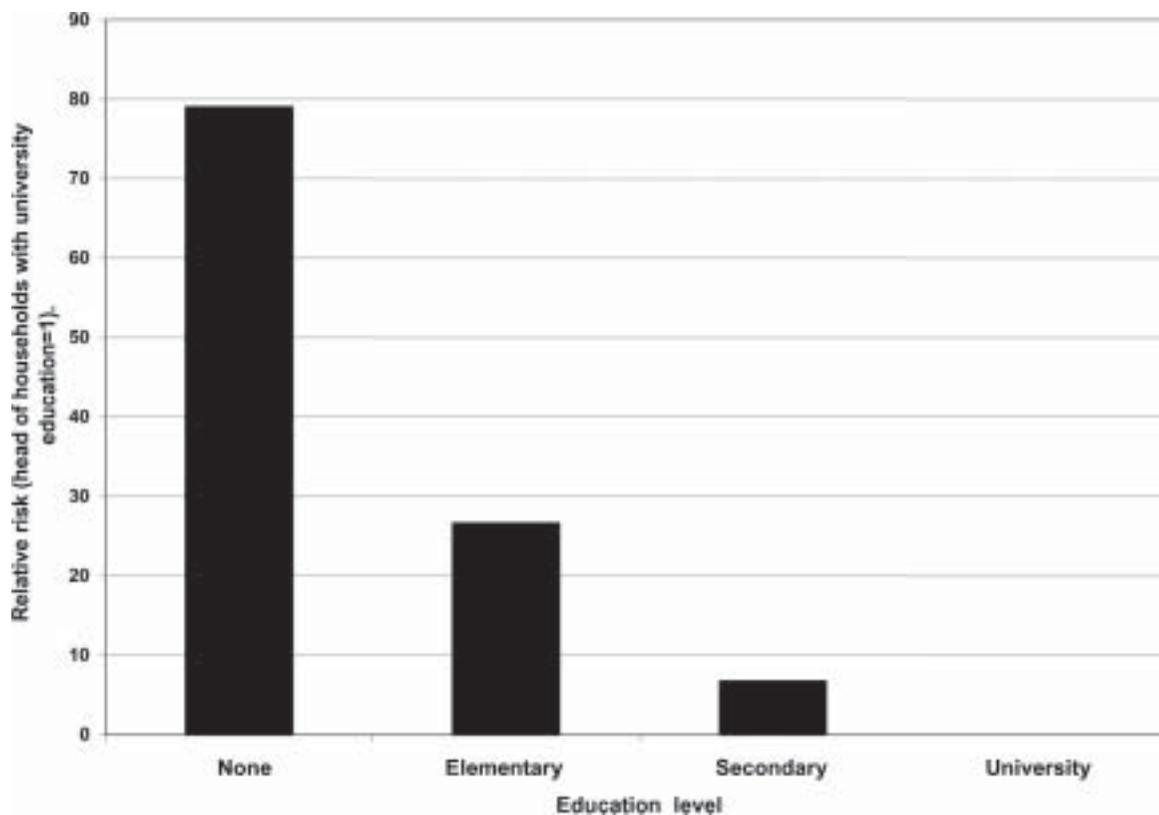
medium-term effects. These effects also depend on the extent to which the Honduran government transforms difficulties into opportunities through its political and economic policies. In the second meeting of the Consultative Group for the Reconstruction and Transformation of Central America (Stockholm Statement, 1999), the international community of donors committed \$9 billion to the reconstruction process (Stockholm Declaration, 1999). Reconstruction plans have focused primarily on: (1) the reactivation of the economy, (2) the alleviation of poverty, (3) the rational utilization of natural resources and protection of the environment, and (4) the promotion of local initiatives that can help mitigate vulnerability to natural disasters.⁵

Hurricane Mitch likely caused a temporary reversal in Honduras' epidemiological transition. In the period immediately following Mitch, several factors—including interruption in the water supply,

deterioration of basic services such as garbage removal, breakdowns in already precarious sewage facilities, and limited effectiveness of the health system—opened the door for the resurgence of communicable diseases (such as cholera, dengue, and malaria) that had previously been held in check. However, the promotion of the reconstruction process in general and in the health sector in particular as well as the recovery of economic activities suggest that Mitch will affect the epidemiological transition less severely in the medium and long term. Moreover, Honduran health programs for emergencies are generally more effective than in the past and include efforts to prevent epidemics.

No reliable or detailed information is available relating the mortality caused by Mitch to different socioeconomic strata of the Honduran population. Nevertheless, two pieces of evidence indicate that the poor experienced the greatest mortality levels. First,

Figure 2. Relative Risk of Being Affected by Hurricane Mitch, San Pedro Sula, Honduras, 1999 (Heads of Households)



Source: Calculations based on data from DIEM (1999).



Population, Poverty, and Vulnerability

observations carried out on the effects of the hurricane show that, in both San Pedro Sula and Tegucigalpa, the areas with the greatest number of missing and dead are also environmentally unsafe areas (susceptible to landslides, floods, and other disasters) that house the cities' poorest inhabitants (ECLAC, 1999a).

Second, the composition of the population in shelters can be taken as a valid indicator of vulnerability. Data from shelter censuses in San Pedro Sula and other surveys carried out by city authorities are broken down by education level. As Figure 2 displays, the population with no education at all had a relative risk of being affected by Mitch some 80 times greater than in the population from the highest educational levels. A huge difference in relative risk was also found between households headed by persons with no education at all and those with at least elementary education. The former category concentrates the most vulnerable segment because of abject poverty, the lack of access to information, and the difficulty of processing available information.

Impacts on Reproductive Health

Natural disasters heighten pre-existing situations of precariousness and vulnerability. In the case of reproductive health, they can accentuate reproductive-health needs by intensifying the practical inability of many couples and individuals to exercise their reproductive rights. Disasters have an immediate effect on health conditions, on access to health services in general, and on reproductive health in particular because of several dynamics:

- Deterioration of health services, infrastructure, equipment, medical drugs, and medical materials as a consequence of the disaster;
- Difficulty in access to services as a direct consequence of the disaster and its impact on communications and transportation;
- A shift in medical priorities away from reproductive health services; and
- An increase in sexual abuse, in sexually transmitted diseases (STDs), and in unwanted pregnancies because of conditions and lack of privacy in shelters.

The factors that aggravate such negative effects include: (1) the extent of the disaster itself in each country or region; (2) the level of impact on health service infrastructure; (3) the countries' financial limitations; (4) the population's level of dependency on public services; and (5) the types of contraceptive

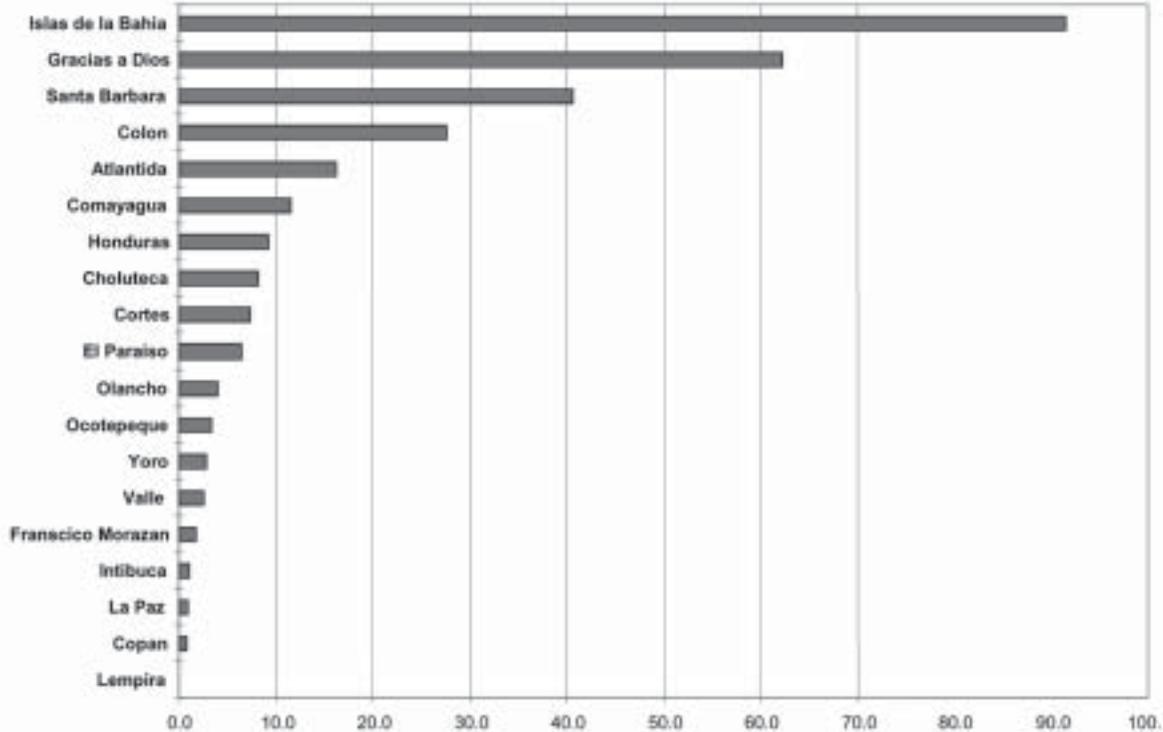
methods available. Changes in the assignment of priorities in national ministries of health (such as prioritizing certain infectious and respiratory diseases at the expense of other areas) also play a role. Investments in infrastructure are often emphasized over direct preventive actions, given the imperative need to reconstruct health centers after the disaster.

A significant portion of the population may face severe difficulties in accessing contraceptive methods and information in the post-disaster period. Given that the poorest segments of the population rely most on the public services hardest hit by the emergency, reproductive health services can suffer severe deterioration exactly in those districts where they are most needed. In the specific case of family planning, limited access to contraceptive methods (leading to their non-use or to the temporary use of ineffective methods) may produce an increase in unwanted pregnancies or in abortions. In addition, delays are inevitable in the implementation of new programs, both in education and in services. If all these possibilities occur, fertility or the number of abortions in the region would increase. Unprotected sexual relations could also lead to an increase in STDs. This relates in part to the increase in rape cases, a problem that tends to increase under the promiscuous conditions and lack of controls prevailing in times of disaster.⁶

Mitch's actual effects on *fertility* have to be viewed in different time frames. In the *short term*, crisis and disaster analyses show that the immediate impact is usually a decrease in the rate of pregnancies and fertility—despite the above-mentioned breakdown in access to contraception and information. In the wake of a natural disaster, marriages are often postponed or cancelled and temporary or permanent separations increase; there is also temporary delay in pregnancies because of less-frequent sexual relations. There could also be an increase in amenorrhea (cessation of menstruation in women of child-bearing years) caused by stress or prolonged malnutrition (see Curson, 1989), although there is no concrete evidence to demonstrate this in the present case.

The magnitude of these changes not only relates to the size of the affected population but also to the duration of the crisis. Mitch likely had a relatively minor short-term impact on fertility *during* the height of the crisis, given the relatively brief duration of its effects on housing arrangements and family separations as well as the fairly rapid recovery of economic activities for the majority of the affected population.⁷ Effects

Figure 3. Percentage of Expected Population Growth in Honduras for 1998 which Failed to Occur Due to Excess Mortality Caused by Hurricane Mitch



Source: Calculations based on the estimated numbers of deaths per municipality (ECLAC, 1999) and population projections by Honduras/UNFPA (1996).

would only be noticed, if at all, in a reduction in births during the months of July and August 1999. As of this writing, there are no monthly data available that can be used to verify this.

There are also *medium-term effects*. Just as fertility tends to decrease in times of crisis, it also tends to increase with recovery. Experiences of war, famine, and other disasters clearly demonstrate this trend. This increase is explained by the recovery of postponed pregnancies, by the tendency of couples to replace lost children, and by the increase in marriages previously delayed or occurring as a result of the optimism which is often displayed some time after the crisis. However, in evaluating these effects, two factors must be considered. First, other natural disasters and socioeconomic crises affect the daily lives of most of the region's inhabitants. Therefore, medium-term effects of Mitch could be conflated with those coming from other events. Second, the prolongation of the

social crisis because of delayed reconstruction efforts and the economic difficulties of the country could continue to depress the birth rate. But the deterioration of reproductive-health services and limited access to services could lead to an increase of non-desired births. Recent data from the a 2001 survey show that fertility for the period 1999-2001 was a little higher than projected (Secretaría de Salud, ASHONPLAFA & CDC, 2002).

In short, tracing the real effects of natural disasters such as Mitch on reproductive health and on fertility involves reviewing a complex array of factors in different time sequences that would need to be analyzed in depth through a detailed field survey. It is clear that pre-existing situations of precariousness and vulnerability are heightened as a result of disasters. Sexual and reproductive behavior undergo abrupt alterations. Access to reproductive health services deteriorates noticeably. Untying the many threads of



Population, Poverty, and Vulnerability

causality in this process, especially at the aggregate level, is a daunting task.

Impacts on Migration

Following a crisis or disaster, the number of people migrating in search of new opportunities tends to increase. This migration may result from displacement due to the loss of belongings (housing, lands, etc.) and the need to find new employment and income.

Changes in the structure of production caused by the effects of Mitch (in agriculture, for example) also resulted in increased migration. In Honduras, although highland subsistence crops fared better, the hurricane devastated banana, coffee, sugar, citric fruits, and other crops. Roads and warehouses were flooded. In Nicaragua, cereal crops, produced mostly by small farmers, were seriously affected, as were main export crops and cattle ranching. In Guatemala and El Salvador, damage was less serious although nevertheless important. Altogether, a significant portion of the population lost its source of subsistence. These agricultural losses likely resulted in increased rural-urban migration (ECLAC, 1999b; 1999c; 1999d; 1999e).

Unfortunately, there is no empirical information available to validate these plausible hypotheses, and, unless special surveys are carried out, we will have to await the next census in order to determine the extent to which Mitch has altered spatial distribution in the region. The same is true with respect to international migration. Although an increase in movement abroad has been widely publicized in newspaper accounts, empirical evidence is still limited.⁸ Two measures taken by the United States in response to Mitch—the designation of “temporarily protected migrants” due to environmental disasters; and the suspension of deportations from the United States of illegal citizens from Guatemala until March 8, 1999—were beneficial for Central American migrants (Embajada, 1999).

Impacts on Population Growth

Mitch had a significant effect on population growth in Honduras in 1998. As Figure 3 demonstrates, close to 10 percent of expected growth did not materialize in 1998 due to the effects of Mitch. Some Honduran provinces were considerably more affected. Without factoring in migration, the departments of Islas de la Bahía, Gracias a Dios, and Santa Bárbara saw population growth reduced by 92 percent, 62 percent, and 40 percent, respectively. At the aggregate level, the long-term impact of Mitch on population growth was probably negligible because of the normally high

growth rate of the population and the short-term effects of Mitch on mortality.

3. POLICY IMPLICATIONS FOR THE POST-MITCH ERA

Reconstruction efforts in the post-Mitch era aimed at mitigating the impacts of natural disasters and at promoting sustainable development in Central America should take demographic processes into closer consideration than they have in the past. Three aspects require particular attention for long-range preventive actions: spatial redistribution, reproductive health, and the development of information systems. Potential contributions can be divided into three stages: prevention, emergency, and recovery. This analysis focuses largely on the prevention phase.

Prevention

Mitch clearly demonstrated the limitations of interventions carried out only in *a posteriori* mode. Even though timely actions during and after the crisis were important, the most critical investments evidently concern the prevention phase. In this regard, policymakers should take proactive actions to plan the spatial distribution of population in order to reduce the effects of future disasters. Actions in the reproductive health sector are also critical. Early-warning systems and other data collection systems can make a significant contribution to reducing a disaster's impacts.

Spatial Distribution and Vulnerability

In efforts oriented toward providing a safer future for the population of Central America, improved planning for the utilization of geographic space can contribute to greater sustainability and personal security. The spatial location and organization of human activity is a critical determinant of risk in natural disasters. In order to attain a better balance between space, sustainability, and the reduction of vulnerability, planners and policymakers must review traditional frameworks and integrate a systematic concern with population-redistribution dynamics into reconstruction and development efforts.

Stimulating new patterns of spatial organization in order to reduce vulnerability and to promote longer-term sustainability requires a proactive and holistic approach, encompassing demographic, economic, and environmental aspects. Addressing this challenge requires a new conceptual tool, which we call *the*

Feature Articles

*sustainable use of space.*⁹ This approach starts with the observation that every country has a population of size X, growing at the rate of Y, which has to distribute itself over territory Z. The key question in this context is—how can this population (a) be best distributed over this land area in order to promote sustainability and mitigate vulnerability, while (b) also exploiting the country’s comparative advantages? The challenge is to identify available concrete options for spatial distribution, evaluate each option’s advantages and disadvantages, and devise possible instruments for the promotion of the most sustainable options.

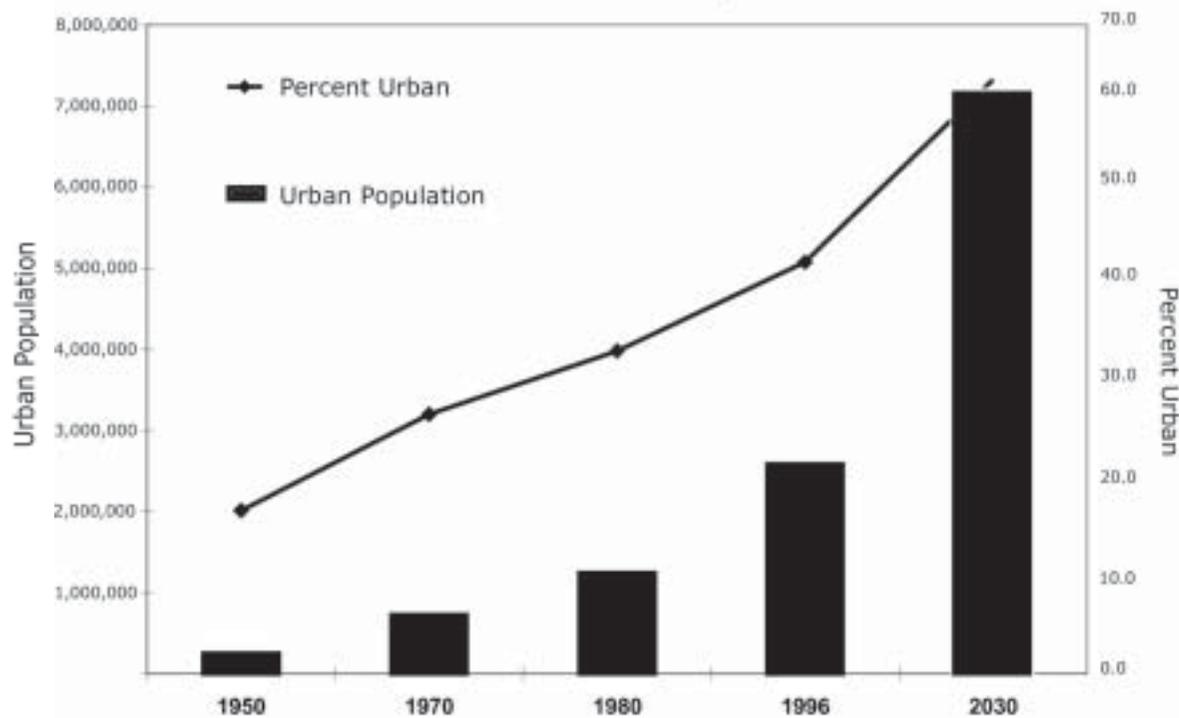
As noted earlier, current patterns of population distribution, determined largely by market factors, result in poor Central Americans being forced to occupy environmentally hazardous areas. The poor have no choice but to occupy disaster-prone areas such as riverbanks, steep or unstable hillsides, deforested lands and toxic grounds, or environmentally critical land such as fragile ecosystems or water catchment areas (Hardoy & Satterthwaite, 1989). Such location patterns contribute enormously to the vulnerability of poor people while also endangering the overall population. And this vulnerability “is compounded by

inappropriate ways of using and managing natural resources which damage the physical and biological environment, exposing certain areas and their inhabitants to the direct and indirect effects of these events” (Bárcena, 2000).

How can this trend be reverted? Do we have a coherent game plan—based on considerations of vulnerability—that would allow us to change this situation? In which directions would we ideally want to promote growth? What do we know about the “ideal map” that could help us take a proactive stance to reduce the vulnerability of poor people in Central American countries?

Dealing with this issue effectively presents both political and technical difficulties. From a political standpoint, intervening in land use requires building a culture of prevention. Such an intervention would also involve short-term costs, long-term investments, and low political returns that politicians anywhere are loathe to assume. As UN Secretary General Kofi Annan has observed, “[b]uilding a culture of prevention is not easy. While the costs of prevention have to be paid in the present, its benefits lie in a distant future. Moreover, the benefits are not tangible: they are the disasters that did

Figure 4. Urbanization in Honduras, 1950-2030



Source: ECLAC (1997); UN Population Division (1997)



Population, Poverty, and Vulnerability

not happen” (Annan, 1999a). In addition, land planning involves interfering in one of the most volatile and lucrative of speculative markets, thereby inviting confrontation with politically significant economic interests. Hence, it will never be easy to convince decision-makers to invest in the type of long-term land planning required to mitigate the effects of natural disasters. Crisis periods have to be exploited in order to help build up momentum and public opinion for essential decisions. Progressive segments of society have to be informed of the benefits of such decisions as well as the costs of not taking a proactive stance.

Policymakers then must base their prevention plans on a sound technical platform. A two-step approach is recommended. First, populations at risk must be identified. These risks include: sporadic catastrophes such as hurricanes and earthquakes; recurrent events such as droughts and floods; and other problems such

as landslides, which may result from natural disasters, human interventions, or both. Next, settlement and development of these high-risk lands must be regulated, limited, or even prevented. GIS systems and historical registers can be used to identify areas subject to flooding, seismic movements, droughts, landslides, and even the recurrence of hurricanes. GIS can also enable researchers to analyze the occupational density of areas at risk, evaluate the degree of risk involved, and thus measure the relative urgency of population relocation. Obviously, availability of this information does not guarantee people’s willingness to move from high-risk areas. The fact that people continue to settle along the San Andreas Fault or in Mexico City indicates that other factors such as economics and tradition will always influence residential decisions.

Secondly, in order for population relocation efforts to work, viable alternatives for demographic/economic

Aftermath of Mitch: El Salvador



A sign prohibiting construction in an area damaged by Hurricane Mitch in Jose Cecilio del Valle, El Salvador. “Current patterns of population distribution, determined largely by market forces, result in poor Central Americans being forced to occupy environmentally hazardous areas.”

Credit: Jim Stipe, Lutheran World Relief. (Photograph courtesy of Johns Hopkins University Center for Communication Programs.)



expansion have to be offered. Those areas should be identified that *can* absorb the people (whether new migrants or long-time residents) who would otherwise seek to reside in vulnerable areas or in protected ecosystems. This analysis inevitably involves economic and political as well as socio-environmental considerations: if population distribution ultimately depends upon the spatial location of economic activity, the reduction of vulnerability and the protection of the environment requires an integrated approach to development. The growing field of strategic-impact assessment can contribute considerably to this effort. In the current economic context, an integrated approach will require public/private/civil-society cooperation in order to exploit a country's economic advantages without increasing vulnerability and degradation. The state's role is to orient economic advantages using fiscal mechanisms and other incentives or disincentives such as zoning, building codes, permits, taxes on vacant areas, and fees in order to protect fragile areas, control densities, and define appropriate land uses.

In short, mitigating vulnerability and promoting sustainability require a proactive approach to the use of space that combines economic benefits with social and environmental concerns. Despite challenges, progress can be made primarily in two areas: (a) urban growth, and (b) regional development. Each of these dimensions will now be examined briefly.

a) Urbanization and Urban Growth

Despite the intensity of past migration flows, urban growth is still at an intermediate stage in most of Central America. Urbanization levels remain relatively low by Latin American standards, although they have increased significantly in recent decades. The proportion of the total Central American population living in urban areas currently varies between 40 and 55 percent (CELADE, 1999). More importantly, this proportion is expected to expand several times during the coming generations. In Honduras, for instance, the urban population grew from 28 percent in 1970 to 44 percent in 1996. By the year 2030, it is estimated that the country's urban population will have increased to 7.3 million, representing 64 percent of the total population. (See Figure 4.) That is, the number of persons living in urban areas in Honduras will likely increase by 4.7 million during the interim.

Other countries in the region have experienced the same pace of urban growth—a pace that is projected to continue. In Guatemala, for instance, the urban population is expected to triple from 4.3 million in

1996 to 13.4 by the year 2030. (See Table 4.) Central American urban populations are projected to increase by an estimated 23 million people over the next 30 years. The geographic and physical placement of these additional people (as well as the quality of housing and construction) will help determine the region's future vulnerability. Should current trends persist—trends marked by the absence of effective land-use planning in urban areas, the neglect of the needs of the poor, and the domination of haphazard market forces—*it can almost be guaranteed that the population of Central America will become increasingly vulnerable to natural threats.*

What can be done to prevent this increasing vulnerability? On the one hand, efforts can and should be made to improve living conditions in rural areas. Reducing rural poverty and providing rural dwellers with health services (especially in the area of reproductive health) would lessen the incidence of undesired fertility and thus the rural population's rate of growth. Improvements in living conditions for rural populations would help reduce migration to urban areas, thereby reducing the intensity of urban growth. Nevertheless, history teaches us that no agricultural or demographic policy is likely to retain population in rural areas indefinitely, or even to significantly affect ongoing urbanization trends.

Hence, an analysis of demographic processes and their relation to natural disasters reveals the need to initiate *explicit and effective land-use planning* in urban areas in order to cope with the inevitable: the intensification of city growth and the tripling of current urban population size.

Facing such challenges requires a change in mentality, attitude, and approach. Most disaster-response practices and experiences deal with rural people and rural disasters. Now, disaster response must address urban needs, with particular attention to the dimensions of urban growth and urban concentration. Authorities have traditionally resisted urban growth instead of trying to organize it. Consequently, migrants pressured by the lack of resources and by a speculative land market have been forced to occupy the least desirable and least adequate sites.

The negative stance of political authorities towards urban growth—specifically, their perennial attempts to deny the inevitable nature of urban growth and urbanization—has prevented effective solutions and contributed to compounding vulnerability. In facing up to this challenge, efforts should focus principally on the identification and occupation of new and appropriate localities for migrant occupation. Trying to redress errors

Table 4. Urban Population, Central America, 1996 and 2030

Country	1996	2030	Increment
Honduras	2,582	7,300	4,718
Nicaragua	2,656	6,259	3,603
Costa Rica	1,743	4,003	2,260
Guatemala	4,275	13,437	9,162
El Salvador	2,627	6,026	3,399
Belize	102	239	137
Total	13,985	37,264	23,279

Source: UN (1997).

and improve conditions in existing residential areas will likely prove extremely costly in political and economic terms, and hence relocation may generally be the most viable option. Focusing on new potential areas for urban expansion is also justified by the fact that most urban growth is still to come. Moreover, prosperous and environmentally sound settlements are *per se* capable of attracting people from other areas, thereby helping to alleviate problems in existing inadequate settlements.

Urbanization arguably constitutes an important potential ally for sustainability (Martine, 1995; 1999). In order for cities to actually generate these potential advantages, however, authorities must intervene in the use of space. Policymakers must be proactive about location, concentration, and spatial utilization to counteract the market's haphazard utilization of urban spaces.

Intervening in urban land markets requires prioritizing the land needs of the poor (WRI, 1997). Past failures in this area have generated serious economic and environmental costs for cities and countries throughout the world. *A posteriori* attempts to resolve the problems caused by squatter settlements have much higher social, economic, and environmental costs. The current mechanisms that organize land markets—land speculation and serendipity—cannot be trusted to provide social and environmental solutions. Should they continue to prevail, *the next disasters will have progressively more serious consequences than Mitch did.*

New initiatives will require ingenuity. For instance, bilateral and multilateral donor agencies may consider

setting up land banks for poor urban migrants. These agencies could devise medium- and long-range land-use strategies and purchase tracts of land in non-hazardous or ecologically fragile areas that would be progressively sold off at reasonable prices to poor urban residents and migrants as demand arises. The profits could then be reinvested in further purchases of adequate land tracts. If proven successful, this idea could then generate its own political momentum and be replicated or taken on by responsible state or local agencies. Although this notion may appear revolutionary, it would ultimately be much cheaper than cleaning up increasingly serious disasters.

Within the theme of urban planning, policymakers give insufficient attention to the issue of density. Compact cities, which concentrate population, housing, and jobs in a relatively reduced space, offer space and energy efficiency. Such cities should, however, be located in areas that are less vulnerable to the effects of natural disasters: otherwise, concentration and density will actually result in greater calamities. Some verticalization of growth (as opposed to the unsustainable American-style suburb) can be a boon. Planning for urban space also requires greater emphasis on public transportation rather than on the private automobile. The Los Angeles pattern of dispersion is unsustainable but is spreading in such places as Panama and even Managua. (Given the geological frailty of its land area, Managua should probably not see any new construction.) The recently announced partnership between Habitat and the Quercus Corporation to develop specialized data

Feature Articles

collection, analysis, management, dissemination, and use of knowledge on human settlements for use by “urban observatories” highlights how the private sector can be marshalled towards proper urban planning in disaster-prone areas (“Habitat joins hands,” 1999).

Do we have positive examples of cities that work in developing countries? The city of Curitiba in Brazil represents a positive anomaly in terms of urban spatial



Central America and Honduras

Source: <http://www.freegk.com/worldatlas/honduras.php>

planning. Its growth has been regulated along the lines of a master plan drawn up in the 1960s. Different administrators have maintained the continuity of the plan, while public participation in its implementation has grown. The key ingredient of the original Curitiba Master Plan was the integration of traffic management and land use in order to limit concentration in the central city. The idea was to substitute the radial “spokes of a wheel” pattern of urban growth with a linear one capable of promoting the expansion of commerce, services, and residences away from the center on “structural axes.” Meanwhile, the historical center of the city was restored, preserved, and made available for pedestrians. Implementation of the plan also focused on physical, cultural, economic, and social transformation of the city. Explicit “environmental” issues were not at the forefront of the original plan,

but have assumed increasing weight over time. Land-use legislation, supported by prior acquisition of adjacent lands by the municipality, has encouraged high-density occupation around each axis. These planned axes have also facilitated the implementation of an innovative public transport system. Special arrangements have also been made in Curitiba for industrial zoning and for the housing of poor migrants; the latter has, however, had limited success (Martine, 1999).

b) Regional Development

Planning at the regional level should also be directed toward favoring more sustainable spatial patterns of economic activity and population distribution both within and between Central American countries. In this case, however, generic lessons and general recommendations are more difficult to derive, since solutions depend on the specificities of resource management and economic activity in each country and region. Moreover, in the context of free trade, spatial planning here has to work together with the private sector and with other segments of society in order to take advantage of each country’s comparative advantage. Ongoing globalization makes this process even more complicated, since it can rapidly alter the nature of comparative advantages and make long-term planning difficult.

The reconstruction process still underway in Central America obviously must produce a more robust economy than that which existed prior to Mitch. To succeed, the affected countries will have to undertake a series of measures whose scope transcends the boundaries of this article, including regional integration. The relatively diminutive scale of the countries involved suggests the adoption of a common development and reconstruction strategy. The aforementioned Stockholm meeting underlined the need to carry out reconstruction and transformation efforts with a regional focus.¹⁰

The International Program Forum of the International Decade for Natural Disasters Reduction (IDNDR, held in July 1999 in Geneva) reached similar conclusions, stressing “the importance of developing and strengthening regional approaches to disaster reduction” (IDNDR, 1999).¹¹ The mitigation of vulnerability also requires adjustments to the market model, both in the social and environmental domains. The market cannot assign value to many environmental goods and lacks the long-term vision required for



Population, Poverty, and Vulnerability

investment in sustainability. Hence, it is the public sector's duty to orient market mechanisms towards the sustainable use of space through such measures as infrastructure building, zoning, and provision of incentives. Some entity has to take the long-range approach and try to visualize different scenarios of spatial organization with the object of maximizing economic and environmental advantages of new or ongoing investments.

The state should be capable of initiating and coordinating the implementation of a sustainable vision of the future, with the instigation, direction, and control of civil society. Despite the fact that globalization and structural adjustment have questioned the legitimacy of state interventions, the sustainable use of space requires the active presence of the state. Its role is not only to preserve environmental legacies but also to provide an integrated view of the relations between demographic trends, economic activities, and environmental dimensions.

The need for proactive action, particularly from the state, does not mean a return to the technocratic arrogance of the 1960s and 70s. A sustainable future and reduced vulnerability depends on the participation of a variety of social actors. Planning for urban or regional space provides rare opportunities for dialogue aimed at (a) adjusting ideal images and real images, and (b) ensuring that public interests prevail over private interests.

In this regard, community participation is key. All international conferences and meetings (realized within the framework of the IDNDR) consider community participation important in the prevention, preparedness, and recovery stages.¹² For example, the Yokohama Strategy and Plan of Action for a Safer World states that:

Community involvement and ... active participation should be encouraged in order to gain greater insight into the individual and collective perception of development and risk, and to have a clear understanding of the cultural and organizational characteristics of each society as well as of its behaviour and interactions with the physical and natural environment. This knowledge is of the utmost importance to determine those things which favor and hinder prevention and mitigation or encourage or limit the preservation of the environment for the development of future generations, and in order to find effective and

efficient means to reduce the impact of disasters ("Guidelines," 1994).

c) Reproductive Health, Gender Equity, and Vulnerability

Promoting improvements in reproductive health as part of a national strategy can also help reduce medium- and long-range vulnerability to natural disasters and social inequality.¹³ Reproductive health information, knowledge, and services must be provided, especially to the poor. Disasters provide opportunities for international agencies to focus actions and detect deficiencies in their reproductive-health policies and approaches.

Efforts aimed at the reduction of vulnerability of Central American societies during the post-Mitch period would benefit in a variety of ways from a greater investment in reproductive-health and gender-equity programs. The Cairo and Beijing Summits produced a consensus (expressed in agreements that all Central American countries signed) that reproductive health and family planning are basic human rights. Moreover, progress achieved in these areas has important implications for the formation of human capital and thus development.

The lack of family-planning and health services impacts women most severely, as women frequently bear full responsibility for all family-related decisions and concerns, including the economic maintenance of the household. During emergency situations and/or disasters such as Hurricane Mitch, such inequities become more acute.

For these reasons, countries urgently need to take more effective action in the areas of reproductive health and gender equity aimed at allowing both the urban and rural poor to exercise their reproductive preferences for lesser fertility. As noted earlier, reduced fertility will ease migratory pressure towards the urban centers.

Reproductive health also contributes to the improvement of human resources and thus to enhanced competitiveness. At the aggregate level, there are clear and empirically proven propositions that reproductive health is likely to contribute to:

- The health of women and children (or the reduction of maternal and child mortality) through improved family planning and child spacing; this improvement in maternal and child health, in turn, generates savings for society in terms of health services;
- Planning and regulation of procreation also allows

Honduras: Departments



Source: http://www.usmission.hn/english/about_u.s/mapawdepartments.htm

families to reduce their intra-family expenditures and make a greater investment in educational activities;

- Competitiveness of a country is enhanced through improved education for the young and for women;
- Reproductive health contributes to gender equity and to the empowerment of women, allowing them to become better educated and to participate more (and under better conditions) in the labor market; to decide freely on their reproductive lives; to have more opportunities and alternatives in their lives; and to contribute to economic progress according to their real capabilities.

All these elements are important in terms of improving national and local capabilities to prevent and mitigate the effects of natural disasters at the family as well as at the national level. However, even if the positive consequences of improved reproductive health are clear, their significance may vary in different types of societies. For example, in the Central American context, the frequency of unstable marriages results

in a more complex relationship between reproductive health and development. Women head over one-fifth of all households in Latin America, and the majority of female heads do not have a stable partner to support them. In Nicaragua, for example, 35 percent of households are headed by women. The number of common-law relationships is greater than formal marriages (35 percent versus 26 percent), a fact which generally translates into greater instability of unions. During times of crisis and disasters, unstable household compositions can create serious difficulties for families in terms of their ability to recover from disasters. Furthermore, in these situations, gender inequity becomes even more evident in unstable unions or female-headed households, placing even greater demands on women.

d) Early Warning Information

During the pre-emergency phase, effective early warning is the key issue for disaster preparedness ("Guiding Principles," 1997). The knowledge obtained through risk-assessment research makes it possible to



Population, Poverty, and Vulnerability

identify the degree to which different population groups, mainly those living in poverty, could be affected by natural hazards. Using this information, these groups can be informed in time and preventive measures can be taken.

Costa Rica, for instance, suffered \$222 million in damages as a result of Mitch. Half of its 81 municipalities were affected, yet only nine people were reported missing or dead. Years of preparation for natural disasters and the existence of early warning systems made the difference. Yet, it is agreed that “much more needs to be done” in order to reduce vulnerability in the country, especially with regards to “the location of human settlements” (OPS/OMS, 1999, pp.70-72).

The population field makes an important contribution to the reduction of vulnerability through the development and updating of integrated information systems that can identify vulnerable areas or population groups. These systems can also help orient migrant settlement patterns in order to lower risks, achieve a more sustainable population distribution, and generate useful information for evaluating the effects of disaster-related damage, especially on women and children. GIS tools that combine a cartographic base with demographic and socio-economic information are thus becoming essential. Unfortunately, despite the increased technological development in this field, the case of Mitch shows that the Central America region needs a much stronger effort in this respect. (The Appendix contains a short list of information needs for the region’s disaster-planning efforts.)

Mitch has also revealed the need to develop methods to collect, process, and present data related to disasters. Such methods could facilitate the analysis of a disaster’s impacts and help provide countries with adequate data resources, both during the emergency itself and in the post-emergency phase. Information concerning the effects on people, families, and homes also should be included. The topic of shelters is also currently characterized by a great lack of coordination and scientific rigor.

The Emergency Phase

Although Central American governments (with the support of international agencies) have developed programs to face natural disasters, these programs have generally operated only during the actual emergency.

Emergency programs are vital in helping to overcome the damages caused by natural hazards. In the case of a hurricane, such effects should disappear fairly quickly, given the brevity of the period in which it affects the population. However, factors related to a country’s underdevelopment (and to its policies aimed at overcoming disasters) can prolong these effects, particularly in the case of reproductive health.

Policymakers should define an *a priori* methodology and approach to dealing with reproductive health needs in emergency situations. Plans might include:

- a) Provision of emergency kits;
- b) Studies of conditions in shelters—particularly concerning women and development of rapid response in reaction to violence, sexual abuse, and need for services;
- c) Support of NGOs and other community-based initiatives working with women in crisis situations.

The Post-Emergency Phase

Post-emergency phase actions should concentrate not only on reconstruction efforts but also on prevention. Following the difficulties caused and/or aggravated by the passage of Hurricane Mitch in Central America, policymakers should address reproductive health needs in two specific ways. First, policymakers should promote efforts to re-establish pre-existing programs as soon as possible, as well as to implement new programs whose initiation has been delayed by the disaster. This component of post-emergency efforts is of the highest importance, given that reproductive health is generally not given priority status during the crisis. It would entail working closely with other national and international institutions for the recovery of the health sector so that the components of reproductive health can be integrated and take advantage of the opportunity to renew practices and redirect actions where possible. Second, the framework of reproductive health actions has to be redefined to incorporate into new programs all available knowledge on the relation between vulnerability, poverty, and reproductive health. In order to attain this goal, we must “strengthen the process of decentralization, so that more egalitarian services directed to the needs of the population may be identified, discussed, and provided” (UNFPA-Nicaragua, 1999).

4. FINAL CONSIDERATIONS

Hurricane Mitch highlighted the fact that socio-economic conditions in Central America magnify the threat of natural hazards for hundreds of thousands of people—especially those living in the most precarious social and economic conditions. Solutions for reducing vulnerability and the impact of natural hazards on the population are not simple, unilateral, or merely technological.¹⁴ Mitch’s consequences constitute an invitation to examine the very meaning of development efforts that are being carried out in this region. The

ongoing reconstruction process should not limit itself to rebuilding countries with past methods. Policymakers have a unique opportunity to develop regional, national, and local comprehensive strategies aimed at disaster prevention and mitigation.

Specific contributions from the population field could help mitigate the effects of natural disasters. The tools of population sciences could help mitigate natural-disaster impacts in three important ways: spatial organization, reproductive health, and information systems. To be effective, these applications must be integrated into a broader conception of both the development process and the struggle against poverty.



APPENDIX 1

Studying the Impacts of Natural Disasters: Information Needs and Problems

In the course of this analysis, serious difficulties were encountered in trying to work with the available information concerning Hurricane Mitch’s impact. Some of the problems include:

- *Difficulties in evaluating the quality of the basic information on deaths and on affected populations.*

The information available in relation to number of deaths caused directly by Mitch and to the spatial distribution of the population is so aggregated that it cannot be used for in-depth analysis. Detailed and reliable figures on fatalities as well as numbers affected by specific patterns of settlement and socioeconomic condition are unavailable. Additionally, official statistics present anomalies that are difficult to reconcile. It has been mentioned that “all data should be disaggregated by sex and analyzed by gender before, during, and after emergencies” (Delaney & Shrader, 2000). More research and analytical work should be carried out on the gendered dimensions of impact, loss, and recovery during disasters.

- *Lack of coordination in post-Mitch data collection activities.*

Various entities have carried out census and surveys on shelters, using different methodologies and on different dates. There does not seem to be consensus regarding their reliability.

- *Scarce cartographic data prior to and after Mitch.*

With the exception of San Pedro Sula, which has geographically referenced information, researchers lack cartographic information as well as data on the population itself. This shortcoming causes serious difficulties in defining the affected areas according to conditions of vulnerability. Even in San Pedro Sula, which has a strong municipal statistical office, extensive use has not been made of available data from the demographic point of view.

- *Lack of a post-Mitch research strategy that would permit us to quantify the effects on demographic variables.*

There are no surveys on, for example, post-Mitch migration patterns or on changes in reproductive behavior or the impact of mortality.



Population, Poverty, and Vulnerability

ACKNOWLEDGMENTS

The authors wish to thank Ralph Hakkert, Jacques du Guerny, Alain Marcoux, Jorge Campos, Jaime Nadal and Antonieta Surawski for helpful comments. The opinions expressed herein are the sole responsibility of the authors.

NOTES

¹ In recognition of the disastrous impact of natural hazards on vulnerable communities, the United Nations General Assembly in 1989 proclaimed the International Decade for Natural Disaster Reduction. The IDNDR's objectives were to reduce (through concerted international action and appropriate use of science and technology) the loss of life and property damage (as well as the social and economic disruption) caused by natural disasters.

² Initial impact of a natural disaster may, in some cases, similarly affect all classes in determined circumstances. Even here, however, the capacity to recover is different due to unequal resources available to various socioeconomic groups.

³ Comparable patterns also prevail in the other countries of the region (UNFPA, 1998, pp. 22-23; Nicaragua, 1998, p. 108).

⁴ Whatever its limitations, "ideal family size" is still the only indicator generated by reproductive health surveys in Honduras that provides a fairly reliable measure of fertility preferences and of their variations among social groups.

⁵ It appears that international efforts have done far less than originally intended in terms of bolstering reconstruction efforts, especially in regional terms. Bilateral and multilateral donors have focused on specific projects and specific countries, but the overall impact on the reduction of vulnerability and the promotion of regional economic integration has come far short of needs. An integrated evaluation of this entire process and its practical limitations would constitute an important contribution to the field.

⁶ As Delaney and Shrader (2000) have noted, "Incidents of familial and sexual violence seem to have decreased immediately after the emergency and have steadily increased during the reconstruction phase. Several shelters have reported problems with increased violence and many have hired security guards to combat it. Some temporary shelters in rural areas have also reported an increase in sexual violence as well as coerced prostitution and promiscuity, particularly among adolescent girls. Both men and women are victimized by increased rates of sexual and physical violence in the rehabilitation phase, as aggression and violence lead to both physical and psychological trauma for all family members."

⁷ In the case of Honduras, the country most affected by Hurricane Mitch, the population housed in shelters reached some 600,000 during the days immediately following Mitch; three weeks later this figure decreased to 285,000, and by April 1999 it was estimated at 20,000.

⁸ Some authors consider that male migration has increased considerably due to Mitch. Delaney and Shrader (2000) note that "while no hard data exist about the extent of the change, most interviewees have noted a marked increase."

⁹ For additional information on the sustainable use of space, see Martine (2001).

¹⁰ Among the reasons that would justify a regional approach, the following can be cited: (a) extreme natural phenomena do not respect national boundaries; (b) there are economies of scale in attending problems from a regional perspective; (c) regional initiatives favor coordination between countries on mitigation and prevention mechanisms; and (d) a regional approach helps draw attention to issues which are not clearly perceived when viewed at the national level (SICA, 1999).

¹¹ See also International Programme Forum (1999).

¹² In the case of reconstruction and recovery activities, it has been stressed that "the rationale for community involvement or the community-based approach is now well known: it is responsive to local needs, draws on local expertise, builds up local capacity, is multisectoral and equitable. By contrast, it is said, 'top-down' programmes tend not to reach those worst affected by disaster, can be manipulated by political interests, are often inefficient, usually take a unisectoral approach and do not respond to people's real needs" (Twigg & Greig, 1999).

¹³ In the case of Nicaragua, UNDP and UNFPA have developed a project on "Transition of Emergencies towards Rehabilitation and Development of the Northern Zone Municipalities affected by Hurricane Mitch." The UNFPA project component incorporates reproductive-health service kits and mobile units for the development of IEC and service promotion activities. During a second stage, UNFPA has given support to actions related to the human settlement component (UNFPA-Managua, 1999).

¹⁴“Disaster prevention for the future...must involve issues and abilities of sustainable development, environmental management, science and technology, commerce and industry, and the encouragement of participatory forms of governance

that contributes to social well-being and security. It can reflect no single professional culture, alone, because the natural hazards and risks to societies in the coming age will challenge, and call upon, collective abilities” (*Final report*, 1999).

REFERENCES

Annan, Kofi. (1999a, 10 September). “An increasing vulnerability to natural disasters.” *The International Herald Tribune*. [On-line]. Available: http://www.un.org/Overview/SG/nnan_press.htm

Annan, Kofi. (1999b). “Introduction to Secretary General’s annual report on the work of the Organization of United Nations, 1999.” Document A/54/1. New York: United Nations.

Ayes Cerca, M. (1999). “La salud en Honduras” (“Health in Honduras”). PAHO/WHO (April). Tegucigalpa, Honduras. Authors.

Bárcena, Alicia. (2000). “From rapid urbanization to the consolidation of human settlements in Latin America and the Caribbean: A territorial perspective.” Paper presented at the Latin American and Caribbean Regional Preparatory Conference for the special session of the General Assembly for an overall review and appraisal of the implementation of the Habitat Agenda, Santiago, Chile, 25–27 October 2000. Mexico City: Economic Commission for Latin America and the Caribbean (ECLAC) & HABITAT.

CCAD/SICA/PNUD/PNUMA/CEPAL. (1999). *El Huracán Mitch: Oportunidad de transformación en Centroamérica* (“Hurricane Mitch: an opportunity for transformation in Central America”). Mexico City: ECLAC.

Curson, P. (1989). “Introduction.” In J. Clarke, P. Curson, S.L. Kayastha & P. Nag (Eds.), *Population and disaster* (pages 1–23). London: Institute of British Geographers.

Direction of Research and Municipal Statistics (DIEM). (1999). *Census of shelters and population surveys*. San Pedro Sula, Honduras: DIEM.

Delaney, Patricia L. & Shrader, E. (2000). “Gender and post-disaster reconstruction: The case of Hurricane Mitch in Honduras and Nicaragua.” Decision Review Draft. LCSPG/LAC Gender Team. Washington, DC: The World Bank.

Economic Commission for Latin America and the Caribbean (ECLAC). (1996). *Dinámica de la población y desarrollo* (“Population dynamics and development”). Santiago: ECLAC.

ECLAC. (1999a). *Honduras: Evaluación de los daños ocasionados por el Huracán Mitch, 1998. Sus implicaciones para el desarrollo*

económico y social y el medio ambiente (“Honduras: Evaluation of the damage caused by Hurricane Mitch, 1998. Implications for economic and social development and for the environment”). LC/MEX/L.367. Mexico City: ECLAC.

ECLAC. (1999b). *Nicaragua: Evaluación de los daños ocasionados por el Huracán Mitch, 1998. Sus implicaciones para el desarrollo económico y social y el medio ambiente* (“Nicaragua: Evaluation of the damage caused by Hurricane Mitch, 1998. Implications for economic and social development and for the environment”). LC/MEX/L.372. Mexico City: ECLAC.

ECLAC. (1999c). *Guatemala: Evaluación de los daños ocasionados por el Huracán Mitch, 1998. Sus implicaciones para el desarrollo económico y social y el medio ambiente* (“Guatemala: Evaluation of the damage caused by Hurricane Mitch, 1998. Implications for economic and social development and for the environment”). LC/MEX/L.370. Mexico City: ECLAC.

ECLAC. (1999d). *El Salvador: Evaluación de los daños ocasionados por el Huracán Mitch, 1998. Sus implicaciones para el desarrollo económico y social y el medio ambiente* (“El Salvador: Evaluation of the damage caused by Hurricane Mitch, 1998. Implications for economic and social development and for the environment”). LC/MEX/L.371. Mexico City: ECLAC.

ECLAC. (1999e). *Costa Rica: Evaluación de los daños ocasionados por el Huracán Mitch, 1998. Sus implicaciones para el desarrollo económico y social y el medio ambiente* (“Costa Rica. Evaluation of the damage caused by Hurricane Mitch, 1998. Implications for economic and social development and for the environment”). LC/MEX/L.373. Mexico City: ECLAC.

ECLAC & Comisión Centroamericana de Medio Ambiente y desarrollo (CCAD) (2002). *El impacto socio-económico y ambiental de la sequía de 2001 en Centroamérica. México*: (“The socio-economic and environmental impacts of the 2001 drought in Central America”). [On-line]. Available: <http://www.eclac.cl/publicaciones/Mexico/1/LCMEXL510Rev1/1510-1.pdf>

ENESF. (1996). *Encuesta nacional de epidemiología y salud familiar* (National Survey of Epidemiology and Family Health). Tegucigalpa: Honduran Ministry of Health.

Embajada de los Estados Unidos de América en El Salvador: Comunicado de prensa (“Press release from US Embassy in El Salvador”). (1999, February 5). [On-line]. Available: <http://www.usinfo.org/sv/uis0205b99.htm>



Population, Poverty, and Vulnerability

- Final report of the scientific and technical committee of the International Decade for Natural Disaster Reduction (IDNDR).* (1999). [On-line]. Available: <http://www.unisdr.org/docs/stcrep.htm>
- “Guidelines for natural disaster prevention, preparedness and mitigation.” (1994). World Conference on Natural Disaster Reduction, Yokohama, Japan, 23–27 May 1994. [On-line]. Available: <http://www.unisdr.org/docs/yokohama/toc.htm>
- “Guiding principles for effective early warning by the Early Warning Programme of the International Decade for Natural Disaster Reduction (IDNDR).” (1997, August). International IDNDR Conference on Early Warning Systems for the Reduction of Natural Disasters. Potsdam, Germany, 7–11. [On-line]. Available: <http://www.idndr.org/docs/early/guiding.htm#national>
- “Habitat joins hands with Quercus Corp.” (1999, May 4). [On-line]. Available: <http://www.unchs.org/unchs/english/hdv5n2/news.htm>
- Hardoy, Jorge & Satterthwaite, David. (1989). *Squatter citizen: Life in the urban third world*. London: Earthscan Publications.
- Hernández, Gabriela. (1999, February). “El huracán de los pobres...y de las oportunidades” (“The hurricane of the poor...and the opportunities”). *Masica*, 6–18.
- Honduras, Secretaria de Planificación & UNFPA. (1996). “Honduras: Proyecciones de población” (“Honduras: Population projections”). Proyecto Política Social, Población, Género y Empleo (HON/94/P02). Tegucigalpa: UNFPA.
- International Decade for Natural Disaster Reduction (IDNDR). (1999). “The mandate on disaster reduction.” International Program Forum, Geneva, 5–9 July 1999. [On-line]. Available: <http://www.unisdr.org/forum/mandate.htm>
- Latin American and Caribbean Demographic Center (CELADE). (1999). *Latin America: Urban and rural population projections*. Demographic Bulletin No. 63. Santiago, Chile: CELADE.
- Lavell, Allan (Ed.). (1994). *Living in risk: Vulnerable communities and disaster prevention in Latin America*. Bogotá: Tercer Mundo Editores.
- Martine, George. (1995). “Población y medio ambiente: Lecciones de la experiencia de América Latina” (“Population and environment: Lessons from the Latin American experience”). *Notas de Población* 62, 261–310
- Martine, George. (1999). “The urban environment: Impending catastrophe or untapped opportunity?” UNFPA Country Support Team, Working Paper No. 29. Mexico City: UNFPA.
- Martine, George. (2001). “The sustainable use of space.” Paper given at the First Cyber Seminar of the Population Environment Research Network, 2001. [On-line]. Available: www.populationenvironmentresearch.org
- Ministerio de Salud. (1997). *Honduras: Encuesta nacional de epidemiología y salud familiar, 1996: Informe final* (“Honduras: National Survey of Epidemiology and Family Health, 1996: Final Report”). Tegucigalpa: Honduran Ministry of Health.
- National Climatic Data Center (NCDC). (1999). *Mitch: The deadliest Atlantic hurricane since 1870*. (Table 3: Damage synopsis by country). [On-line]. Available: <http://lwf.ncdc.noaa.gov/oa/reports/mitch/mitch.html#DAMAGE>
- Nicaragua, Instituto Nacional de Estadísticas y Censos (INEC). (1998). *Encuesta Nicaragüense de demografía y salud* (“Demographic and health survey of Nicaragua”). Instituto Nacional de Estadísticas y Censos – INEC. Managua, Nicaragua: INEC.
- Organización Panamericana de la Salud/ Organización Mundial de la Salud (OPS/OMS). (1999). *Masica: Revista Centroamericana del programa medio ambiente y salud en el istmo Centroamericano* (“Masica: Central America review of the environment and health program”). San José, Costa Rica: OPS/OMS.
- OPS/OMS. (2002). *Cronología de los desastres ocurridos en Nicaragua (1609-1995)* (“Chronology of natural disasters in Nicaragua”). [On-line]. Available: <http://www.ops.org.ni/opsnic/tematicas/desastres/cronologia-desastres.htm>
- Secretaría de Salud, ASHONPLAFA, & CDC. (2002). *Encuesta nacional de epidemiología y salud familiar (ENESF)* (“National survey of epidemiology and family health”). Tegucigalpa: ASHONPLAFA.
- Sistema de Integración Centroamericana (SICA). (1999). *Reconstrucción y transformación de Centroamérica después del Huracán Mitch: Una visión regional* (“Reconstruction and transformation of Central America after Hurricane Mitch: A regional vision”). San Salvador: SICA.
- “The Stockholm Declaration.” (1999). [On-line]. Available: http://www.ccic.ca/archives/devpol/1999/apg7_stockholm_declaration.htm
- The International Programme Forum. (1999). *The concluding phase of the United Nations International Decade for Natural Disaster Reduction*. [On-line]. Available: <http://www.unisdr.org/conference/accountability.htm>

Feature Articles

Thouret, Jean-Claude & D'Ercole, Robert. (1996). "Vulnérabilité aux risques naturels en milieu urbain: Effets, facteurs et réponses sociales" ("Vulnerability to natural risks in urban milieu: Effects, factors and social responses"). *Cahiers Sciences Humaines* 32(2), 407-422.

Twigg, J. & Greig, B. (1999). "The age of accountability: Community involvement in disaster reduction." Paper given at UN-IDNDR and QUIPUNET Internet Conference, 14-25 June 1999. Author.

United Nations (UN). (1997). *World urbanization prospects. ST/ESA/SER.A/166*. Sales E.97, XII.3. New York: United Nations.

United Nations Development Program (UNDP)—Nicaragua. (1998). "Valoración de los efectos del Huracán Mitch y propuestas para enfrentar la etapa de reconstrucción" ("Evaluation of the effects of Hurricane Mitch and proposals for the reconstruction phase"). Authors.

United Nations Population Division. (1997). *Urban and rural Areas, 1996*. New York: United Nations.

United Nations Population Fund (UNFPA). (1998). *Pobreza y inequidad de género: Salud y derechos sexuales y reproductivos en América Latina y el Caribe* ("Poverty and gender inequity: Health and sexual and reproductive rights in Latin America and the Caribbean"). VII Conferencia Regional sobre la Integración de la Mujer en el Desarrollo Económico y Social de América Latina y el Caribe. Santiago, Chile: UNFPA.

UNFPA (Nicaragua Office). (1998). "Contributions to the interagency document to the Under-Secretary of the United Nations." Managua, Nicaragua: UNFPA.

UNFPA (Nicaragua Office). (1999). "Informe efectos del Huracán Mitch: Acciones del UNFPA-Nicaragua" ("Report on the effects of Hurricane Mitch: Actions by the UNFPA office in Nicaragua"). Managua, Nicaragua: UNFPA.

World Resources Institute (WRI). (1997). *World resources 1996-97: A guide to the global environment—The urban environment*. New York: Oxford.

ECSP TRADE AND ENVIRONMENT FORUM

Promoting world trade and protecting the global commons are frequently presented as mutual exclusive goals. But this dichotomy often results in a stalemate between the business and environmental communities—a stalemate that inhibits progress both for future trade liberalization and for multilateral environmental solutions.

Headed by Wilson Center Senior Policy Scholar William Krist, ECSP's Trade and Environment Forum (TEF) addresses this critical global policy problem. Recognizing the legitimate claims of both international trade law and environmental law, TEF identifies methods of harmonizing international trading rules with today's rapidly evolving environmental concerns.

Visit the TEF Web site at <http://wwics.si.edu/tef/index.htm> to read TEF publications, find out about TEF Wilson Center meetings, and keep abreast of recent trade and environment developments.



MIGRATION, POPULATION CHANGE, AND THE RURAL ENVIRONMENT

By **Richard E. Bilborrow**

Abstract

This article considers issues pertaining to the linkages between rural populations, migration from and to rural areas, and the environment—focusing on developing countries in the latter part of the 20th century. The article concentrates on internal migration, although it does briefly discuss the state of knowledge on the interplay between international migration and the environment. It addresses questions such as: What are the recent—and projected—patterns of rural population growth? How much internal migration in developing nations is towards rural environments? What kinds of rural environments are people moving into, in what countries, and what are the environmental consequences? Are there relationships in the other direction as well—that is, does environmental deterioration play an important role in out-migration from rural areas? And does out-migration from rural areas have environmental effects on the places of migratory origin? The article concludes with policy recommendations.

The movement of human populations across the planet has characterized human societies throughout history. Historically, resource scarcity or depletion has induced this movement.¹ In recent years, rural populations and their relationships to their environment are again attracting growing interest, especially in connection with population change and particularly migration. Rural areas contain most of the world's forested land (tropical rainforests, sub-tropical forests, and temperate forests) and other lands (such as agricultural, semi-arid, and drylands); they supply humankind with most of its food. Such environments also contain most of the world's gene pool. While tropical rainforests and coral reefs have attracted the most attention because they have the highest density and diversity of species per unit area, other biota (such as highland forests, wetlands, savanna, drylands, and deserts) also contain unique floral and faunal diversity. Human population growth and intrusion threaten, to varying degrees, all of these biota.

This article considers issues pertaining to the linkages between rural populations, migration from and to rural areas, and the environment—focusing on developing

countries in the latter part of the 20th century. The article concentrates on internal migration, although it does briefly discuss the state of knowledge on the interplay between international migration and the environment. It addresses questions such as: What are the recent—and projected—patterns of rural population growth? How much internal migration in developing nations is towards rural environments? What kinds of rural environments are people moving into, in what countries, and what are the environmental consequences? Are there relationships in the other direction as well—that is, does environmental deterioration play an important role in out-migration from rural areas? And does out-migration from rural areas have environmental effects on the places of migratory origin?

The article first reviews the basic demographic facts—based on the latest United Nations estimates and projections—on the size of contemporary rural populations, their density, and their recent and expected future trends in growth. These estimates show major differences between developed and developing countries and among regions within the developing world. The article then considers patterns of population

Richard E. Bilborrow is a Faculty Fellow at the Carolina Population Center and both a research professor in biostatistics and an adjunct professor in ecology and city and regional planning at the University of North Carolina-Chapel Hill. An economist-demographer, he has worked on research and technical assistance projects throughout the developing world, especially in Latin America. In Ecuador, Guatemala, Mexico, and Indonesia, he has designed, directed, and analyzed household surveys on migration, fertility, economic development, poverty, land use, and the environment. His books on migration methodology are standard references. He has published about 20 books and over 130 articles.



Table 1. Rural Population Sizes, Rates of Growth, and Rural Density, 1960 to 2030

Major Areas	Percentage of the Population in Rural Areas			Rural Population (millions)			Rate of Growth of the Rural Population (percentage)	
	1960	2000	2030	1960	2000	2030	1960-2000	2000-2030
World	66.4	53.0	39.7	2005	2925	3223	1.18	0.01
Less Developed Regions	78.4	60.1	43.8	1652	2925	3023	1.43	0.11
More Developed Regions	38.6	24.0	16.5	353	285	200	-0.54	-1.19
<hr/>								
Africa	81.5	62.1	45.5	225	487	640	193	0.91
Asia	79.2	63.3	46.6	1348	2331	2272	137	-0.09
Latin America and the Caribbean	42.0	25.2	17.4	254	184	120	-0.81	-1.42
Northern America	50.7	24.7	16.8	111	128	122	0.37	-0.18
Oceania	33.6	29.8	25.6	5	9	11	135	0.51
<i>Sources:</i> (UN Population Division FAO 2000; FAO 2000b)								

redistribution through migration, noting the importance of rural-rural migration. Section 2 considers how rural-rural migration may affect several forms of environmental degradation. Section 3 briefly reviews relevant theoretical approaches, especially pertaining to the determinants of migration and the analysis of its environmental consequences. The next section assesses empirical evidence—grouped by region—on the environmental consequences of migration into rural areas, followed by a short discussion of the environmental consequences of out-migration on areas of origin. Section 5 then looks at how environmental degradation might stimulate or force migration, both national and international. Finally, the article considers preliminary policy implications.

1. RURAL POPULATIONS IN THE DEVELOPING WORLD: SIZE, DENSITY, GROWTH RATES AND PATTERNS OF REDISTRIBUTION THROUGH MIGRATION

The past century has witnessed a profound shift in the world's population distribution from primarily rural to increasingly urban. Currently only a quarter of the population of the developed world and of Latin America lives in rural areas. But despite similar ongoing trends in population redistribution in both Asia and Africa—home to three-quarters of the world's population—nearly two-thirds of the population still lives in rural places (see Table 1). The pace of rural population decline, moreover, appears to be slowing in many places in recent decades, as rural areas have become depleted and cities increasingly crowded. Still, due to the many advantages of urban

Editor's Note: This article is an abridged and revised version of an working paper originally published as part of the University of Michigan Population-Environment Fellows Program's Population, Environmental Change, and Security Working Paper Series. Copies are available on-line at <http://www.sph.umich.edu/pfps/bilsborrow.pdf>

Table 1. Continued				
Major Areas	Land in Arable and Permanent Crops (1 million hectares)		Persons per Hectare of Arable and Permanently Cropped Land	
	1961	1998	1961	1998
World	1346	1512	1.51	2.10
Less Developed Regions	676	855	2.49	3.37
More Developed Regions	670	656	0.52	0.44
Africa	155	202	1.48	2.34
Asia	484	556	2.84	4.13
Latin America and the Caribbean	345	311	0.73	0.60
Northern America	102	159	1.09	0.80
Oceania	35	59	0.15	0.15

areas—including greater human interaction; the store and accumulation of knowledge and culture; and greater accent on modern services, infrastructure, media, and diversions (often facilitated by economies of scale in production or distribution)—the proportion of people living in urban areas is expected to continue to grow. Indeed, over the next 30 years, the world’s urban population will likely grow by the same amount (two billion) as the world total, resulting in no net overall rural population growth (UN Population Division, 2000).²

Global rural population growth rates for 2000-2030 are also projected to decline from growth rates in the period 1960-2000. However, these rates will remain positive in many sub-regions, significantly so (around 1 percent or more per year) in much of Africa and Micronesia-Melanesia.

Table 2 shows the largest developing countries in the world in terms of rural population size at the turn of the millennium. Three countries currently have over 100 million people living in rural areas—China, India, and Indonesia. Two more Asian countries will join that list by 2030. Of the 27 countries in the table, 16 will continue to experience positive rural population growth over the next three decades. Of the eight countries with the largest rural populations in 2000—each with over

50 million—all but China and Indonesia will experience overall rural population growth in the coming decades.

At a regional level, projections show the highest rural population growth rates occurring in central Africa, which contains countries and sub-regions characterized by not only high population density but also civil conflict. Table 1 shows land in arable and permanent crops in 1961 and 1998 and rural population density measured as rural population divided by agricultural land. As rural populations have grown, they have expanded their agricultural area—a process called “agricultural extensification.” Table 1 indicates this increase in agricultural land area (except for a decrease in Europe and a constant land area in North America). Agricultural land area increased by 26 percent overall in the developing world during the 37-year period, but this figure varied dramatically across regions. Extensification explains most of Latin America’s increased agricultural production during the period, but it accounts for only a small part of Asia’s large increase in agricultural output, which is mostly attributable to increasing land productivity. In Africa, food production per person failed to rise during the period despite an expansion into agricultural land. Still, this expansion was modest, as Africa has much less potentially usable agricultural land available than Latin America.

Table 2. Population Sizes and Growth Rates of the Developing Countries with the Largest Rural Population, 1960-2030					
Country	Rural Population (millions)			Rural Growth Rate (percentage)	
	1960	2000	2030	1960-2000	2000-2030
China	552.2	867.6	743.9	1.13	-.051
India	362.9	725.4	749.3	1.73	0.11
Indonesia	82.2	125.3	103.6	1.05	-0.63
Pakistan	38.9	98.5	123.7	2.32	0.76
Bangladesh	48.8	97.5	105.2	1.73	0.25
Vietnam	29.6	64.1	74.9	1.93	0.52
Nigeria	32.3	62.5	72.0	1.65	0.47
Ethiopia	21.3	51.5	82.7	2.21	1.58
Thailand	23.1	48.1	45.1	1.84	-0.22
Egypt	17.3	37.5	40.3	1.94	0.24
Democratic Rep. of the Congo	11.9	36.0	59.8	2.77	1.69
Myanmar	17.6	33.0	32.0	1.58	-0.10
Brazil	40.1	31.8	25.0	-0.57	-0.80

Source: United Nations Population Division (2000).

The last two columns of Table 1 reflect this combination of the expansion in the land area and rural population growth. For the developing world as a whole, rural population growth considerably exceeded the increase in agricultural land, with the result that rural population per hectare rose from 2.5 to 3.4, or by 35 percent. The biggest increase occurred in Asia, from 2.8 to 4.1, but Africa also saw an increase from 1.5 to 2.3 (Cleaver & Schreiber, 1994; FAO, 1996). In Latin America, however, the rural population hardly grew, with the result that rural population density actually declined significantly overall.

Most countries of eastern Africa are expected to have substantial future rural population growth—a discouraging prospect given the lack of agricultural productivity increases; the lack of unused lands to exploit (only semi-arid areas with little agricultural potential remain); and the large areas already degraded. Both South Asia and western Asia will experience modest future

rural population growth; both regions already have very high rural population densities relative to arable land. In the Western Hemisphere, Central America—the one region expected to experience rural population growth—already has densely populated countries with degraded rural environments (Leonard, 1987) as well as agricultural output that has failed to increase sufficiently enough to achieve much economic growth. Fertility and overall (natural) population growth also remain much higher in Central America than elsewhere in Latin America.

The population figures introduced above show the rural populations of many countries declining already before 2000; by 2030, population sizes are projected to peak in all but a few dozen countries in Africa and Asia. The question thus arises how a declining rural population can affect the rural environment, since overall population pressures on the land will increasingly fall. The answer: rural-rural migration—that is, migration from one rural

Table 2. Continued

Country	Rural Population (millions)			Rural Growth Rate (percentage)	
	1960	2000	2030	1960-2000	2000-2030
Philippines	19.2	31.4	29.9	1.23	-0.17
Iran	14.2	26.0	25.2	1.51	-0.11
Mexico	18.2	25.3	24.4	0.83	-0.12
Tanzania	9.7	22.5	28.2	2.10	0.75
Nepal	9.0	21.1	29.7	2.14	1.14
Kenya	7.7	20.1	20.2	2.40	0.02
South Africa	9.3	20.0	17.0	1.92	-0.55
Sudan	10.0	18.8	20.7	1.58	0.32
Uganda	6.2	18.7	34.7	2.75	2.06
Afghanistan	9.9	17.7	29.4	1.46	1.69
Turkey	19.3	16.4	11.6	-0.41	-1.16
Uzbekistan	5.7	15.4	18.5	2.50	0.62
Sri Lanka	8.1	14.4	14.1	1.43	-0.08
Yemen	4.8	13.6	25.8	2.63	2.12

area to another—has and will continue to accelerate the decline in rural density in one area while raising it in others, as rural populations leave areas with a scarce supply of exploitable land to seek land elsewhere.

Demographers and other social scientists interested in migration have traditionally focused on *rural-urban migration*—doubtless due to the rapid growth of cities and the important roles they have played in the progress of civilization and economic development. But other forms of population movement have been and even now continue to be *more important* than rural-urban movements. Table 3 provides data (mostly pertaining to the 1980s) on the four mathematically-possible directions of internal migration flows within developing countries. Evidently, the sample of countries is a convenience sample and is not representative of the regions. The data also suffer from wide differences in the definitions of “urban” used by countries, rendering comparisons across countries hazardous.

Nonetheless, Table 3 strikingly indicates that rural-urban migration constitutes the most important movement for *only two* countries in the list, while urban-urban migration is most important for nine and rural-

rural for three. Surprisingly, rural-rural migration exceeds rural-urban in 11 of the 14 countries—including the largest three of India, Pakistan, and Brazil.³ These results suggest that rural areas of developing countries have experienced and continue to experience substantial changes in population distribution. These changes are linked to powerful forces of attraction and (sometimes also) repulsion resulting from wide differences in living conditions and economic opportunities between areas and across regions.

2. ENVIRONMENT INDICATORS AND THE POOR

Before we can consider potential linkages between migration and the environment, we need a clear understanding of what we mean by both terms. First, this article will consider as the main measures of *rural* environmental degradation: (a) deforestation; (b) declining soil quality (including soil desiccation); and (c) loss of biodiversity.⁴ This analysis excludes other forms of environmental degradation (such as water contamination and shortages, air pollution, global warming, toxic and nuclear emissions, and salinization

Table 3. Migrants by Type of Flow, According to Urban or Rural Origin and Destination						
Country	Census Year	Type of Data	Percentage			
			Rural-Urban	Urban-Urban	Rural-Rural	Urban-Rural
A. Africa						
Botswana	1988	Place of Birth	60.0	8.0	29.0	3.0
Cote d'Ivoire	1986	Previous Residence	14.8	44.2	20.3	20.7
Egypt	1976	Inter-state	26.0	55.2	12.0	6.8
Ghana	1988	Previous Residence	4.6	48.5	9.5	37.3
B. Asia						
India	1971	Place of Birth	14.6	10.4	69.1	5.9
India	1981	Place of Birth	16.7	11.9	65.4	6.1
Malaysia	1970	Residence in 1965	8.8	20.0	38.8	32.4
Pakistan	1973	Residence in 1965	17.3	38.8	32.6	11.4
Philippines	1973	Residence in 1965	39.3	25.2	19.7	15.8
Republic of Korea	1966	Residence in 1961	36.6	32.0	21.2	10.2
Republic of Korea	1975	Residence in 1970	43.5	28.7	14.0	13.8
Republic of Korea	1995	Residence in 1990	12.8	85.7	1.5	7.0
Thailand	1980	Residence in 1975	15.4	18.5	56.0	10.2
C. Latin America						
Brazil	1970	Place of Birth	17.4	50.4	26.5	5.6
Ecuador	1982	Residence in 1977	16.0	46.0	18.0	21.0
Honduras	1983	Residence in 1978	26.0	32.0	28.2	13.9
Peru	1986	Previous Residence	11.6	51.6	13.6	23.2
<p><i>Sources:</i> See UN Population Division (2000), except for Botswana, Cote d'Ivoire, Ghana, Ecuador, and Peru, see original sources in Bilsborrow (1992), which are based on population census data (except for Peru, based on the Living Standards Measurement Survey supported by the World Bank).</p>						

Migration, Population Change, and the Rural Environment

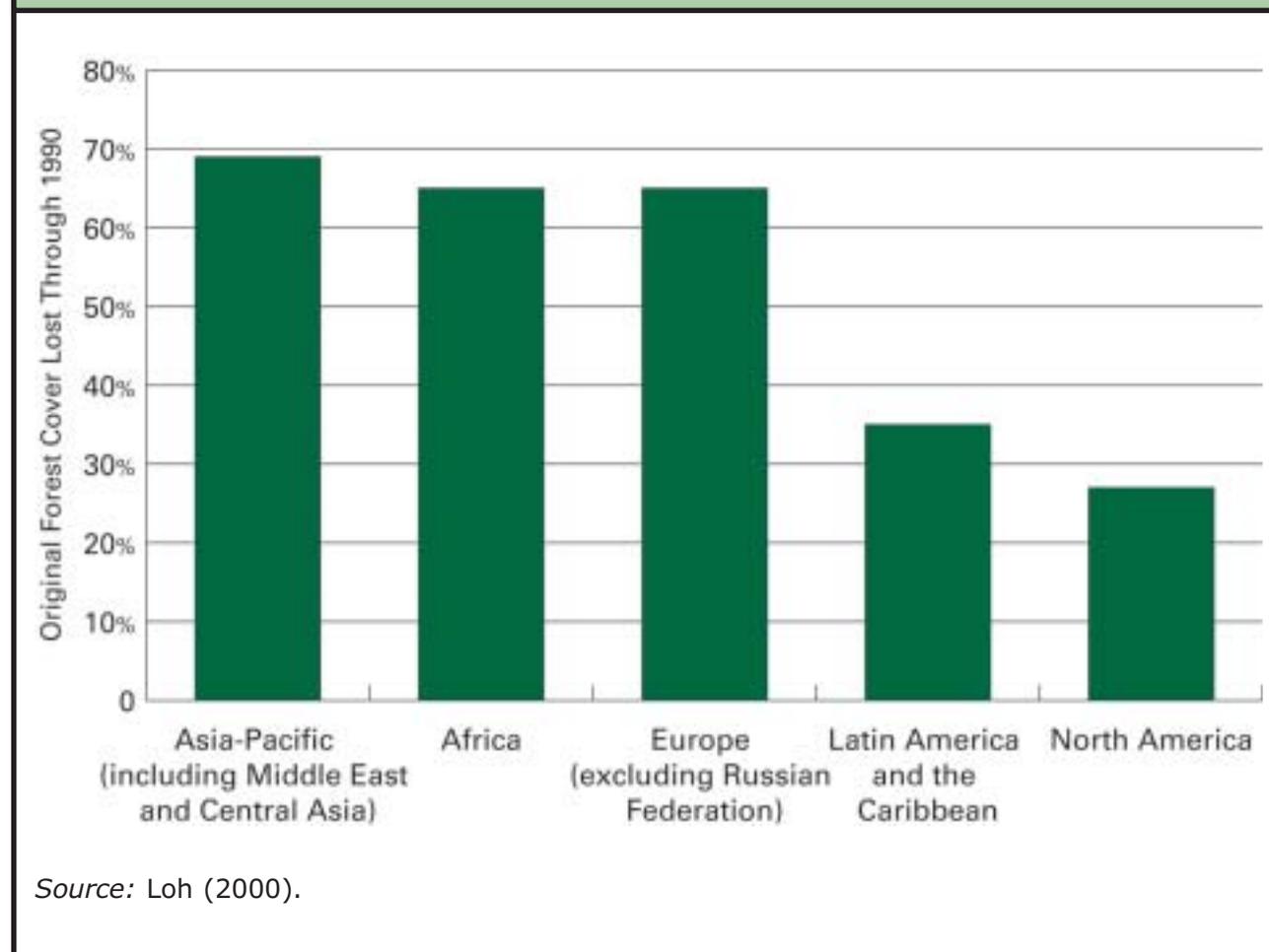
from continual irrigation with insufficient flushing of salt buildups from evaporation). These problems are either (a) more pertinent to developed countries and/or urban areas, or (b) have received little attention in the specific context of population-rural environment linkages.

Deforestation. The latest FAO data (FAO, 2001) indicate that, from 1950 to 2000, developing countries lost half of their forest cover. (See Figure 1). And the pace of deforestation accelerated in the 1990s. The *annual stock* of forests lost was highest in Latin America in the 1990s (at 4.8 million hectares/year, compared with 3.7 and 2.9 for Africa and Asia); but the *annual rate* of forest loss was often largest in countries where so little of the original forests remained due to centuries of dense habitation and exploitation for human use. Thailand and Costa Rica lost about half their extant stock of forests in the 1980s. Deforestation removes the protective vegetation, which usually leads to further consequences, such as: flooding; soil erosion from water and wind; and decreased replenishment of underground water aquifers

(because of the lack of vegetation to slow water runoff and the lack of tree roots to channel the water downward).

The World Bank (1991) has attributed about 60 percent of recent deforestation in the developing world to the advance of the agricultural frontier; 20 percent to logging operations (including mining and petroleum); and 20 percent to fuelwood use.⁵ There are no reliable estimates, however, and the importance of each factor varies greatly across regions and countries as well as within countries. But demographic factors appear to be of importance in both agricultural extensification and fuelwood use (FAO, 2000a). A study by Bilsborrow and Carr (2001) on Latin America based on cross-country data identifies pasture expansion as the major factor in deforestation in most countries of the region, although the expansion of annual crops also played an important role in Central America. Crop expansion is much more closely linked to population growth and its increasing food demands. However, there has not been

Figure 1. Loss of Original Forest Cover by Origin



an adequate quantitative assessment of the relative shares of pasture expansion versus other agricultural expansion in relation to forest clearing across developing countries and over time.

Migration linked to the extension of the agricultural frontier directly contributes to the ongoing process of deforestation on the agricultural frontier, though the subsequent *natural population growth* of migrant populations *becomes increasingly important over time*. The vast majority of the literature fails to even consider the role of fertility and natural population growth *in situ* on the loss of forest cover.

Most migrant colonists to agricultural frontiers are poor and have traditionally been implicated in deforestation. But the poor migrate to tropical rainforests and semi-arid land frontiers because they lack access to land or other capital (e.g., human) to sustain themselves. Furthermore, road construction has usually facilitated their migration to such ecologically fragile environments—supplied by logging or mining enterprises, often by multinational corporations to gain access to resources for the global market.⁶ Similarly, the poor throughout the developing world—particularly sub-Saharan Africa, rural Asia, and parts of rural Latin America—use fuelwood (or charcoal, its derivative) for their domestic energy needs.

Soil desiccation. Soil desiccation is often mislabeled as “desertification.”⁷ The removal of protective vegetation—whether of trees, shrubs, or savanna grasses—renders the soil vulnerable to water and wind erosion. Sudden vegetation removal may both destroy remaining vegetation and lead to drying of the soil. Postel (1997) and Falkenmark (1994) describe the process and its possible linkage to the population growth of humans and ruminants (pastoralists and their herds), most notably in the Sudano-Saharan belt across Africa. Nevertheless, desiccation on a smaller scale is also occurring in many parts of Asia, Mexico, and even in areas of the Amazon that are denuded of vegetation, trampled by cattle, and experiencing declining rainfall due to micro-climate changes.

Soil degradation. Soil degradation takes various forms—including erosion, desiccation, salinization, and declining fertility. Although this degradation is difficult to determine on a large scale, the noted Wageningen Institute of the Netherlands has conducted a global assessment of the extent of human-induced soil degradation (Oldeman et al., 1990). The study estimated that 20 percent of all the vegetated land in the developing regions is degraded—much of it moderately to extremely degraded. Deforestation is seen as one of the major causes

of soil degradation, estimated to account for 40 percent of the degradation in Asia and South America, 22 percent in Mexico and Central America, and 14 percent in Africa (with the overall extent of degradation greater in the latter two regions).

Land Inequality and Environmental Degradation

Land is unequally distributed throughout the world. Latin America’s extreme land inequality is characterized by the control of most of the land by a few farms (the *latifundia*) while most of the farmers have very little land (*minifundia*). Moreover, as Leonard et al (1989) noted, the poorest 20 percent of developing country populations also tend to live on “low potential” lands—that is, marginal agricultural lands with inadequate or unreliable rainfall, low soil fertility, and/or steep slopes. In country after country—even those such as Mexico and Bolivia, where some land redistribution has occurred—the relatively well-off still control the better lands. Three-quarters of the poorest 20 percent in Latin America live on marginal lands. Fifty-seven percent of Asia’s poor and 51 percent of Africa’s also inhabit marginal lands. Not just the lack of land but also its *quality* contributes to rural poverty.

And the low potential of these lands makes it likely that the poor will also degrade them through use.⁸ Once the poor have degraded lands in one area, they often migrate to other marginal areas (such as tropical rainforests or semi-arid areas) and deforest and degrade those areas, creating a “cumulative causation” circle linking rural poverty, deforestation, and land degradation.⁹ Section 4 presents examples.

In the Brazilian Amazon, poor migrant settlers clear marginal land, which yields only a few years of adequate crops. The settlers then sell the land (mainly to ranching interests) and move to new areas that they similarly degrade. Ranchers also have taken over such land through violence or threat of violence (Schmink & Wood, 1993; Cowell, 1993).

Analysts now believe that population growth and migration linked to vegetation clearance has led to micro-climate changes in rural areas—declines in rainfall and therefore in agricultural potential due to deforestation—in the Andean valleys of South America, in the Himalayas, and even in the Amazon Basin. A debate also continues about whether population increase and overuse of marginally productive drylands for farming and grazing in the Sudano-Saharan belt across central Africa has led to desiccation of soils and a southern expansion of the Sahara.

Rural-Rural Migration and Biodiversity

Finally, up to 55 percent of all species on earth live in the tropical rainforests, so that recent large-scale intrusions of rural-rural migrants have had a devastating effect on biodiversity and on the world's gene pool, with possibly dire consequences for future human food production and medicines (Cincotta & Engleman, 2000). Human population increase and human activity also affect biodiversity through the devastation of species for food or pleasure (such as a number of fish species the past century). But the biggest human impact on rural environments comes through the conversion of areas for human habitation, agriculture, energy production, transportation, and recreation—all of which can destroy ecosystems and natural habitats. Migration plays a fundamental role in these processes, either by inducing or following them.

3. CONCEPTUALIZING THE LINKAGES BETWEEN MIGRATION AND THE RURAL ENVIRONMENT

Linkages between migration and the (rural) environment are complex and may take several different forms. So it is useful to break down these linkages into distinct types by drawing on theory that deals with (a) the *determinants of migration*, including the role of environmental factors on stimulating or forcing out-migration or on attracting in-migration; and (2) *the effects of migration on destination and departure areas*, particularly focusing on their effects on the environment.

The Determinants of Migration

Where do environmental factors fit into theories of the determinants of migration? In essence, migration is affected by: (a) *differences* in economic opportunities and living conditions between places (and countries, for international migration); (b) people's *awareness* of those differences and desire to improve their lives by moving; and (c) their *ability to act* upon those desires. The main factors influencing desires to migrate include differences in employment opportunities, wage rates, and living conditions (which geographers describe under the umbrella term "place utility"—see Wolpert, 1965). At the same time, psychological/emotional attachments to home/family, friends, and community keep most people from migrating. Distance to the potential destination, communication and transportation, educational levels, and (for international migration) state policies each strongly influence the awareness of differences from one place to another, the ability to migrate, and the cost of migration.

The factors that affect migration have been categorized (Lee, 1966) as "push" factors (in the place of origin) and "pull" factors (in the place of destination). Environmental variables are an element in both. Environmental push factors include both natural disasters (earthquakes, volcanic eruptions, hurricanes/cyclones) as well as human-induced environmental degradation (e.g., flooding resulting from deforestation of watersheds, salinization of soils due to prolonged irrigation, soil degradation from improper land-use practices). Environmental pull factors may include the attraction of good farmland or of a more attractive natural setting or climate.

Traditional empirical research on migration decisions has focused on the individual characteristics of persons that do or do not predispose them to migrate—such as a person's age, sex, or education (Sjaastad, 1962). Starting with Mincer (1978) and essays in DeJong and Gardner (1981) among others, the standard view focusing on migration decisions as made by individuals changed to view most migration decisions in developing countries as *household decisions*—that is, households decide whether to send a household member away or to move the whole household with the migrant. Migration theory has recently also recognized that the *community or context* of the household also plays a role (e.g., Wood, 1982; Bilsborrow et al., 1984; Findley, 1987; Massey, 1990). The local community-contextual factors may themselves be seen as affected by higher level provincial and national policies, and the latter by international factors. For example, the living conditions of coffee farmers depend on the farm-gate prices for sacks of coffee offered by intermediaries—prices that, in turn, depend on government tax, subsidy, and export policies pertaining to coffee and inputs used in its growing, as well as prices and demand in international markets. Changes in factors such as international prices therefore filter down through political levels and institutions at each stage until they reach local farmers. Figure 2 illustrates the hierarchical nature of migration decisions and the relevance of both origin and destination conditions to these decisions.

Figure 2 also shows the relevance of *environmental* factors in influencing out-migration from rural areas in the context of household and community-level contextual factors. Environmental factors may operate either (a) by affecting income-earning opportunities of household members at the level of the household farm or business (e.g., the amount and quality of land available); or (b) through their effects on economic opportunities in the community. For example, soil degradation from

Feature Articles

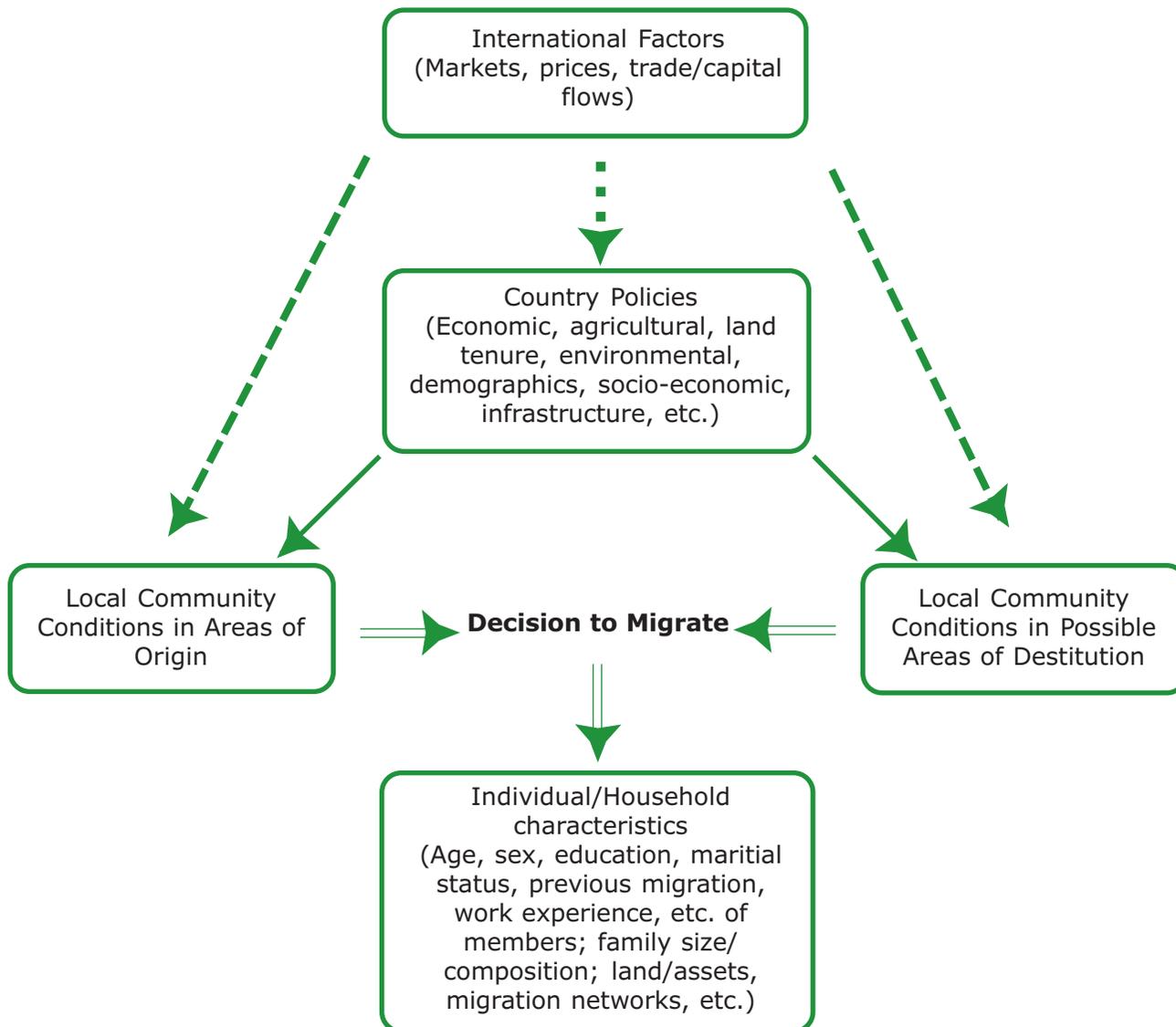
excessive or improper use or from the ash of a volcano may provoke a household to consider migrating. Environmental factors may also disturb the entire community: natural disasters or soil degradation in the community reduce agricultural prospects and therefore the derived demand for labor and agricultural wages in the area. Human practices may sometimes also make the place of origin less desirable in other, non-economic ways (such as via water pollution, air pollution, or deforestation). Indeed, *any* form of environmental change that adversely affects land productivity will tend to reduce agricultural incomes and stimulate out-migration. In fact, where household surveys show people migrating because of low incomes, an *underlying* environmental factor likely

exists. In such cases, the environmental degradation may constitute a “root” cause of out-migration and the decline in crop yields only the proximate cause (Shaw, 1989).

The Consequences of Migration

While a substantial body of theory now examines the determinants of migration, theory on the consequences of migration is limited. Consequences are also usually studied only in terms of a wide range of indicators, including: migration’s effects on household size or composition (such as by increasing or decreasing the education level or productivity of the labor force, or the supply of labor); access to employment or higher wages; and better access to services and amenities. These

Figure 2. The Migration Decision





Migration, Population Change, and the Rural Environment

are effects at individual and household levels, although impacts also exist at the community level on both communities of destination and origin (in terms of population size, growth, and density; wage rates; crowding; and stock of human capital). The consequences may be viewed from the perspective of: (a) individuals, households, and/or communities; (b) migrants and/or non-migrants; and (c) communities of origin or destination.

In terms of the consequence for rural areas of destination, Malthus (1798) and Boserup (1965) serve as useful starting points, despite their focus on population and land use (specifically, on how population growth affects population density and whether that increase in density lowers per-person living standards). Because Malthus could not foresee the vast changes in agricultural technology, he erroneously argued that greater population density would cause declines in living standards. However, in a rarely cited passage, Malthus also states that rural farm families under appropriate conditions would respond to population pressure by *out-migrating in search of land*, which would extend the agricultural frontier—either nationally or internationally (Malthus, 1798, pp. 346ff). In contrast, Boserup (1965) hypothesized that, under certain circumstances, rising population density (by increasing living standards) would stimulate farm families to use land *more intensively* through adaptive technology, thus avoiding the need to migrate. Davis (1963) and Bilsborrow (1987) subsequently formulated a broader “multiphasic model” that viewed out-migration as only one possible response to the growing pressures on a farm family’s living standards resulting from population growth.

The models above can be usefully incorporated into an overall conceptual model of the linkages between the rural household’s migration decision and the possible environmental consequences in areas of destination. Figure 3 illustrates such a model.

According to this model, the household continuously evaluates conditions in the place of origin and elsewhere to determine how to survive or cope in difficult times or whether to move to improve its standard of living. The possible forms of adaptation include, as a first option, further land clearing *in situ* if any untapped land exists on the family’s plot or in the local community, including “open access” lands available to anyone (Bilsborrow & Geores, 1992). Of course, the latter becomes untenable when many farmers compete for open land, leading to resource degradation through a “tragedy of the commons” (Hardin, 1968). In addition, families may subdivide their agricultural plot among the children, resulting in land *fragmentation* and increasingly

inadequate plot sizes (i.e., too small to support a family). Both of these options tend to lower living standards and eventually stimulate further responses. Short of out-migration, families may also opt for *land intensification* via: (a) shortening fallow periods, (b) increasing labor per unit of land (through more weeding and/or the building and maintaining of terraces and windbreaks), or (c) increasing use of irrigation or fertilizer (Boserup, 1965). The dotted arrows in Figure 3 identify ways in which government policies can encourage these methods to increase land productivity.

However, the above responses may also lead to environmental degradation. Soil overuse without compensatory practices (such as fertilizer or crop rotation) decreases soil fertility. The runoff of excess chemical fertilizers and pesticides causes water pollution; mining depletes underground water aquifers; and irrigation may lead to salinization (build-up of salt deposits) of soils if insufficient water is available.

Developing countries have a strong “urban bias” in their development policies, resulting in a policy context that does not favor agricultural intensification (Lipton, 1977). Without such intensification, however, rural families have no alternative but to migrate. As noted in Section 1, rural-rural migration remains a major aspect of population redistribution in many countries, and it may be linked to agricultural extensification and extending the agricultural frontier through land clearing even when rural population size in the country as a whole is falling. This rural-rural migration also has significant environmental implications when directed predominantly to marginal, fragile areas that have often been made accessible recently through extensions of road networks. Through clearing of forests or other vegetation to establish croplands or pasture, the extensification process may: (a) damage watersheds; (b) reduce water retention and replenishment of underground aquifers; (c) increase surface runoff, flooding, soil erosion, and siltation of dams downstream; and (d) decrease soil fertility. While appropriate policies can control or moderate many of these consequences, most developing countries do not have the necessary resources and technology to implement such policies.

Note that the arrows in Figure 3 indicate *alternative* pathways. The more one type of response occurs, the less pressure or tendency there is for the other responses (Davis, 1963; Bilsborrow, 1987). These alternatives also do not exhaust the types of household decisions intended to maintain or improve welfare, which also include fertility decline and either temporary labor migration or permanent out-migration by one or more family members. The allocation of household labor in such a

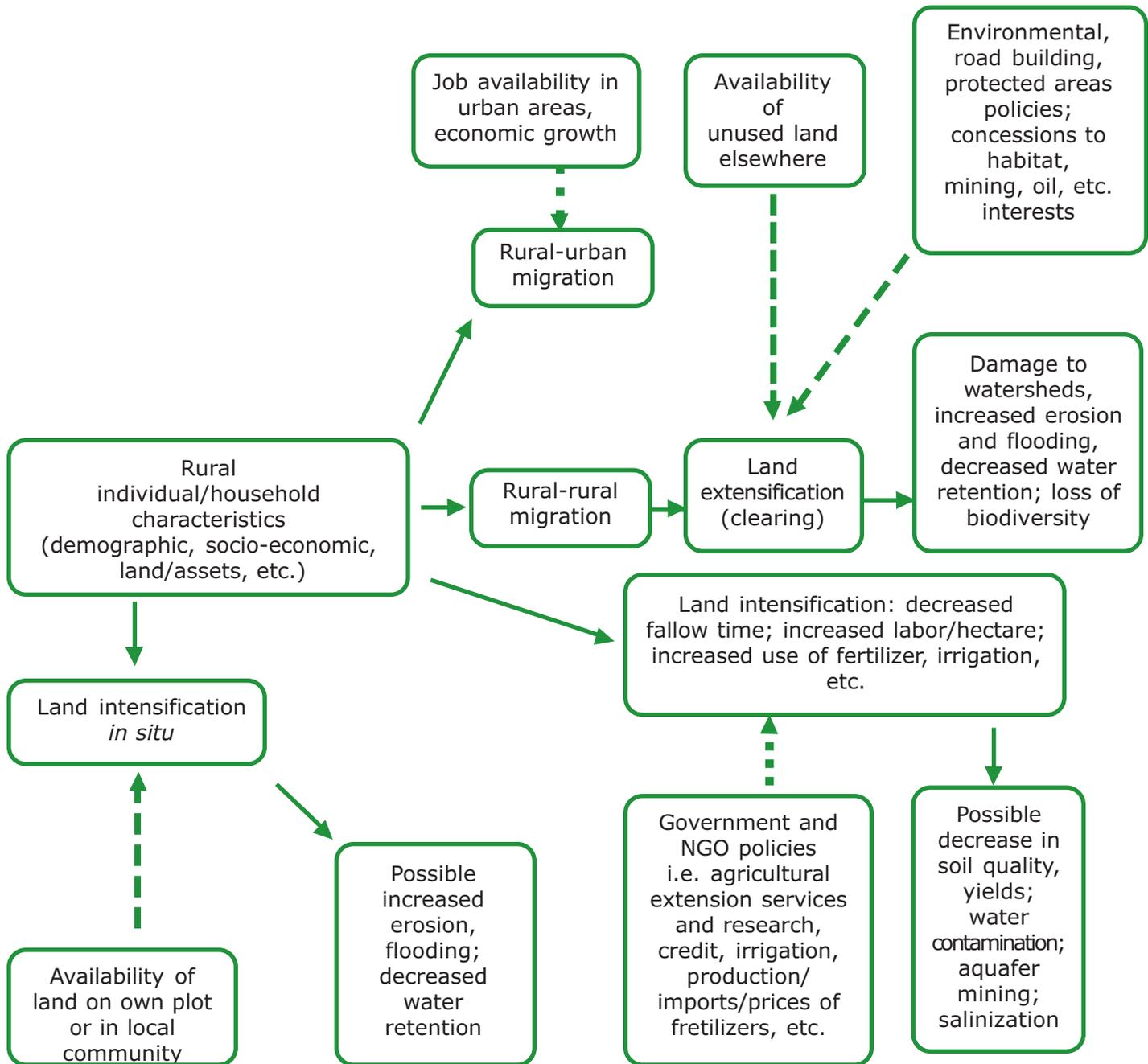
Feature Articles

way across space and among more than one form of economic activity spreads risks, as seen in the “peasant household survival” theory (Arguello, 1981).¹⁰

More important, the dotted lines in Figure 3 indicate the crucial roles played by *contextual factors* in determining rural household decisions about migration or intensification. These factors include: local and national natural-resource endowments; social and economic

infrastructure; national and local government policies that determine land ownership and access to land; environmental policies and set-asides for protected areas; road construction; and the regulation (or lack thereof) of logging, mining, and petroleum companies. These contextual factors and policies establish the physical context and rules of the game for household responses to population pressures and environmental degradation.

Figure 3. Rural Household Decision-Making, Migration, and the Rural Environment



While the discussion in this section focuses on situations with *growing* rural populations, Section 1 notes that in the future more developing countries will have declining rural populations in the aggregate. Standard microeconomics predicts that declining populations cause increases in land available per person/household—raising rural wages, demand for and prices of agricultural output, and therefore rural family living standards (as well as possibly permitting natural reforestation in “origin” areas to the degree less land is used). However, to the degree that only the more educated and motivated out-migrate from rural areas, the decline in the average *quality* of the labor force may more than counter the positive effects of a lower labor-land ratio. In addition, international factors or a strong urban bias in government policies may further counter this population decline, particularly since a declining rural population will have even less political power, possibly resulting in an even stronger urban bias. As more countries begin to experience declining rural populations, this issue will become an important research topic.

The discussion above takes population growth as the initiating factor in the sequence of change, but economic forces or environmental degradation in the rural region of origin could also create pressure on living standards and thereby stimulate the original response(s), including out-migration. Such forces are considered in Section 5.

The next section critically reviews a number of empirical studies of particular countries and communities to identify linkages between migration and the rural environment observed in recent decades, including the roles played by contextual factors in determining the relationships and decisions adopted.

4. IMPACTS OF MIGRATION ON THE RURAL ENVIRONMENT IN DEVELOPING COUNTRIES

How migration and environmental degradation interact varies by situation and depends on such factors as natural-resource endowments, local institutions and infrastructure, and government policy. While each study described below may have some broader applicability for other countries in the same geographic region or elsewhere experiencing similar processes, each type of situation is not necessarily equally common or important.

Migration of Agricultural Colonists to the Rainforest Frontier

Settler migration to rainforest areas and the subsequent destruction of that habitat are a topic of

rapidly growing concern. Because of their numbers and their access to increasingly effective (and destructive) technology for land clearing (such as chainsaws), migrant colonists are linked to a significant proportion of the developing world’s tropical deforestation. Although important cases are available from Asia and Africa, this discussion will focus on Latin America, the region undergoing the most rapid tropical deforestation.

Brazil, the country most studied in the context of migration and deforestation, has 35 percent of the world’s tropical rainforests. Extension of the agricultural frontier in Brazil has resulted in the largest annual volume of forests lost in recent decades (see Section 1). However, many other countries (in Latin America and elsewhere) that had smaller initial forest stocks than Brazil have experienced higher *annual rates* of deforestation. Indigenous tribes initially and sparsely settled the Brazilian Amazon, and rubber tappers (*caboclos*) exploited parts of it during the rubber boom a century ago. But most of the region remained untouched and without “permanent” settlements until road construction began in the 1960s. In a country characterized by high rates of both population growth and industrial growth, national policy at the time promoted a westward expansion of people to: (a) tap the Amazon’s vast wealth; (b) assert Brazilian sovereignty in border areas; and (c) provide a release valve for peasants who had insufficient land and lived in densely populated areas elsewhere (especially in the drought-stricken Northeast). Several government-sponsored programs initially provided free land and food for six months in Brazil’s Rondonia state and elsewhere to attract migrant settlers, but spontaneous settlers soon completely overran the effects of these programs (Henriques, 1983; Hecht & Cockburn, 1990). Tax incentives for cattle also added to a speculative land boom. While initial settlers could lay claim to large (200 and above hectares) plots, the size of new settlement plots made available fell to 100 hectares in Rondonia in the 1970s and to 50 hectares in the 1990s. Poor soils, transportation difficulties in marketing the produce over long distances, lack of land titles and long delays in getting titles, and lack of credit for all but the big ranchers led many of the original settlers to experience declining yields over time on the marginal soils. These settlers then sold out their holdings or even abandoned them in order to migrate further into the rainforest to begin the clearing process on a new plot or to move to the region’s boomtowns.

Rural-rural migration within the Amazon Basin has thus continued to lead to further deforestation, even as the region’s total rural population has ceased growing

since the 1980s. In addition, ranchers (benefitting from generous Brazilian tax subsidies) often bought out the small farmers or forcefully removed them from the land (Hecht, 1985; Hecht & Cockburn, 1990; Schmink & Wood, 1993). The conversion of cleared small farms and abandoned lands into pasture for large cattle ranches—which use more land than crops—has contributed to continuing deforestation in the 1990s.

Because of: (a) the Brazilian government's expansionist policies in the Amazon (including road building and the creation of a new capital in the interior close to the rainforest); and (b) Brazil's relatively low population density in the country as a whole, some argue that demographic factors have played no significant role in the deforestation of the region. While increasing rural population pressures cannot be considered a major proximate cause of recent deforestation in the Brazilian Amazon (since the rural population of the Amazon, as well as in Brazil as a whole, has been declining), this agnostic view disregards the effects of high fertility and population growth in areas of origin of many of the migrant settlers to the Amazon. Given Brazil's extreme land ownership inequality, high fertility in Northeast Brazil led to increasing population density and pressures on the land. Landholdings of most families became even smaller due to the division of plots among children. When combined with a series of droughts, this increased population pressure exacerbated rural poverty in the Northeast, pushing out-migration from that region to the Amazon region, where migrants were pulled by available land. Although many migrants from the Northeast initially moved to Sao Paulo and other cities in search of work, they moved on to the Amazon with the construction of its new roads. The later replacement of coffee farms by large, mechanized soybean plantations in southeastern Brazil also forced many additional farm families to migrate to cities or to the agricultural frontier in the Amazon.

In both instances, rural-rural migration led to the deforestation in the Brazilian Amazon through (a) the driving forces of population growth, (b) a highly-unequal land distribution in areas of origin, (c) misguided government policies that subsidized cattle ranching up to the 1990s, and (d) changes in agricultural crops and technology in the South. High fertility and high population growth in areas of origin no longer contribute significantly to out-migration to the Amazon Basin. Fertility has substantially declined in most of Brazil since the 1970s, reaching essentially a replacement level of 2.2 for 2000–2005 (UN Population Division, 2000).

Similar processes of migration to the rainforest

frontier accompanied by large-scale forest clearing have been documented in a number of other countries in Latin America. In *Guatemala*, migration into the northern Peten resulted in the clearing of half the forests in the region during the period 1950–1985 (Leonard, 1987). More than in Brazil, high population growth in areas of origin may have played an important role in this Guatemalan deforestation. The combination of agricultural-plot fragmentation into economically unviable sizes and the lack of local alternative sources of employment pushed out-migration from rural areas—especially to Guatemala City and the Peten, the country's last agricultural frontier. The process of deforestation in the Peten observed by Leonard (1987) has continued since that time, as seen in satellite imagery and as documented on the ground in recent household surveys, even in and around national parks and the Maya Biosphere Reserve (Sader et al., 1997). Rural-rural migration appears to continue to drive this process of deforestation. Policymakers need information on the origins and motives of this migration in order to develop policies to better direct this migration in Guatemala. Otherwise, the ecologically important remaining forests of northern Guatemala will disappear within two decades.

Elsewhere in Central America, important studies have been carried out in Panama, Costa Rica, and Honduras. In *Panama*, migration to the forest frontier (mainly to establish cattle farms) led to deforestation along new roads (Heckandon & McKay, 1984; Joly, 1989), a process that extended southward in the 1990s to near the Colombian border in the Darien Gap. Decades ago in *Costa Rica*, migrants to the canton of Sarapiquí colonized forest areas and cleared them to plant cash crops or grow cattle. As a consequence, the population of Sarapiquí grew fourfold between 1963 and 1983, while the forest cover decreased from 70 percent to 30 percent, and pasture increased from 24 percent to 57 percent of the land area (Schelhas, 1996).

Indeed, increases in pasture area have played a major role in most deforestation in Latin America (Bilsborrow & Carr, 2001). For example, in southern *Honduras*, the government promoted the expansion of cattle ranching and cotton and sugar cane plantations on lowland areas with good soils to expand export earnings. This policy enabled large commercial landowners to force smallholders into migrating to adjoining mountain slopes, where they established new farms. The migrant farmers had to clear the forests on the slopes, leading to additional environmental consequences of increased soil erosion and flooding downstream as well as low



Migration, Population Change, and the Rural Environment

agricultural yields (Stonich, 1990; DeWalt, 1985; DeWalt & Stonich, 1999; see also Humphries (1998) on cattle ranching in northern Honduras).

Apart from Brazil, the main research on migration and deforestation in South America has focused on Ecuador, perhaps partly due to drug production and insecurity in its Andean neighbors' Amazon regions (and the resulting paucity of road construction). In Ecuador, migration to its northern Amazon provinces and the subsequent deforestation by agricultural colonists began in the early 1970s with the construction of roads by petroleum companies to lay oil pipelines. Those roads facilitated an influx of migrant colonists, 75 percent of which originated in the highlands (Pichón, 1997; Pichón

linking the Amazon to other parts of Ecuador, allowing large-scale access to the region. The high concentration of landless and near-landless families in Ecuador's Sierra or Highlands—which resulted from high fertility and extreme inequality in the distribution of landholdings—left a ready pool of persons ready to migrate in search of land. Thus, population pressure on existing agricultural land and the distribution of that land appear to have been key factors responsible for the out-migration from the Sierra—and hence ultimately for much of the deforestation in the Amazon Basin of Ecuador.

In virtually all cases of environmental degradation caused by migrant forest clearing in Latin America, most colonists have been low-income families migrating in

Household behavior regarding migration and environmental degradation must be linked to larger forces such as markets.

& Bilsborrow, 1999) and 83 percent in rural areas. The population of the Amazon region grew at annual rates of 8 percent in 1974–1982 and 6 percent in 1982–1990 (the latest available intercensal periods), increases that in both cases were more than double the country's growth rates. At the same time, deforestation in Ecuador (mainly in the Amazon) proceeded at a rate of 1.8 percent per year, the highest among the seven Amazon Basin countries (FAO, 1997). The overall estimated rate of deforestation in the country of 1.2 percent per year in 1995–2000 (FAO, 2001) remains the highest in Latin America. This loss has particular ecological significance because the western Amazon region straddling southern Colombia, Ecuador, and Peru is one of the world's most biodiverse areas.¹¹

The data obtained to date from specialized household surveys in 1990 and 1999 permit detailed analyses of the factors responsible for changes in land clearing and land use by migrant households in the Amazon region; these analyses facilitate the development of better demographic, agricultural, environmental, and socioeconomic policies for that region. However, these data do not suffice to determine *why the migrants left their places of origin* in the first place, and therefore they tell us little about what policies are needed to alter (e.g., reduce or redirect) those migration flows. To model the migration decision-making process and determine why migrants left, researchers need data on non-migrants in places of origin (see Bilsborrow et al., 1984; 1997). Evidently, the Ecuadorian government policy of according priority to the extraction and export of petroleum from the region led to the building of roads

search of land. However, the land in tropical rainforests is usually of such poor quality that migrant farmers tilling it have rarely risen above the poverty level. Despite the considerable environmental loss suffered on the continent through deforestation, poverty rates have not fallen (Murphy et al., 1997; Ozorio, 1992; UN Population Division, 2000). Other agents—including cattle ranching, mining, and logging—can also claim direct responsibility for deforestation. Indeed, Wood et al. (1996) found (a) rates of deforestation in the Brazilian Amazon were linked to levels of in-migration, and (b) that deforestation was much more attributable to large farms and ranches than small farmers growing crops. A subsequent study of Walker et al. (2000) found that, along Brazil's Transamazon Highway, a decline in the prices of major cash crops (cacao, black pepper, rice, etc.) relative to the price of beef contributed to small farmers switching land to cattle production. The average ratio of land in pasture to land in crops in the region rose from 2.5 to 9.1. As Figure 2 indicates, household behavior regarding migration and environmental degradation must be linked to larger forces such as markets.

Significantly, populations seeking fuel wood for energy can also cause deforestation. The poor in developing countries (especially Africa) and certain migrant groups (such as displaced persons and refugees) depend on fuel wood. Conflict and major natural disasters often force large numbers of rural dwellers to move and seek refuge in other parts of their own country (displaced persons) or in another country (refugees). In central and eastern Africa, west-central and Southeast Asia, and parts of Central America, large populations of internally

displaced persons and refugees have had to live for long periods in recent years in makeshift camps. These migrants have used nearby forests for fuel wood, resulting in deforestation and depletion of surface and underground water deposits (Sessay & Mohamed, 1997).

Migration and Impacts on Desiccation in Dryland Areas

Population growth due to both (a) the difference between fertility and mortality—known as *natural population growth*, and (b) in-migration has also been linked to vegetation loss in dryland areas. Most research in this area examines sub-Saharan Africa, but many Asia and Latin America cases also provide examples. For instance, colonists settling in communal farms (*ejidos*) around the Calakmul Biosphere Reserve in the Yucatan Peninsula, Mexico have caused environmental degradation through the use of crops and technologies inappropriate for the area (Ericson et al., 1999).

African cases are numerous. In Tanzania, 45 percent of the country was considered desiccated by 1980, largely due to the in-migration of people with their animals to semi-arid regions (Darkoh, 1982). The Sudan's Gezira project, the world's largest agricultural irrigation scheme, has displaced pastoralists from their traditional seasonal grazing ranges, while the draining of wetlands to create other irrigation schemes has attracted migrants to eastern Sudan. The Sudan has lost three-quarters of its original forests (mostly since 1950) and continues to lose forest cover at a high rate. While some deforestation results from the extensive use of fuel wood for cooking, the arrival of refugees and other migrants to previously unexploited lands has played an important role as well (Ibrahim, 1987; Little, 1987; Bilborrow & DeLargy, 1991).

Non-migration factors also often precipitate environmental degradation. These factors include: the actions of governments; national and multinational corporations (logging and mining enterprises); and large-scale ranchers responding to national and international demands for high quality wood, beef, and other forest and agricultural products. As noted previously, the roads and infrastructure these actors construct have usually facilitated the arrival of migrants. More generally, governments have often altered areas with the specific goal to attract migrants: governments have undertaken dam construction for irrigation in the eastern Sudan, northern Mexico, northern India, central China (the huge Three Gorges project), coastal Peru, and many other places. (Such projects may displace other populations, however.) And the creation of national parks

and protected areas often leads to higher pressures on resources in other nearby areas (including buffer zones), resulting in increased deforestation or desiccation in those areas.

Impacts of Out-Migration on Areas of Origin

Theory suggests that out-migration should have positive effects on rural areas of origin because of a decrease in the person-land ratio. (Reduced pressures on resources might even facilitate natural reforestation, though little research exists on this subject.) In the Camacho valley of Bolivia, out-migration led to less intensive grazing and environmental improvements (Preston, 1998).

But in several contexts, out-migration has *negatively* affected areas of origin. In the Peruvian Andes, out-migration depleted the labor supply, which made it hard to maintain terraces and which led to increasing soil erosion (Collins, 1986). A Lake Victoria island community in Kenya experienced similar difficulties (Conelly, 1994). Finally, in Gabon, near the Gamba Complex of Protected Areas, the out-migration of young persons searching for employment in cities and in the oil sector reportedly disrupted community-based conservation projects (Freudenberger et al., 1999). The usual positive selectivity of migrants also may contribute to negative effects in general in areas of origin, not only on the environment but also on the lives of those remaining. A number of studies on southern Africa find the out-migration of males to work in the mines and cities of South Africa has disrupted family lives and led to ecological degradation of origin area farms, even as it has also led to increased autonomy and decision-making by the women left behind.

A Note on Migration and Biodiversity

The relationships between human migration movements and biological diversity on the planet are attracting growing interest because of: (a) the increasing size and mobility of the human population; (b) the ongoing loss of biodiversity; and (c) the rapid creation of "protected areas" such as national parks, nature reserves, and forest reserves. The global area under such protection has doubled in the past decade—although the area outside of Antarctica has decreased (Harrison & Sheppard, 1997). And a report of the International Union for the Conservation of Nature-World Conservation Union (IUCN) released in September 2000 stated that (a) 11,000 species of plants and animals face imminent extinction, and (b) the current human-induced extinction rate is 1,000 to 10,000 times that which would



Migration, Population Change, and the Rural Environment

occur under natural conditions (“11,000 Species,” 2000). Indonesia, India, Brazil, and China have the most threatened mammals and birds, mostly due to habitat destruction by human intrusions. Major international environmental organizations such as Conservation International, The Nature Conservancy, and the Worldwide Fund for Nature have supported looking into the linkages between migration movements and intrusions into protected areas as well as how to measure and monitor migration impacts.

But this is hardly a new theme. Throughout human history, migration movements have been linked to biodiversity losses. A recent study by Cincotta and Engelman (2000), although focusing primarily on population size, growth, and density (but not defining “migration” in its glossary of demographic terms), provides a brief overview of the effects of past human migrations: “There is clear evidence that human hunters played a role in extinctions as far back as 10,000 years ago, and perhaps even 50,000 years before the present...[even though] there may have been only 5 million humans” (pp. 24ff). Within 1,000 years after the first settlers purportedly crossed the Bering Strait land bridge about 12,000 years ago, people had hunted 73 percent of large mammals to extinction in North America. When the migrants continued into South America, 80 percent of its large mammals may have disappeared. Similar losses occurred earlier in Europe and Asia.

More recently, substantial evidence suggests that human migration into and near many new protected areas contributes to degradation and biodiversity loss. Protected areas in Madagascar, East and South Africa, Indonesia, Thailand, India, the Amazon, the Galapagos Islands, Mesoamerica, and many other places demonstrate such degradation and loss, though documenting the loss or disappearance of specific species is difficult and expensive and linking it to intrusions of human populations is not always straightforward. The Forest Fragments Project of Lovejoy (Cincotta & Engelman, 2000, p. 40) in the northern Brazilian Amazon sheds light on the impacts of migrants by showing the relationship between the size of the protected area or plot (varying from one hectare to 1000 hectares) and species presence. While small areas can preserve most species, large species require much larger areas for their protection. Thus, while small and fragmented areas may often suffer only limited biodiversity loss in terms of number of species because of human migrant intrusion, key species may be lost. Cincotta and Engelman observe that a number of studies have linked migration to habitat

loss, including the destruction of tropical rainforests. They also examine the demographic dynamics of the planet’s 28 main biological hotspots (as determined by Conservation International) and note higher than average population density and growth for these areas. (See Figure 4 for a Population Action International map of similar population growth findings in global biodiversity “hotspots.”) Some areas with low density, such as the Amazon and Congo basins, have extraordinarily high population-growth rates. As Cincotta and Engelman conclude, “habitat disturbance, fragmentation, and outright habitat loss, taken together, currently constitute the leading direct cause of extinction” (Cincotta & Engelman, 2000, p. 42).

Since migration is an important potential factor affecting protected areas, conservationists should have monitoring systems for keeping track of migrants and their effects around such areas. Ericson and Bilsborrow developed such a monitoring system for the Calakmul Biosphere Reserve in the Yucatán Peninsula of Mexico. The Calakmul Biosphere Reserve constitutes a significant part of a larger system of protected areas known as the La Selva Maya, which joins Mexico, Guatemala, and Belize to form an ecological corridor of over two million hectares stretching from the central Yucatán and the Belize forests south (Bilsborrow et al., 1998). Created in 1989, the system covers 800,000 hectares, including core and buffer zones. Ecologically-sustainable production activities are allowed in the buffer zone, but not in the core zone. A heavy influx of migrants (some fleeing Chiapas) and a high natural population growth rate have spurred rapid population growth in the buffer zone as well as in nearby towns since 1990. Some communities are expected to double their population in three to seven years. The population living around the reserve is estimated at about 25,000 people (Bilsborrow et al., 1998). Many people living in and around the reserve are rural-rural migrants, *pushed* from their places of origin in recent years by lack of land, unemployment, displacement by commercial agriculture, ecological catastrophe, and social unrest (as in the case of Chiapas). A new wave of in-migration—mostly of government and service-industry workers—is underway now with the recent establishment of Calakmul and its nearby administrative center of Xpujil, the strengthening of infrastructure, and the development of tourism.

While population density remains low around the Reserve, population growth has a high potential ecological impact because the area has a semi-arid climate, poor soils, and hence a low carrying capacity. A methodology for monitoring population growth

(especially in-migration) and its environmental impacts was proposed to the World Wildlife Fund (Bilborrow et al., 1998), based on the administration of short questionnaires to samples of key informant households every 12 months in representative “sentinel” *ejidos*. The system aims to enable an inexpensive assessment of population change, the contribution of migration, and changes in land use and the environment, with implications for policy/ameliorative measures. If adapted to country/local community conditions, such a methodology could be used broadly around other protected areas in Mexico and elsewhere.

5. EFFECTS OF ENVIRONMENTAL CHANGE ON OUT-MIGRATION FROM RURAL AREAS

The effects of the environment on migration have received less attention than those of migrants on the environment; but these effects are now also attracting research interest (Kane, 1995; Myers, 1997). Today, interest in environmentally induced migration has focused on the issues of: (a) “environmental refugees”¹² (*international* migrants compelled by environmental conditions to seek temporary asylum in another, usually neighboring, country); (b) “displaced persons” (people forced to migrate within their country by environmental disasters or civil strife); and (c) other persons who migrate from rural areas within their own country *at least partly* for reasons of environmental deterioration. The latter, not referred to as environmental refugees except in the sensationalistic literature, account for the largest number but have received little attention, both because the international funding community has generally neglected *internal* migration in low-income countries and because the issue does not usually involve persons in desperate need of assistance.

Two factors may cause a deterioration of the environment that impels people to leave: (1) a major natural disaster (such as an earthquake, flood, volcanic eruption, or hurricane); or (2) a gradual, cumulative deterioration in the productivity or livability of a place. Most of the time, major natural disasters produce *internally* displaced persons, but sometimes—because of the magnitude of the disaster, the poverty of the country and its inability to provide assistance, and its closeness to an international border—people cross that border seeking refuge and are accepted as international refugees.

The Dominican Republic provides an interesting case study on the effects of *cumulative* processes of environmental degradation on internal migration (Zweifler, Gold, & Thomas, 1994). A time series of air

photographs was linked to survey data to examine the processes influencing land-use change in a hill community called Las Ayumas. Settled around 1900, Las Ayumas was a vibrant (albeit poor) frontier community until 1940, with rice, plantains, maize, beans, and other crops raised in food gardens known as *conucos*. But as early as the 1940s, settlers had cleared most of the original forest, and soil fertility began to decline. Farmers responded first by reducing the cultivation of nutrient-demanding crops such as peanuts, tobacco, and rice and switching to less demanding perennials such as pasture and coffee. The village also became more incorporated into the market economy, which spurred crop intensification. A boom in world coffee prices led to an expansion of the land area in coffee to 40 percent by 1959, at which time forests still covered 23 percent of the land area. But forest area fell to 7 percent by 1968 while the main local urban center, Santiago, grew rapidly, attracting young adult male labor from the village. This urban growth led to even greater dependence on land uses such as coffee and pasture that demand low labor inputs and can tolerate depleted soils. From 1968 to 1983, the area in coffee further expanded, reaching 63 percent of total land use while food gardens shrank. Cassava, bananas, and sweet potatoes, all of which tolerate degraded soils, also replaced the earlier basic foods grown in *conucos*. Thus, over the past 50 years, the decline in soil fertility has led to both out-migration as well as land-use changes in favor of crops with lower demands on labor and soil nutrients.

Similar processes of adaptation (including out-migration) have likely occurred and continue to occur widely in the developing world, although survey questionnaires rarely bring out the underlying, long-term processes of environmental degradation such as declining soil fertility. For example, in both Brazil and Ecuador, major waves of migrants to the Amazon originated in areas (from Northeast Brazil and the southern Ecuadorian Sierra province of Loja) characterized by not only periodic climatic droughts but also recurrent droughts that may be related to earlier deforestation, desiccation, declining availability of water, and nutrient-depleting agricultural practices in areas of origin. In Guatemala, the virtually complete deforestation of the Altiplano led to high soil erosion, which must have reduced soil fertility (Leonard, 1987). While fertilizer can restore nutrients to soils, the loss of soil itself cannot be compensated except over millennia. Since most farmers in developing countries cannot afford fertilizers, populations will tend to continue to migrate away from areas with depleted soil fertility.

Migration, Population Change, and the Rural Environment

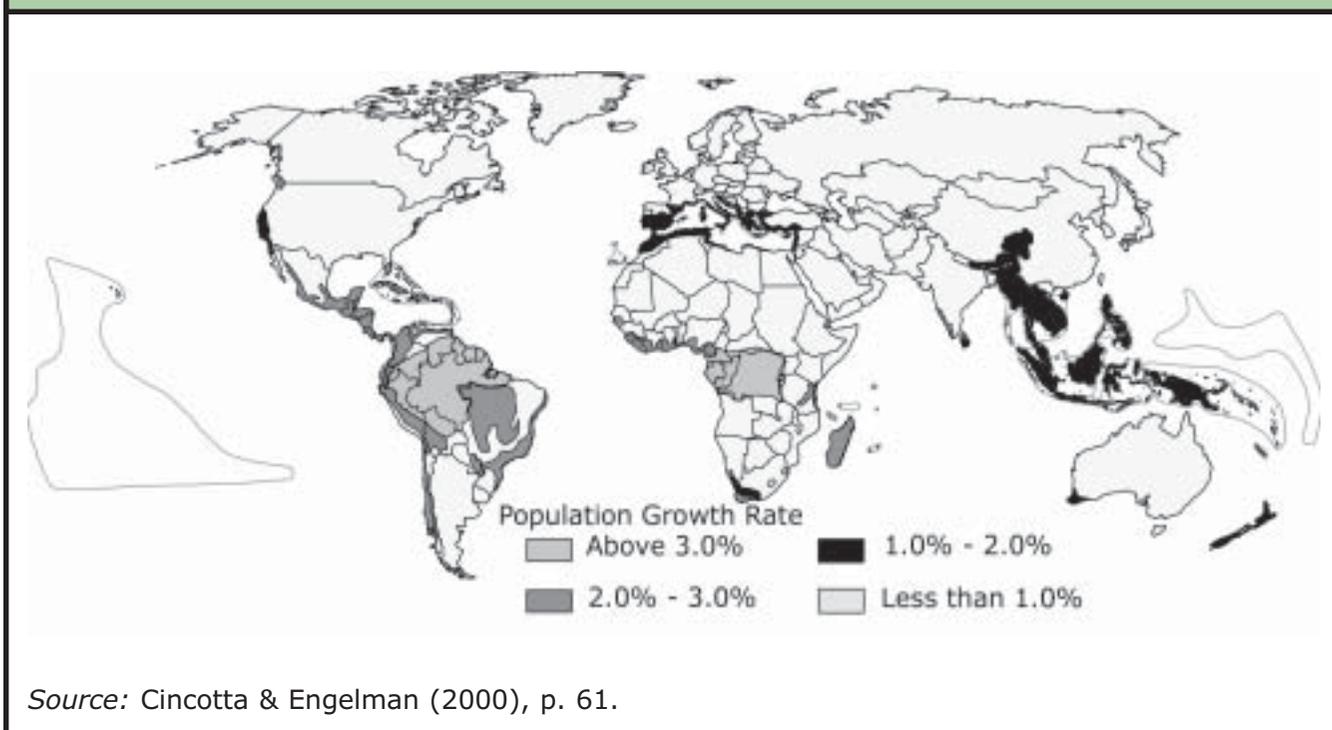
Although sudden environmental disasters or cumulative degradation reportedly play an important role in the internal displacement of an estimated current stock of 6.5 million displaced persons, the precise role of environmental factors is hard to establish, especially where political, civil, religious, or ethnic conflicts also intercede (Lonergan, 1998). Lonergan describes (see also Black, 1999) with acuity how many studies have greatly exaggerated both the numbers of persons affected and the purported role of environmental factors as “the root cause” of both international migration in general and of refugees and internally displaced persons in particular. (This exaggeration is perhaps driven by the need to promote the wider acceptance and use of the concept of “environmental refugees” as well as to stimulate funding). Some of these studies even report numbers higher than the *total* numbers of refugees and displaced persons. As Lonergan notes, while there is indeed growing interest in studying the specific role of environmental factors in generating both international and internal migration, little direct empirical evidence on this linkage exists.

The relevance of poverty and inequality in access to and use of resources as well as to out-migration decisions is well-known. Consequently, researchers must disentangle the relationships between the environment,

migration, and poverty—especially in environmental “hot spots,” those places with highly vulnerable ecosystems and growing human populations. This applies especially to the many countries that already have large numbers of internally displaced persons—including Afghanistan, Iran, Pakistan, Cambodia, Indonesia (of recent vintage), Angola, Rwanda, Burundi, Mozambique, Somalia, the Sudan, Democratic Republic of the Congo, Ethiopia, Eritrea, Guatemala, and Mexico. Vulnerable populations also coexist with severe rural poverty, policies of agricultural neglect, and declining soil fertility—dynamics which apply to even more low-income countries and regions within countries, and to most indigenous populations and many minority groups, (such as in the Amazon region and Southeast Asia). Lonergan (1998) concludes that “the key factor is that certain populations are becoming more vulnerable to environmental change because of other factors, primarily poverty and resource inequality...” (p. 11). Interactions of environmental degradation and poverty thus may have particular importance in inducing out-migration.

In general, despite the growing interest in the topic and, the increasing number of studies that deal with environmental impacts on migration decisions, the quality of research remains weak—surely weaker than that in the other direction, on the effects of migration

Figure 4. Population Growth in the 25 Global Biodiversity Hotspots and Major Tropical Wilderness Areas, 1995-2000



on the rural environment. Moreover, despite growing interest in the topic of “environmental refugees,” even fewer studies examine the linkages between environmental conditions and *international* migration than those that investigate environmental impacts on internal migration movements in developing countries.

6. SUMMARY AND POLICY OPTIONS

According to the latest UN projections, rural populations will continue to grow for several decades more in most of Africa and much of Asia, even as they decline in Latin America. In addition, internal migration movements—notably, rural-rural migration—are likely to continue to play prominent roles in population dynamics and environmental change in much of the developing world, including Latin America. These two factors ensure that rural population dynamics will continue to be a potentially important factor in environmental change.

The literature offers much more discussion of the effects of migration on the environment than the converse. It provides numerous examples in which the migration of farmers to the agricultural frontier has resulted in tropical deforestation or the desiccation of land in dryland areas. This growing area of scholarly research relates to the international community’s concern about tropical deforestation and its implications for global warming and biodiversity loss. The case studies also indicate the crucial roles of natural-resource endowments, local/community and national institutions and policy, and (in some cases) international markets and cultural factors in determining the manner and extent to which migration has caused environmental degradation (as well as economic success or failure for the mostly poor migrants themselves). Road building and expansion have played a major role in opening up vast areas for exploitation and despoliation in various Amazon Basin countries, Central America, Thailand, and elsewhere. Extractive enterprises such as lumber, mining, and petroleum—usually from foreign countries but with domestic government approval—have usually initiated this road building. Government policies to promote cattle ranching or the expansion of cash crops for export (usually by large landholders) have been key factors in Brazil, Honduras, Panama, the Philippines, Kenya, and other countries. And the lack of environmental policies or of their enforcement has played an important role everywhere.

Nevertheless, empirical research has barely touched upon how many factors at the household, local

community, and national levels work to induce either (a) out-migration from places of origin, or (b) environmental degradation in places of destination. Among the factors that theory suggests may be important to these two issues are: (a) *demographic factors at the household level* (e.g., family size or composition) and *community level* (such as population density, previous migration, and migration networks); (b) *socioeconomic factors at the household level* (such as education, employment experience, migration origin, land plot size, and quality of soil) and *community level* (e.g., presence of markets, location relative to major cities, international borders, transportation infrastructure and linkages, rules governing access to land and natural resources, availability of schools, health and family planning facilities, employment structure and opportunities, wage and income levels, availability of credit and technical assistance, and social mores and cultural practices and beliefs); and (c) *natural-resource endowments* (land availability, including forests and unowned or common property lands; quality of land; availability of water; topography; altitude and temperature; and risk of area to flooding, drought, or other natural disaster). However, only a few studies have quantitatively examined several of these factors together, and many have not yet been tested at all.

Most household and community factors listed are in turn influenced by national policies and institutions (regarding land tenure and distribution; security; credit; agricultural development programs and technical assistance; lumber and mining concessions; fiscal policy and subsidies; and export-import policies, including tariffs and quotas). Ultimately, local governments and institutions filter the effects of such policies in terms of their potential effects on household decision-making processes. It is a formidable task indeed to trace through and quantify these many complex and hierarchical linkages, but software has advanced faster than attempts at applying it—again, partly because of the lack of attention of research-funding agencies to migration. Perhaps this will change as it comes to be recognized that some of the most salient population-environment linkages occur via migration.

Despite the limitations of present research findings, policy decisions need to be made *now* by both governments and NGOs in developing countries and by international agencies. Existing studies do indicate numerous instances in which migration to the agricultural frontier plays a major role in tropical deforestation, the desiccation of landscapes, and land degradation. Given the extraordinary biodiversity of the



Migration, Population Change, and the Rural Environment

areas being settled and the importance of tropical forests for world climate patterns and reducing global warming, the international community should address the root causes of the migration that leads to deforestation *as well as* how to reduce this deforestation *in situ*, at the frontier. Dealing with these two issues involves a full range of interlinked population, development, and environmental policy considerations that go beyond the scope of this article and which will vary from country to country. Nevertheless, the theoretical approaches and case studies discussed above suggest some broad implications.

It is important to first distinguish those policies

neglect”). However, even if national policies are reformed to redirect resources from urban to rural areas, out-migration is still likely to occur in situations in which the origin environment is degraded and population density is high.

Government efforts to directly settle migrants—whether primarily to reduce population density and lack of land access in areas of origin (as in Indonesia) or to exploit untapped resources in destination areas (as in Brazil and elsewhere in Latin America)—have generally not been successful (Oberai, 1988). One reason for this lack of success is the nature of migration itself and the dominant role of networks. In both Indonesia and Brazil,

The international community should address the root causes of the migration that leads to deforestation *as well as* how to reduce this deforestation *in situ*, at the frontier.

relating to *origin* areas from those pertaining to the populations in areas of *destination*. If we are concerned about the effects of migration (e.g., extensification of agriculture) on the environment of destination areas, we must also address the factors that stimulate migrants to leave in the first place. Some policy measures that might reduce pressures to migrate from rural areas include improving access to: (a) agricultural land, (b) technical assistance, and (c) inputs (especially water—perhaps through irrigation—and fertilizer). Such measures facilitate land-use intensification and increase yields. Access to adequate land is likely the most important factor, but international funding agencies and political leaders in developing countries (given the vested interests of the latter in most cases) bend over backwards to avoid confronting the issue of extreme inequality in landholdings. Policymakers need to initiate *major* (not token or paper) land redistribution or at least land taxes to stimulate land use (for Guatemala, see Bilsborrow & Stupp, 1997); this step would at least generate employment. Many studies have shown that concentrated land distribution is directly linked to rural poverty, and poverty in turn to out-migration. Other pertinent policies include improving the provision of (a) socio-economic infrastructure; (b) transportation and communications linkages; and especially (c) economic production and employment opportunities in areas from which people are migrating (or improving them in alternative destinations).

These are tall orders, and go to the heart of development policies generally—which have been characterized by “urban bias” in developing countries (Lipton, 1977) (though a better term may be “rural

the number of sponsored migrants was soon overwhelmed by much larger numbers of spontaneous migrants,¹³ attracted by word-of-mouth via migrant networks as well as by the roads built to provide access for the sponsored migrants. The environmental consequences of the original directed-settlement policies thus became much more negative than expected. (Indeed, governments in countries with great inequality in landholdings and access as well as high rural poverty need not allocate substantial resources to recruiting initial settlers. Just providing access to land through roads will be sufficient to attract migrants.)

In regions of destination, countries need to develop policies to improve the livelihoods of migrants, who are mostly poor. But such policies should take into account the desirability of protecting areas of particular ecological value while at the same time encouraging land-use practices that are sustainable and appropriate for the climate and soils. Improving access to family planning in regions of destination is also critical, since high natural increase among migrant populations already settled in frontier areas is also adding substantially to demographic pressures on the environment.¹⁴ These frontier areas have been neglected by both government agencies and private-sector nongovernmental organizations. Policies to encourage less *extensive* (including clearing of pristine areas) and more *intensive* land-use practices are also desirable—both in places of origin and destination. In tropical-forest environments, these policies should include promotion of: (a) agro-forestry; (b) native species and nitrogen-fixing plants; and (c) credit (for intensification—not for cattle purchase or pasture expansion, which provides little employment and

requires large areas to be cleared). Programs to pay farmers for preserving forests on their plots—thus preserving the “environmental services” of the forests—have been tried with success in Costa Rica and Brazil and proposed in Ecuador and other countries.

In addition, road building and extension must be carefully monitored, with the recognition that providing road access is an *immediate* threat to ecosystems. Road extension policies should instead focus on rationalizing access to areas (a) already opened up or degraded, or (b) where biodiversity is limited. Such policies will require

more and better assessments of the ecological value of areas (and the desirability of protecting them) and of the soil quality of areas (and of their agricultural potential) *before* new roads are built, so that they can be directed into the latter areas.

In summary, since most migrants to the agricultural frontier are poor, the challenge is to find ways of combating rural poverty in areas of origin while at the same time promoting a more sustainable use of the rural environment in both areas of origin and areas of destination. **W**

AUTHOR’S NOTE

I am grateful to Geoff Dabelko and Gayl Ness for comments, and to David Carr and Laurie Leadbetter for bibliographic assistance.

NOTES

¹A striking pictorial-textual view of human migration processes in history is presented by Davis in a 1972 issue of *Scientific American*, subsequently reprinted (Davis, 1974).

²The latest UN projections prepared in 2000 are based upon trends in fertility, mortality, and international migration. These projections should never be considered forecasts; they are contingent on a continuation of recent past trends and incorporate assumptions about future paths of fertility and mortality. The most important of these assumptions is the level of fertility at the end of the projection period and the pace of decline towards that level for each country. See UN Population Division (2000).

³Trends over time are available in the data only for Korea and India. Korea underwent a striking transformation from a low-income economy to a middle-income economy in the period (1966-95), which was linked to its population redistribution: while prior to 1966, rural-urban, urban-urban, and rural-rural migration movements were all significant in Korea, by the 1990s most of the population was living in cities and urban-urban migration was dominant.

⁴The reliability of environmental measures has been subject to much debate. For example, with respect to deforestation, World Bank and FAO estimates of deforestation in Indonesia in the 1980s differed by a factor of three (see Bilborrow, 1992). A recent paper has questioned high FAO estimates of deforestation rates in seven countries of West Africa by pointing out that the “original” base year (1900 or 1950) estimates of forest cover were too high (Leach & Fairhead, 2000). The growing availability of satellite imagery promises to lead to much better estimates in the future, but substantial data processing and analysis is needed to convert satellite images to

reliable measures of cleared forests.

⁵Indeed, the search for wood has led to a virtual elimination of vegetation around human settlements in some areas of the world. This deforestation progresses in concentric circles that steadily widen with population growth and increase the time it takes people (usually women) to collect fuelwood. A classic example is around the water holes in the Sudan, which followed from a misconstrued World Bank policy of promoting shallow wells for water extraction, which led to mining of underground water aquifers (Bilborrow & DeLargy, 1991).

⁶The effects of roads on facilitating in-migration to fragile ecosystems have been documented in a number of studies. See Rudel (1983), Rudel & Richards (1990), Chomitz & Gray (1995), Brown & Pearce (1994), and case studies reviewed in Section 4.

⁷I am grateful to Malin Falkenmark for pointing this out some years ago.

⁸Repetto (1986) describes a six-fold increase in sedimentation in a West Java watershed since 1911 due mainly to the poor population moving up steeper mountain slopes to clear forests to create farms as population grew. The most severe erosion was found on subsistence upland holdings of under 0.4 ha.

⁹The concept of cumulative causation was proffered by Myrdal (1963) in his political economy classic.

¹⁰The *peasant household survival theory* views poor households as engaging in a wide range of behavior and allocating household members to diverse tasks to ensure survival in a precarious world. The theory sees household decision-making



Migration, Population Change, and the Rural Environment

as made by the household as a whole for the overall benefit of the household rather than for the benefit of individuals within it. The dynamic described by the theory has implications for both fertility and migration behavior. It favors large families, which permit more diversification; migration also becomes a mechanism for spreading a household's risk over space and across economic activities. In a composite example, a household may have one member working a small plot of land to provide basic food subsistence, while another member works elsewhere during part of the year as a seasonal migrant laborer, another may work in non-agricultural work, and yet another migrates away to live and work but sends remittances back to the household.

¹¹Myers (1997; 2000) has called this region one of the world's 11 ecological "hotspots."

¹²According to the 1951 Geneva Convention, refugees are persons outside their country of citizenship who are unwilling or unable to return to their country because of a "well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion."

¹³Bilsborrow (1992), based on World Bank and other sources, found spontaneous migrants to be at least double the number of sponsored migrants in the Indonesia transmigration program.

¹⁴Fertility levels of populations along the agricultural frontier are generally quite high. An important exception is Brazil, where total fertility levels on most of the Amazonian frontier are between three and four births per woman in her lifetime.

REFERENCES

- "11,000 species said to face extinction, with pace quickening." (2000, September 29). *The New York Times*, A5.
- Arguello, Omar (1981). "Estrategias de supervivencia: Un concepto en busca de su contenido" ("Survival strategies: A concept in search of its content"). *Demografía y Economía* 15(2), 190-203
- Bilsborrow, Richard E. (1987). "Population pressures and agricultural development in developing countries: A conceptual framework and recent evidence." *World Development* 15(2), 183-203.
- Bilsborrow, Richard E. (1992). *Rural poverty, migration and the environment in developing countries: Three case studies*. World Bank Policy Research Working Paper (WPS 1017). Background paper for the World Bank, *World Development Report, 1992: Development and the Environment*. Washington, DC: The World Bank.
- Bilsborrow, Richard E. & Carr, David. (2001). "Population, agricultural land use and the environment in developing countries." In David Lee & Christopher Barrett (Eds.), *Tradeoffs or synergies? Agricultural intensification, economic development and the environment* (pages 35-55). Wallingford, UK: CAB International.
- Bilsborrow, Richard E. & DeLargy, Pamela. (1991). "Land use, migration and natural resource deterioration: The experience of Guatemala and the Sudan." *Population Development Review* 16, 125-147.
- Bilsborrow, Richard E.; Ericson, Jenny; & Mass Rodriguez, R. (1998). "Sistema de monitoreo de poblacion para la Reserva de la Biosfera de Calakmul—Una propuesta" ("A system of population monitoring for the Calakmul Biosphere Reserve—A proposal"). Merida and Mexico, DF, Mexico: Pronatura de Yucatan and World Wildlife Fund.
- Bilsborrow, Richard E. & Geores, Martha E. (1992). *Rural population dynamics and agricultural development: Issues and consequences in Latin America*. Ithaca, NY: Cornell International Institute for Food, Agriculture and Development.
- Bilsborrow, Richard E.; Graeme, Hugo; Oberai, A.S.; & Zlotnik, Hania. (1997). *International migration statistics: Guidelines for improving data collection systems*. Geneva, Switzerland: International Labour Office.
- Bilsborrow, Richard E.; Oberai, A.S.; & Standing, Guy. (1984). *Migration surveys in low-income countries: Guidelines for survey and questionnaire design*. London and Sydney, Australia: International Labour Office.
- Bilsborrow, Richard E. & Stupp, Paul. (1997). "Population dynamics, land use change and deforestation in Guatemala." In Anne Pebley & Luis Rosero Bixby (Eds), *Population and development in the Isthmus of Central America* (pages 581-623). Santa Barbara, CA: RAND Corporation.
- Black, Richard. (1999). *Refugees, environment and development*. Essex, UK: Addison Wesley Longman.
- Boserup, Ester. (1965). *Population and technological change: A study of long-term trends*. Chicago: University of Chicago Press.
- Brown, Katrina & Pearce, David W. (Eds). (1994). *The causes of tropical deforestation*. London: University College of London Press.

Feature Articles

- Chomitz, Kenneth M. & Gray, David A. (1995). *Roads, lands, markets and deforestation: A spatial model of land use in Belize*. (Policy Research Working Paper 1444). Washington, DC: The World Bank.
- Cincotta, Richard & Engelman, Robert. (2000). *Nature's place: Human population and the future of biological diversity*. Washington, DC: Population Action International.
- Cleaver, K.M. & Schreiber, G.A. (1994). *Reversing the spiral: The population, agriculture and environment nexus in sub-Saharan Africa*. Washington, DC: World Bank.
- Collins, Jane (1986). "Smallholder settlement of tropical South America: The social causes of ecological destruction." *Human Organization* 45(1), 1-10.
- Conelly, W. Thomas (1994). "Population pressure, labor availability, and agricultural disintensification: The decline of farming on Rusinga Island, Kenya." *Human Ecology* 22(2), 145-170.
- Cowell, Adrian. (Producer and Director). (1993). *The decade of destruction*. [Film]. (Available from Bullfrog Films: <http://www.bullfrogfilms.com/catalog/dod.html>)
- Darkoh, M.B.K. (1982, April). "Population expansion and desertification in Tanzania." *Desertification Control* (6), 26-33
- Davis, Kingsley. (1963). "The theory of change and response in modern demographic history." *Population Index* 29(4), 345-366.
- Davis, Kingsley. (1974). "The migration of human populations." In *The Human Population*, 52-65. New York: W.H. Freeman.
- DeJong, Gordon & Gardner, Robert (Eds.) (1981). *Migration decision making: Multidisciplinary approaches to microlevel studies in developed and developing countries*. Oxford, UK: Pergamon Press.
- DeWalt, Billie. (1985). "Microcosmic and macrocosmic processes of agrarian change in Southern Honduras: The cattle are eating the forest." In B. DeWalt & P. Pelto (Eds.), *Micro and macro levels of analysis in anthropology: Issues in theory and research*. Boulder, Colorado: Westview Press.
- DeWalt, Billie & Stonich, Susan M. (1999). "Inequality, population and forest destruction in Honduras." In R. Bilsborrow & D. Hogan (Eds.), *Population and deforestation in the humid tropics*. Liege, Belgium: International Union for the Scientific Study of Population.
- Ericson, Jenny; Freudenberg, Mark; & Boege, E. (1999). "Population dynamics, migration, and the future of the Calakmul Biosphere Reserve." (Program on Population and Sustainable Development Occasional Paper No. 1). Washington, DC: American Association for the Advancement of Science.
- Falkenmark, Malin. (1994). "Water availability as carrying capacity determinant: A new factor in third world demography." In Basia Zaba & John Clarke (Eds.), *Environment and population change* (pages 170-195). Liege, Belgium: Derouaux Ordina.
- Findley, Sally E. (1987). "An interactive contextual model of migration in Ilocos Norte, the Philippines." *Demography* 24(2), 163-190.
- Food and Agriculture Organization of the United Nations (FAO). (1996). "Food requirements and population growth." (Technical Background Document No. 4, *World Food Summit*). Rome: FAO.
- FAO. (1997). *State of the world's forests*. Oxford, UK: Words and Publications.
- FAO. (2000a). "Population and the environment: A review of issues and concepts for population programmes." Part III: Population and deforestation. Rome: FAO. Unpublished paper.
- FAO (2000b). Statistical Databases: Land use. [On-line]. Available: <http://apps.fao.org/lim500/npgw-wrap.pl?LandUse&Domain=LUI&servlet=1>
- FAO. (2001). *The global forest resources assessment 2000: Summary report*. Rome: FAO, Committee on Forestry. [On-line]. Available: www.fao.org/forestry/fo/fra.
- Freudenberg, Mark, et al. (1999). "Report on national parks in Gabon." Washington, DC: World Wildlife Fund. Unpublished paper.
- Hardin, G. (1968, December 13). "The tragedy of the commons." *Science* 162, 1243-1248.
- Harrison, Jeremy & Sheppard, David. (1997). *1997 United Nations list of protected areas*. UNEP World Conservation Monitoring Centre and the IUCN World Commission on Protected Areas. [On-line]. Available: http://www.unep-wcmc.org/protected_areas/data/un_econtents.htm
- Hecht, Susanna. (1985). "Environment, development, and politics: Capital accumulation and the livestock sector in eastern Amazonia." *World Development* 13(6), 663-684.
- Hecht, Susanna & Cockburn, Alexander. (1990). *The fate of the forest*. New York: Harper Collins.

Migration, Population Change, and the Rural Environment

- Heckandon, M. Stanley & McKay, A. (Eds.) (1984). *Colonización y destrucción de bosques en Panama: Ensayos sobre un grave problema ecológico* ("Colonization and destruction of forests in Panama: Essays on a serious ecological problem"). Panama: Asociación Panameña de Antropología.
- Henriques, M.H. (1983). "The colonization experience in Brazil." In A. Oberai (Ed.), *Land settlement policies and population redistribution in developing countries* (pages 316-354). New York and London: Praeger.
- Humphries, Sally. (1998). "Milk cows, migrants, and land markets: Unraveling the complexities of forest-to-pasture conversion in Northern Honduras." *Economic Development and Cultural Change* 47(1), 95-124.
- Ibrahim, Fouad. (1987). "Ecology and land use changes in the semiarid zone of the Sudan." In Peter Little & Michael Horowitz (Eds.), *Lands at risk in the third world* (pages 213-229). Boulder, CO: Westview Press.
- Joly, L.G. (1989). "The conversion of rain forests to pastures in Panama." In D. Schumann & William Partridge (Eds.), *The human ecology of tropical land settlement in Latin America* (pages 89-110). Boulder, CO: Westview Press.
- Kane, Hal. (1995). *The hour of departure: Forces that create refugees and migrants*. (Worldwatch Paper 125). Washington, DC: Worldwatch Institute.
- Leach, R. & Fairhead, J. (2000). "Challenging neo-Malthusian deforestation analyses in West Africa's dynamic forest landscapes." *Population and Development Review* 26(1), 17-41.
- Lee, Everett. (1966). "A theory on migration." *Demography* 3(1), 47-57.
- Leonard, H. Jeffrey. (1987). *Natural resources and economic development in Central America: A regional environmental profile*. Brunswick, NJ: Transaction Books.
- Leonard, H. Jeffery; Kallab, Valeriana; & Feinberg, Richard E. (1989). *Environment and the poor: Development strategies for a common agenda*. New Brunswick, NJ: Transaction Books.
- Lipton, Michael. (1977). *Why poor people stay poor: A study of urban bias in world development*. London: Temple Smith.
- Little, Peter. (1987). "Land use conflicts in the agricultural/pastoral borderlands: The case of Kenya." In Peter Little & Michael Horowitz (Eds.), *Lands at risk in the third world* (pages 191-212). Boulder, CO: Westview Press.
- Loh, Jonathan. (Ed.) (1998). *The living report 1998*. Gland, Switzerland: World Wild Fund for Nature. Reprinted in Gardner-Outlaw, Tom & Engelman, Robert (1999). *Forest futures: Population, consumption, and wood resources* (page 26). Washington, DC: Population Action International.
- Loneragan, Steve. (1998). "The role of environmental degradation in population displacement." *Environmental Change and Security Project Report 4*, 5-15.
- Malthus, T.R. (1960). *On population (First essay on population, 1798, and second essay on population, 1803)*. New York: Modern Library/Random House.
- Massey, Douglas. (1990). "Social structure, household strategies, and the cumulative causation of migration." *Population Index* 56(1), 3-26.
- Mincer, Jacob. (1978). "Family migration decisions." *Journal of Political Economy* 86, 749-73.
- Murphy, Laura; Bilsborrow, Richard; & Pichon, Francisco. (1997). "Poverty and prosperity among settlers in the Ecuadorian Amazon rainforest." *Journal of Development Studies* 34(2), 335-365.
- Myers, Norman. (1997). "Environmental refugees." *Population and Environment* 19(2), 167-182.
- Myers, Norman; Mittermeier RA; Mittermeier CG; da Fonseca, GAB; Kent, J. (2000, 24 February). "Biodiversity hotspots for conservation priorities." *Nature* 403, 853-858.
- Myrdal, Gunnar. (1963). *The political element in the development of economic theory*. St. Leonards, NSW, Australia: Allen and Unwin.
- Oberai, A.S. (Ed.) (1988). *Land settlement policies and population redistribution in developing countries: Achievements, problems, and prospects*. New York, NY: Praeger.
- Oldeman, L.R.; van Engelen, V.; & Pulles, J. (1990). "The extent of human-induced soil degradation." In L.R. Oldeman, R. Hakkeling, & W. Sombroek (Eds.), *World map of the status of human-induced soil erosion: An explanatory note*. Wageningen, Netherlands: International Soil Reference and Information Centre.
- Ozorio de Almeida, Anna Luiza. (1992). *The colonization of the Amazon*. Austin: University of Texas Press.
- Pichón, Francisco. (1997). "Colonist land allocation decisions, land use and deforestation in the Ecuadorian Amazon frontier." *Economic Development and Cultural Change* 45(4), 707-744.
- Pichón, Francisco & Bilsborrow, Richard E. (1999). "Land-use systems, deforestation, and demographic factors in the

Feature Articles

- humid tropics: Farm-level evidence from Ecuador." In Richard Bilborrow and D. Hogan (Eds.), *Population and deforestation in the humid tropics* (pages 175-207). Liege, Belgium: International Union for the Scientific Study of Population.
- Postel, Sandra. (1997). *Dividing the waters: Food security, ecosystem health, and the new politics of scarcity*. Worldwatch Paper 132. Washington, DC: Worldwatch Institute.
- Preston, David. (1998). "Post-peasant capitalist grazers: The 21st century in southern Bolivia." *Mountain Research and Development* 18(2), 151-158.
- Repetto, Robert. (1986). "Soil loss and population pressure on Java." *Ambio* 15(1), 14-18.
- Rudel, T.K. (1983). "Roads, speculators, and colonization in the Ecuadorian Amazon." *Human Ecology* 11(4), 385-403.
- Rudel, T.K. & Richards, S. (1990). "Urbanization, roads, and rural population change in the Ecuadorian Andes." *Studies in comparative international development* 25(3), 73-89.
- Sader, S.A.; Reining, C.; Sever, T.; & Soza, C. (1997). "Human migration and agricultural expansion: A threat to the Maya tropical forests." *Journal of Forestry* 95(12), 27-32.
- Schelhas, John. (1996). "Land use choice and change: Intensification and diversification in the lowland tropics of Costa Rica." *Human Organization* 15(3), 298-306.
- Schmink, Marianne & Wood, Charles. (1993). *Contested frontiers*. New York: Columbia University Press.
- Sessay, Richard & Mohamed, F. (1997). "Forced migration, environmental change, and wood fuel issues in the Senegal River Valley." *Environmental Conservation* 24(3), 251-260.
- Shaw, R. Paul. (1989). "Rapid population growth and environmental degradation: Ultimate versus proximate factors." *Environmental Conservation* 16(3), 199-208.
- Sjaastad, Larry. (1962). "The costs and returns of human migration." *Journal of Political Economy* 70(5), 80-93.
- Stonich, Susan M. (1990). "The dynamics of social processes and environmental destruction: A Central American case study." *Population and Development Review* 15(2), 269-296.
- United Nations Population Division. (2000). *World urbanization prospects: The 1999 Revision*. New York: United Nations.
- Walker, Robert; Moran, Emilio; & Anselin L. (2000). "Deforestation and cattle ranching in the Brazilian Amazon: External capital and household processes." *World Development* 28(4), 683-699.
- Wolpert, J. (1965). "Behavioral aspects of the decision to migrate." *Papers and Proceedings of the Regional Science Association* 15, 159-169.
- Wood, Charles H. (1982). "Equilibrium and historical-structural perspectives on migration." *International Migration Review* 16(2), 298-319.
- Wood, Charles H.; Skole, David; Perz, Stephen; & Caetano, A. (1996, May). "Population and deforestation in the Brazilian Amazon." Paper presented at, Annual Meeting of Population Association of America, New Orleans: the Author.
- World Bank. (1991). *Forestry*. (Sector report). Washington, DC: The World Bank.
- Zweifler, M.O.; Gold, M.; & Thomas, R. (1994). "Land-use evolution in hill regions of the Dominican Republic." *Professional Geographer* 46(1), 39-53.



SECURITY AND ECOLOGY IN THE AGE OF GLOBALIZATION

By **Simon Dalby**

Abstract

The environment has emerged as a major theme in the post-Cold War discussion of human security. There has been a considerable amount of detailed empirical work on the relationship between environmental change and likely conflicts. This article argues that, while the interconnections between the environment and conflict are many and complex, the likelihood of large-scale warfare over renewable resources is small. Nonetheless, environmental difficulties do render many people insecure. A parallel conceptual discussion suggests that the empirical work of environmental security research needs to be placed in the larger context of global economic changes and large-scale urbanization of a growing humanity. This urban population increasingly draws resources from rural areas, disrupting indigenous populations. All these dynamics are also complicated by the rapidly increasing scale of human activities, which has induced a level of material- and energy-flow through the global economy that is a new and substantial ecological factor in the biosphere. Given the scale of these processes, societies should carefully consider these interconnections and reduce their total resource throughput to improve environmental security and develop sustainable modes of living for the future.

Many situations with a vaguely environmental designation now apparently endanger modern modes of life in the North (as the affluent industrialized parts of the world are now often called). Growing population pressures and environmental crises in the South—the poor and underdeveloped parts of the planet—have long concerned policymakers and academics. Many states have developed security and intelligence agencies, environmental ministries, and international treaty obligations that address population and environmental dynamics. Weather forecasts for many areas now include routine updates of ozone-depletion levels and the variable daily dangers of exposure to ultraviolet radiation. Some discussions address pollution as a technical matter and such phenomena as ozone holes in terms of risks or hazards rather than as security concerns. But since these matters are now also part of international political discourse and policy initiatives, environment cannot be separated from matters of what is now called “global” security.

Environmental change and resource shortages are integral to these discussions, which have also taken place against a backdrop of important questions within

the North-South political dialogue. In 1992, the largest summit of world leaders took place in Rio de Janeiro to deal with issues of environment and development. Although the level of high political attention to these issues does fluctuate, the global environment has clearly become a matter of continuing international political concern. Some alarmist accounts have even suggested that future security threats to the affluent North will come about because environmental degradation will lead to starvation and the collapse of societies in the South, leading in turn to a massive migration of “environmental refugees.”

In 1994, Robert Kaplan garnered much attention in Washington and elsewhere with his alarming predictions of a “coming anarchy” premised on the assumption of resource shortages (Kaplan, 1994; see also Kaplan, 2000). Kaplan suggested that these resource shortages would occur in part because global population would grow faster than the ability of agriculture to support it (a traditional Malthusian argument). But Kaplan’s argument also fits into larger recent arguments about how resource shortages in general cause conflict—the so-called “neo-Malthusian” arguments that underlie a substantial part

Simon Dalby is a professor of geography and political economy at Carleton University in Ottawa, where he teaches geopolitics and environment. He is co-editor of The Geopolitics Reader and Rethinking Geopolitics (both published by Routledge in 1998) and the author of Environmental Security (University of Minnesota Press, 2002).

of environmental-security literature.

The 1990s spawned two major interconnected discussions among Northern scholars on these themes. The first discussion centered on security—its definition and how it might be redefined after the Cold War. This debate included dialogue on which other threats (apart from those related to warfare) ought to be included in comprehensive definitions and policies; it also examined who and what was being secured in the process (Buzan, Wæver, & deWilde, 1998). The redefinition of security has prominently featured environmental considerations (Deudney & Matthew, 1999; Lowi & Shaw, 2000; Barnett, 2001). Second, a more empirical discussion looked at the narrower question of whether environmental change actually threatened (or could plausibly threaten) security for states in general and the North in particular (Diehl & Gleditsch, 2001). By the end of the 1990s, as the lengthy bibliographies in previous editions of *ECSP Report* attest, the results of this substantial body of empirical research work were appearing in print.

Some researchers argue that the environment-security debate has evolved in three stages (Rønnfeldt, 1997). First came the initial conceptual work that called for a broader understanding of security than that which dominated Cold War discourses. Second, theorists attempted to sketch out how to specify links between environment and insecurity in order to establish a practical research agenda for scholarly analysis. The third stage has featured a search for empirical verification or refutation of the initial postulates. While studies are still in progress, enough detailed field work had been done by 2000 to give at least a broad outline of the likely relationships between environment and security and to dismiss definitively much of the early alarmism about international conflict in the form of “ecowars.”

It is now time to feed these conclusions back into the larger conceptual discussion that first set the field's empirical research in motion. With the wisdom of a decade's research to draw on, environmental security discussions can now move to a fourth stage of synthesis and reconceptualization (Dalby, 2002). In addition to this fourth stage, scholars and policymakers now have to consider current research on biospheric systems and what is now called global change science in their effort to think clearly about both environment and security. Considering matters in these terms adds some

crucial dimensions that the 1990s alarmist accounts of neo-Malthusian scarcities left out. Policymakers need to carefully consider both the context of security discussions as well as what their policymaking aims to secure; neither is as obvious as is frequently assumed. In particular, taking ecology seriously requires questioning more than a few conventional assumptions.

Environment and Conflict

With these caveats in mind, the development of environmental conflict research through the 1990s can be briefly summarized as six interconnected approaches. First, the Toronto school—as the research groups collectively lead by the University of Toronto's Thomas Homer-Dixon came to be called—emphasizes the construction of scarcity by complex social and environmental processes that in some circumstances also lead to political instability (Homer-Dixon & Blitt, 1998; Homer-Dixon, 1999). The Toronto school argues that simple scarcity as a result of environmental change and population growth is only part of a much more complex situation in which social factors intersect with natural phenomena. These researchers emphasize situations in which elites extend their control over productive resources (in a process called “resource capture”) and displace peasants and subsistence farmers (“ecological marginalization”). Resource capture and ecological marginalization, argues the Toronto school, may lead to conflict (as people resist displacement) and environmental damage (as these displaced people are forced to migrate to cities or to eke out their livings by clearing marginal land). In some cases, this process may be connected to state failure and political violence, especially in those developing states in which insurgencies feed on grievances related to injustice and inequity.

Identifying where social breakdown and violence occur depends on understanding states' ability to respond to such processes. In Homer-Dixon's analyses, declining state capacity relates in at least four ways to increasing environmental scarcity. First, environmental scarcity increases financial demands on the state for infrastructure. Second, the state faces demands by elites for financial assistance or legal changes for their direct benefit. Third, this predatory elite behavior may lead to defensive reactions by weaker groups—whether in the form of opposition to legal changes that alter

Editor's Note: This article is a substantially revised version of a piece that will appear in fall 2002 in *ISUMA: Canadian Journal of Policy Research*.



Security and Ecology in the Age of Globalization

property ownership arrangements or as direct protests against infrastructure “developments” that dispossess the poor. Finally, the general reduction in economic activity caused by the combination of these dynamics can reduce state revenue and fiscal flexibility, further aggravating difficulties. None of the Toronto research suggests that interstate war is likely as a direct consequence of environmental scarcity, although the indirect consequences of social friction caused by large-scale migration—in part across national boundaries—has in some cases caused international

elites may aggravate traditional conflicts over land and other resources, especially when these resources are in short supply. Kahl’s reading reinforces the ENCOP point that at least a substantial part of rural violence may have its roots in urban politics. A foreign-aid policy of building state capacity in such circumstances may only worsen these situations.

In the late 1990s, NATO researchers took on the relationships between environment and security by drawing on the findings of both the Toronto group and ENCOP and adding insights from contemporary

From Bougainville to Burma, marginal peoples suffer from dispossession, violence, and the expropriation of resources to feed international markets.

tensions. Frequent alarmist newspaper headlines notwithstanding, water wars are also unlikely; the circumstances that would motivate such wars are rare (Lonergan, 2001).

The second approach, embodied in the Environment and Conflicts Project (ENCOP) led by Günther Baechler, links environmental concerns more directly to development and social change in the South (Baechler, 1998). ENCOP examined many different case studies and concluded that, while conflict and environmental change are related in many ways, conflict is more likely to be linked directly to the disruptions of modernity. In summarizing and clarifying the overall ENCOP model, Baechler (1999) stresses that violence was likely to occur in more remote areas, mountain locations, and grasslands—places where environmental stresses coincide with political tensions and unjust access to resources. For ENCOP, the concept of “environmental discrimination” (which emphasizes situations in which politics creates inequitable access to natural resources) connects directly to what Baechler calls a condition of “maldevelopment.”

ENCOP links maldevelopment to a society’s transition from subsistence to market economy. In many cases, ENCOP argues, violence occurs as people resist expropriation of resources and the environmental damage caused by development projects. For example, in Bougainville, Papua New Guinea, a long standing and violent insurgency has been directly linked to opposition to a giant mine (Böge, 1999). Colin Kahl’s (1998) research tackles these matters in a slightly different but loosely parallel way. Drawing on a detailed analysis of Kenya, Kahl shows how threatened urban

German work on climate change and related matters (Carius & Lietzmann, 1999, Lietzmann & Vest, 1999). In this third environmental security approach, these NATO researchers suggest that environmental matters can be understood as a complex series of syndromes, some of which might cause conflict. The comprehensiveness of these syndromes clearly suggests that the notion of environment as a causal factor in conflict is simply too broad to serve as a useful analytical category. But the NATO work also suggests that the environment is an important factor in contemporary social change. NATO has also sponsored high-profile workshops to encourage dialogues on these themes with Eastern Europe and the post-Soviet states; the proceedings suggest numerous possible ways of thinking about these issues (Lonergan, 1999; Petzold-Bradley et al., 2001).

A fourth school of thinking, linked to the International Peace Research Institute, Oslo (PRIO), has turned the environmental scarcity-conflict argument on its head by suggesting that violence over resources in the South occurs in the struggle to control *abundant* resources (de Soysa, 2000). This research incorporates some economists’ discussions about development difficulties in resource-rich areas; it suggests that many wars concern control over revenue streams from resources that have substantial market value. (Examples include timber in Burma, diamonds in Sierra Leone, or oil fields in the Middle East.) The PRIO research directly links violence in some cases to the core-periphery disruptions of native peoples noted by ENCOP. A number of recent studies have reinforced the PRIO argument by tracing the violence surrounding resources directly to larger patterns of

global political economy. These studies sometimes sharply criticize the “neo-Malthusian” tendencies of the Toronto school, which focus on shortages of resources that are supposedly both common and linked to conflict (Peluso & Watts, 2001).

Conflict over abundant resources frequently causes environmental disputes, but environmental change is not a simple cause of conflict in these cases. However, resources have become part of the “new wars”¹ in the South (Kaldor, 1999). The control of resource exports is now part of a complicated political economy of violence that links identity struggles to (a) international business connections that supply weapons to the protagonists, and (b) the absence of effective state structures. These patterns are frequently complex and not simply matters of greed-driven conflict. Both the international economy as well as political connections to diasporic communities (such as the Tamils in Toronto or the Irish in New York) are factors in these patterns of violence and the role of international organizations in quelling it (Le Billon, 2001).

Michael Klare (2001) has subsequently linked these concerns over resource control and conflict back to older arguments about “resource wars,” in particular to discussions of conflict over global oil supplies. Klare’s argument (the fifth approach) reprises classic geopolitics and reproduces neo-Malthusian narratives of forthcoming stresses and strains in the international system due to decreasing supplies of petroleum. He also suggests that water shortages might create similar dynamics, and he revisits classic concerns about Egypt, Sudan, and Ethiopia fighting over the Nile River waters upon which Egypt’s agriculture and industry depend. Klare’s analysis reiterates the findings of most environment and security literature, suggesting a greater likelihood of violence and conflict related to environment and resources in the South rather than in the affluent North. But as with most of his predecessors, he fails to question the Northern resource-consumption patterns that lead to these difficulties. Klare also fails to seriously consider the possible climate disruptions in the medium-term future if unrestricted carbon-fuel consumption continues.

In this vein, a sixth approach is relevant—an approach summarized in the term Global Environmental Change and Human Security (GECHS).² These studies examine vulnerabilities of populations to changing environments—specifically, disruptions such as those caused by climate change. GECHS-style research also addresses the welfare and

survival of people rather than states (Matthew, 2001). This focus overlaps in part with ENCO’s research into why the incidence of violence correlates highly with those geographic regions that earn the lowest scores on the UN human-development indices. GECHS research emphasizes how important it is to understand the complexity of both environmental and social processes in specific contexts. It also stresses the obvious point that the rural poor frequently suffer the most vulnerability to both environmental change and the disruptions caused by political violence (Renner, 1996). Human insecurity is very context-dependent, and research and policy alike have to recognize this complexity.

Contexts of Human Security

Empirical research into environment and conflict has generated considerable insight into the practices of violence; it has also made very clear that research results are in part determined by how questions are formulated. But these advances must then be connected back into the larger debate about security that has been in play in the North since the end of the Cold War—a debate that has explored environmental themes as part of an emphasis on the security of people, not states. The highest profile articulation of “human security” comes from the United Nations Development Program (UNDP) in its *Human Development Report 1994* (UNDP, 1994). These discussions have dusted off and reintegrated themes of poverty and misery that had been important in the early days of the United Nations but which had been swept aside during the Cold War.

The *Human Development Report 1994* includes environmental factors as one of its human security themes. In its discussion of global threats to human security (dangers caused by the actions of millions of people rather than the deliberate aggression of specific states), the *Report’s* use of “environment” generally refers to threats such as transboundary air pollution, CFCs and ozone depletion, greenhouse gases and climate changes, biological-diversity reduction, coastal marine pollution, and global fish-catch reductions. The *Report* clearly suggests that environmental threats to human security are best dealt with by preventive and anticipatory action rather than crisis intervention.

But the *Report’s* assumption of a universal humanity that faces common challenges in a world of huge inequities and political violence has limitations as well as consequences for discussions of sustainable development. The greatest enthusiasm for global



Security and Ecology in the Age of Globalization

approaches to security comes from North America and European states, which are least likely to face direct military confrontation (Stares, 1998). Is the locus of both this enthusiasm and the environmental security debates noted above politically insignificant (Barnett, 2000)? Current consumption patterns threaten the South because of (a) the North's extensive consumption of resources, and (b) the ecological and social disruptions caused in many rural areas of the South by that resource extraction (Redclift, 1996). While this pattern is not the sole cause of Southern insecurity, it plays an important role overlooked in the neo-Malthusian specifications of conflict caused by resource shortages. If the North merely seeks to maintain its overall pattern of resource consumption

within limits that will not disrupt Northern prosperity, merely reformulating the concept of human security will continue to compromise the real security of Southern populations.

The case of greenhouse gases and multilateral environmental agreements (such as the Kyoto Protocol) makes clear the link between consumption and security (Adams, 2000). Intensive resource use (particularly of fossil fuels) has powered the development of the industrialized world. Not surprisingly, states that have begun to develop more recently balk at forgoing such heavy resource use. U.S. negotiating positions have also frequently been hampered by the common U.S. stand that all states must agree on international arrangements before the

Logging Camp in Kalimantan, Indonesia



"If the North merely seeks to maintain its overall pattern of resource consumption within limits that will not disrupt Northern prosperity, merely reformulating the concept of human security will continue to compromise the real security of Southern populations."

Photo: Chris Stowers/Panos Pictures

United States can support a regime for greenhouse gas limitations. Widely varying national economic situations, however, have made establishing common standards for such an agreement difficult. Meanwhile, the overall focus on emissions limits and regulations continues to foreclose opportunities for technological innovation by focusing once again on end-of-the-pipe thinking rather than on ways to rebuild economies that reduce resource throughputs.

The geographic messiness of the global economy—which is marked by resource extraction from the South and export to the North (Grove, 1997)—complicates formulating a treaty on greenhouse gas emissions. Does gas flared off a well in Nigeria count against Nigeria when Europe uses the oil to fuel its cars? Does a Russian forest that absorbs carbon dioxide count as a national or a global carbon “sink”? In addition, the establishment of “emissions” and “sinks” as tradable items further complicates this geography. Rich countries can buy sinks in poor countries to offset their carbon dioxide production—allowing the wealthy to forgo reductions of greenhouse emissions. While such mechanisms may be of use for some economic policies, they might also allow policymakers to avoid the crucial issue of reducing total carbon dioxide levels in the atmosphere.

One can also easily envision scenarios in which governments implement international agreements concerning sinks with disregard for traditional access to forests or the use of forests for survival by the poor and marginal—precisely those who are most insecure. From Bougainville (Böge, 1999) to Burma (Talbot & Brown, 1998), marginal peoples suffer from dispossession, violence, and the expropriation of resources to feed international markets. Elsewhere, the poor are forced off subsistence plots to make way for expanding commercial agriculture or large infrastructure projects such as highways and dams. Arguments about intellectual property rights, control over ancestral territories, traditional seed varieties, and medicinal plants are all part of the commercial expansion that lies at the heart of most development projects (Miller, 2001). In addition, as noted above, displaced people become migrants, often landing in burgeoning Southern cities where they, too, become part of the urban economy that the expanding commercial agriculture sector must feed. In the process, these growing numbers of urban consumers make ever-larger demands on the surrounding countryside to supply the food and other commodities they use.

In short, there is a large-scale geographic dimension to what Karl Polanyi (1957) called “the great transformation” to commercial society. The 20th century was undoubtedly the century of urbanization, powered by rural-urban migration; and this crucial transformation (with all its environmental and social consequences) frequently gets lost, both in many economic specifications of state “development” and in discussions of scarcity-induced violence.

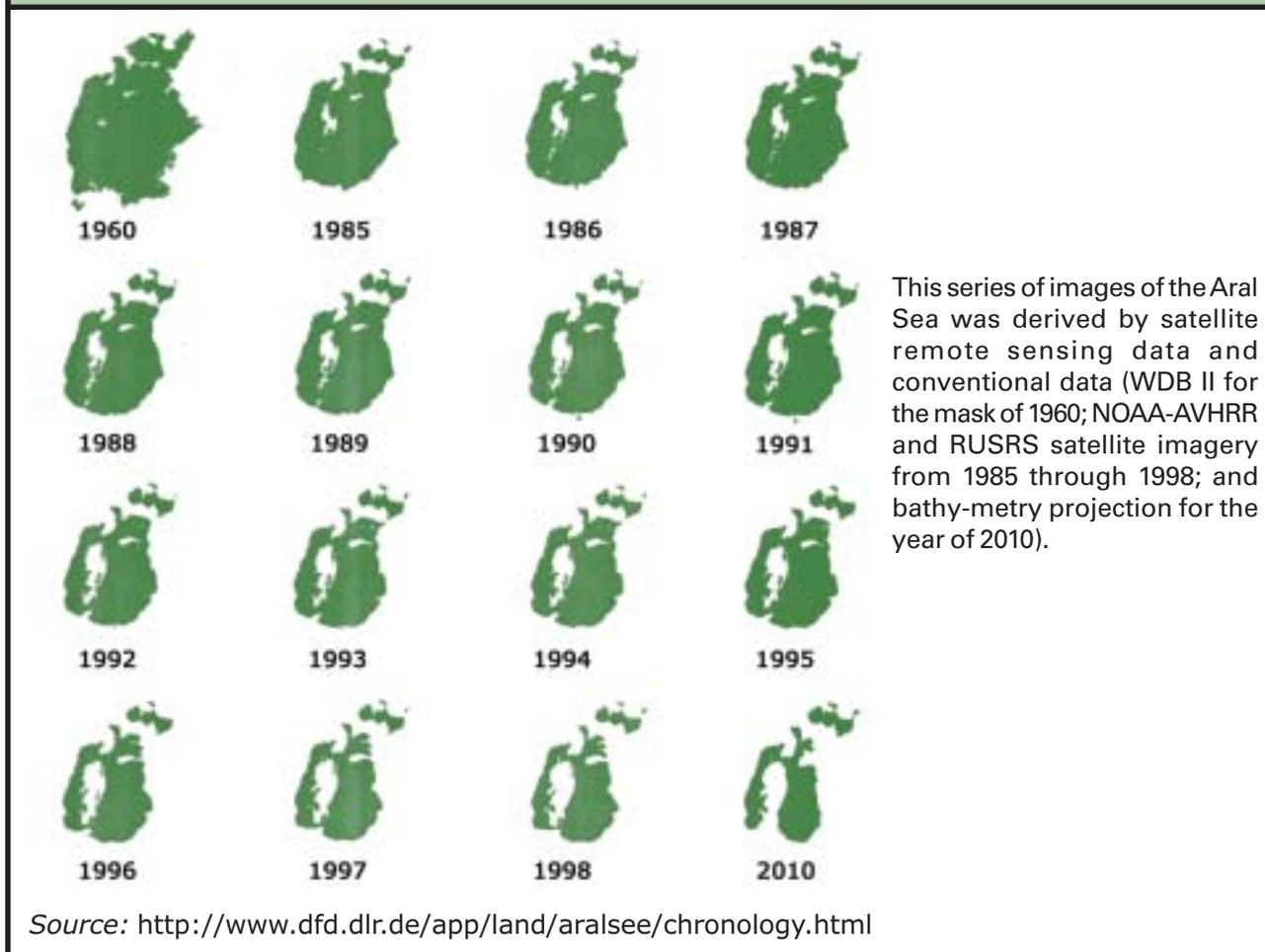
“Environment” and “Ecology”

But the category of “environment” itself is not always useful in these discussions. While environment is at once an unavoidable general category of great importance, it also needs to be broken down into sub-categories if useful, practical research is to be carried out. Indeed, “environment” (traditionally understood as the backdrop for human activity) is no longer very helpful in formulating policy options within the biosphere. On the other hand, the global economy’s various environmental disruptions are as a whole the most worrisome dynamic for human security in many places. Such nuances are of fundamental importance for analysis and policymaking.

For the question of how environment and conflict interact, even a narrower focus on renewable resources or pollution does not produce clearly defined analytical categories. River-water supplies, soil-moisture levels, or deforestation rates are much more useful indicators of specific factors that might influence conflict or its absence. Nonetheless, health issues connected to pollution clearly do matter politically, as elites in the former Soviet bloc and elsewhere have discovered from the 1980s on. But the case of the Aral Sea—whose disappearance (an indirect result of industrial agriculture) is leading to a loss of livelihood and significant related health impacts—does not confirm the simple behaviorist assumption that such assaults on health or well-being will cause people to flee or fight. (See Figure 1 for a chronology of Aral Sea dessication.) Poverty, state restrictions on migration, and numerous social and cultural factors complicate matters.

Combining such diverse phenomena as climate change, toxic industrial pollution, soil erosion, deforestation, aquifer depletion, and shortages of subsistence farmland into the category of “environment” is also frequently not helpful. These phenomena relate to a variety of human societies in such numerous ways that generalized concepts can rarely make useful contributions to their analysis.

Figure 1. Chronology of the Dessication of the Aral Sea



Researchers interested in conflict have divided environmental themes into many more specific targets of investigation, such as water, forests, and other resources. Researchers have also started to look at individual resources in particular places. In addition, there is no consensus definition of environmental insecurity (Barnett & Dovers, 2001).

The assumption that the environment is separate from both humanity and economic systems lies at the heart of the policy difficulties facing sustainable development and security thinking. The idea of environment as an independent variable—something that is beyond human control and that stresses human societies in ways that require a policy response—presents a problem for the environmental dimension of human security. As the burgeoning environmental history literature has now made abundantly clear, the sheer scale of human activity renders this assumption inadequate for both scholarship and policy formulation (McNeill, 2000). Instead, researchers and

decision-makers should focus more specifically on *ecology*.

Ecology studies the flows of energy and food through complex systems made up of living things, air, water, and soil. Human activity is now a major part of these flows; and the disruptive impacts of humanity are not simply a matter of climate change but rather a matter of numerous and simultaneous changes to many natural systems. We are literally remaking the biosphere—indirectly by changing the air that we breathe, and directly by disrupting forests and grasslands through mining, agriculture, deforestation, and urbanization. (See Figure 2 for a sense of how much land has been transformed globally by human activity.) The scale of this transformation requires us to understand humanity as a major force remaking the planetary ecosystem (IGBP, 2001). Environment is no longer simply the backdrop to human activities: it is increasingly the *human-made context* for our lives. Policy that usefully addresses both sustainability and

Feature Articles

security has to start from these scientific insights—even if our conventional categories for managing human societies do not easily fit with these new understandings.

Ecology should not be restricted to a matter of environmental politics among nation-states (Litfin, 1998). Contemporary research shows that the flows of resources and materials that support the global economy are causing most environmental change. From shrimp to oil to timber and coffee, Northern consumption is supplied by resources from all over the world with unavoidable environmental consequences (Redclift, 1996). These consequences, however, are often obscured from Northern consumers who buy the commodities that the global economy

apparently miraculously and mysteriously supplies.

A Conceptual Synthesis?

The preceding discussion outlines the global interconnections that environmental security research now struggles to incorporate into both academic analysis and policy advice. Putting all of this discussion's elements into one simple overview is a conceptually risky business. But the following sketch—and it is no more than a sketch—suggests how all of these pieces can form a fairly simple scheme that allows us to clarify the dilemmas of human security and to factor the appropriate contexts into policy advice.³

First, we must recognize that rich and powerful

Uzbekistan: Muntaryk, Aral Sea



The tideline, which once reached Muynak, has now receded over 100 kilometers because the Aral's sources were pumped dry for cotton irrigation: "Environment is no longer simply the backdrop to human activities: it is increasingly the human-made context for our lives. Policy that usefully addresses both sustainability and security has to start from these scientific insights."

Credit: Dieter Telemans/Panos Pictures



Security and Ecology in the Age of Globalization

urban elites have both (a) a disproportionate impact on the earth's natural systems, and (b) also make many of the policy decisions regarding resource-use and pollution. Second, global population is growing; and more importantly, it is becoming urbanized. As a result, this population increasingly depends on resources and food supplies from rural areas that are sometimes remote. Third, this process is happening in the context of rapid globalization—with its inherent dislocations—of an economy ever more dependent on petroleum products. Fourth, nation-states (even well-functioning ones) are frequently not the appropriate political entities to make decisions about many economic and environmental matters that flow across their borders in a highly uneven global economy.

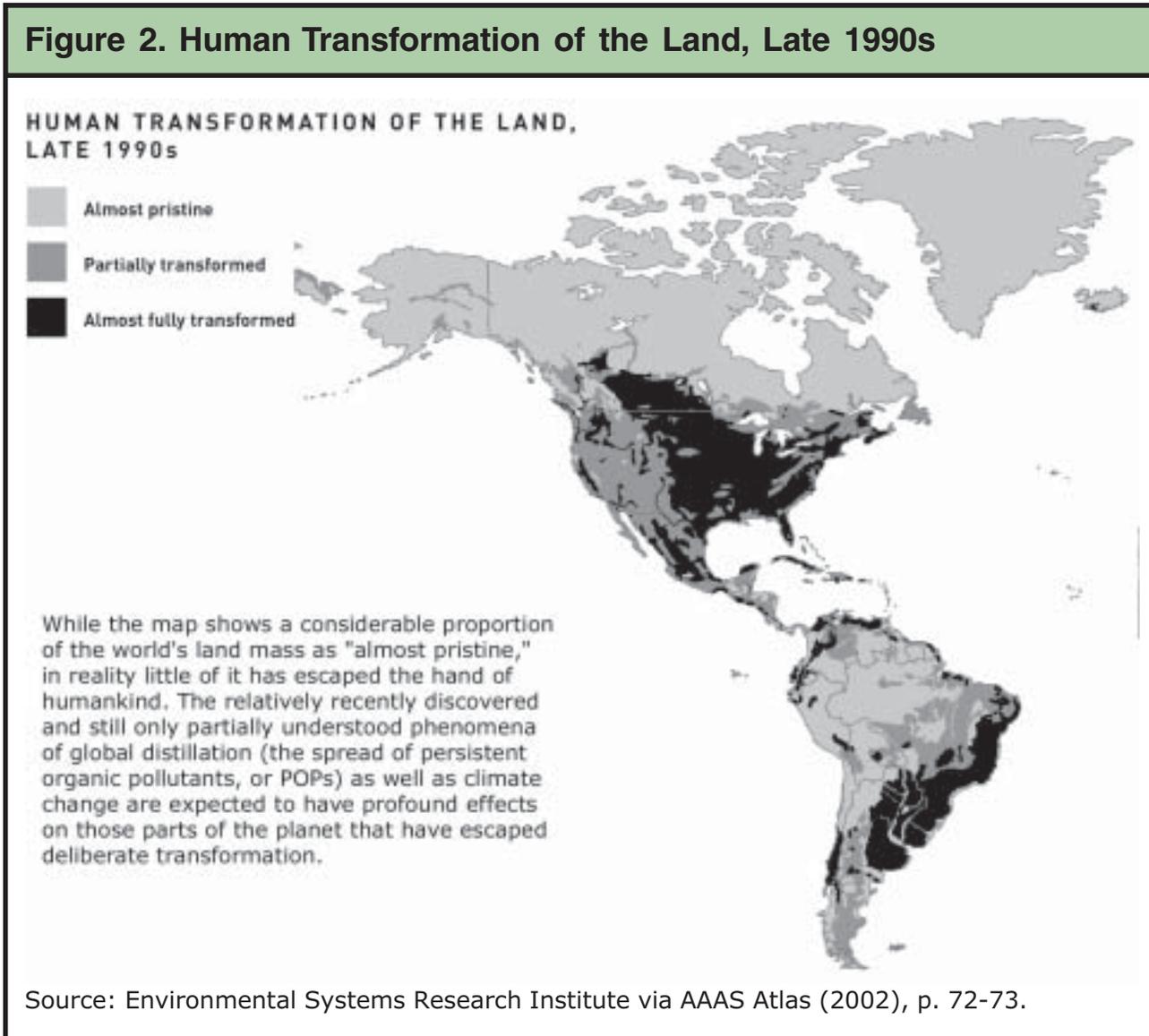
Extrapolating from the work of some Indian scholars to the global scale allows us to put these elements into a single summary conceptual scheme. In considering the state of Indian society in the 1990s, Madrav Gadgil and Ramachandra Guha (1995) classified people in terms of their ecological situation by using three categories. First, Gadgil and Guha termed as “ecosystem people” those locally-based populations who use their own labor to survive by cultivating and harvesting food and other resources from specific localities. Second, many of these people have been displaced from their homes in recent decades, becoming “ecological refugees.” Finally, these ecological refugees often gravitate to rapidly expanding urban centers, where they become “omnivores”—those who literally eat everything, often foods and other resources brought from great distances to the metropolises. Many omnivores in developed countries may also live or spend a substantial part of their lives in rural areas; but their economic support system is dependent on flows of resources from a distance.

These categories are obviously not mutually exclusive: many people have the characteristics of more than one category. For example, suburban dwellers growing vegetables for their family's use are in that sense analogous to ecosystem people, and most ecosystem people are involved in at least a few commercial transactions for luxury goods. But Gadgil and Guha's categorical scheme has the advantage of specifying people in terms of their functional position in both ecosystems and (more generally) within the biosphere. Their labels also challenge us to think about our own ecological situations. Most of the people who read policy discussions of environmental security are likely to be omnivores. And the processes of extracting the resources that support their lives—be those

resources oil from Ogoniland in Nigeria, diamonds from Sierra Leone, or tropical timber from Angola—may be the cause of considerable disruption and violence (Le Billon, 2001). The ecological-situation framework suggests that disruptions caused by the spread of the market system—which demands transfers of ever-larger supplies from rural areas to cities for omnivore consumption—perpetually threaten to turn ecosystem people into ecological refugees. When serious environmental disruptions occur (including droughts, storms, and floods), ecosystem people often become impoverished ecological refugees, while omnivores have the economic flexibility to simply buy their foods and resources from elsewhere.

This crucial geography also relates to the overall vulnerability of the poor and marginal in many places. Ecosystem people often have substantial survival mechanisms—but these mechanisms are sometimes tragically overwhelmed by expansions of the market economy that reduce access to traditional food supplies and storage. The curtailment of forest access, the enclosure of common-grazing lands, and the diversion of water into irrigation schemes all disrupt access to traditional food supplies. Traditional non-commercial methods of food storage are also often superseded by modern commercial arrangements. In good times, farmers are happy to sell their crops rather than store them, but when disaster strikes, the poor often lack the means to buy suddenly scarce foods.

Each of the three ecological-situation categories obviously entails very different human consequences and perspectives on the process. But policymakers who address sustainable development must bear in mind that they nearly always come to the negotiating table as omnivores, and as such they bring developed-economy and urban assumptions to bear on problems that are at odds with rural societies. Urban definitions of sustainable development are frequently less than helpful, especially when urban aesthetic criteria view the environment as something pristine that needs “protection” from rural inhabitants. Such mindsets frequently fail to recognize the complexity of rural social arrangements or the ecological contexts of local residents. And these difficulties are compounded by urban stereotypes of peasants as backward and incapable of using resources “rationally”—i.e., in a short-term, commercial way (Scott, 1998). In the hands of journalists like Kaplan (1994, 2000), these arguments are all too frequently extended to suggest that rural populations are the source of numerous security threats to Northern omnivores.



Policy Implications

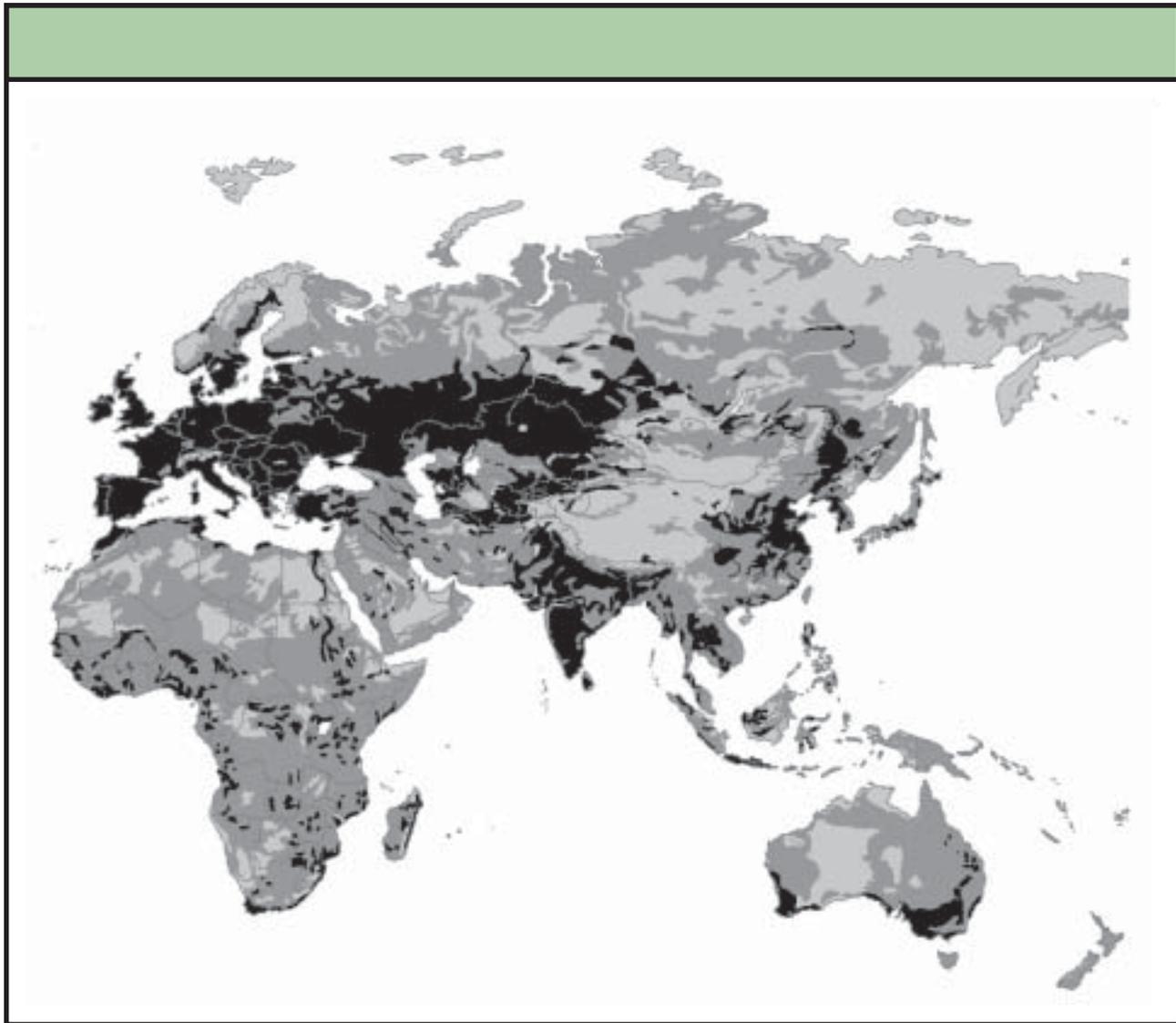
In his recent book *The Ingenuity Gap*, Homer-Dixon (2000) tries to escape the intellectual limitations of thinking about these matters within conventional international relations formulations. Homer-Dixon notes the repeated collapse of environmental security discussions into debates between optimists and pessimists, cornucopians and neo-Malthusians; and he recognizes the pointlessness of these oppositions for both the environment and policy advice. Instead, his recent focus on the "ingenuity gap" in both developed and developing countries suggests that the largest problems humanity faces are those related to our frequent inability to think creatively and in a timely and contextualized manner. Homer-Dixon argues that we need to frame policy problems so that proposed solutions emphasize adaptability and social as well as

technical innovation. And he concludes that environment in terms of security—or environment as a simple cause of conflict—are inadequate frameworks for the task at hand. Homer-Dixon himself has applied ingenuity to think anew about development and environment in ways that practically tackle human difficulties while being sensitive to local circumstances as well as the growing interconnections of the global economy.

Likewise, Baechler (1999) insists that questions of vulnerability and security must be considered together. He also argues that innovation and conflict-resolution require both detailed political work and the provision of options to marginalized populations. But his analysis does not conclude that solutions will necessarily come from increased state capacity. Indeed, in quite a number of the cases that Baechler has analyzed, the zealous



Security and Ecology in the Age of Globalization



attempts of states to remake their rural areas in the process of development has aggravated conflict rather than facilitated useful social innovation. This realization is an important corrective to the simple assumption that further modernization and development is the answer.

In stark contrast, Klare (2001) points to the dangers of war over resources, but he offers few political ideas for escaping from this potential mess. Helping marginal populations adapt to environmental change will require political ingenuity. Large measures of ingenuity will also be required to reduce unsustainable elite consumption as well as to formulate wise policies that constrain how resource extraction, pollution, and atmospheric change disrupt rural ecologies. Above all, we should prioritize the kind of technologies and structures that will minimize resource use in the medium- and long-term future over “end-of-the-

pipe” regulations that focus on emissions.

How the Wuppertal Institute in Germany formulates these terms is especially suggestive (Sachs, Loske, & Linz, 1998). Wuppertal researchers point to the distant Southern consequences of Northern consumption—such as mining wastes, deforestation, and displaced peasant farmers—as the key to global sustainable development. Reducing the total material throughput in the economy, they argue, is the key to (a) reducing total ecological damage, while simultaneously (b) supporting economically benign modes of trade that will improve the prospects for the poorest Southern populations. Poverty reduction thus depends on restricting those exports that have caused the worst environmental destruction.

Solar and wind energy are perhaps best emblematic of recent innovative suggestions that emphasize how ecological flows connect with human security. Once



produced and installed, these technologies minimize the flow of material through ecosystems. Wind and sun provide the energy. No fuels have to be transported. No pollution alters the atmosphere. They can be installed close to where power is needed, thus reducing the materials needed to move energy. Consumers get electricity and warm water, but do so without importing oil from distant lands in a process that frequently disrupts local ecologies and social systems. When combined with intelligent building design that minimizes energy requirements, solar and wind energy offer tremendous potential for practical reductions in greenhouse gas emissions. Smart buildings and appropriate architecture can, when designed carefully, both reduce energy costs and pollution as well as provide comfortable working environments that enhance productivity.

But these technical difficulties seem trivial in comparison to the political and administrative hurdles that face ecologically friendly design, as the great difficulties that face innovative urban architects in many countries attest (Brugman, 2001). To create sustainable communities—communities that do not environmentally harm distant places—policy innovation must extend to local governments and building codes. A sustainable-development policy that also attempts to enhance human security demands innovative design and policies to minimize the ecological impact of new buildings and transportation systems. These areas are not where most security analysts focus their attention when thinking about environment, but such ingenuity will have large human security payoffs for many people.

Rethinking Ecology and Security

Northern consumption, its consequences for Southern human security, and the shift in focus from

environment to ecology are now fundamental to rethinking environmental security. The cumulative results of omniverous consumption are literally remaking parts of the global biosphere in ways that might cause all sorts of unforeseen disruptions. Ecological systems are already adapting to the rise in global temperature in the last few decades; and they are doing so in ways that are site-specific (Walther et al., 2002).

While omnivores are in part protected from these disruptions by their abilities to use purchasing power in the global economy to switch supply sources, ecosystem people frequently do not have that option. Many more of them may be turned into environmental refugees in the coming decades—not because of any local shortages of resources, but as a consequence of the disruptions caused both directly and indirectly by omniverous consumption. Environmental security thinking must focus explicitly on these ecological interconnections as a key component of both (a) environmental disruptions, and (b) wars over control of resource exports. Indeed, environmental security needs to take ecology much more seriously. While nation-states may provide administrative and legal structures within which policy is formulated and administered, such spatial categories do not even come close to capturing the flows of energy and materials through our lives. Thinking ecologically—specifically, understanding security as the assurance of relatively undisturbed ecological systems in all parts of the biosphere—requires that researchers and policymakers (a) even more drastically reframe conventional categories of security, and (b) integrate the question of whom is secured into their analyses. Only then can the contexts of environmental insecurity be treated with the seriousness they deserve.

W

NOTES

¹ Kaldor defines these “new wars” as wars related “to the underside of globalization, to inequality whether caused by free trade or the collapse of authoritarian state sectors.” She cites Bosnia, Kosovo, and many African wars as examples.

² GECHS is also a core project of the International Human Dimensions Program on Global Environmental Change and

publishes an information bulletin titled *AVISO*, which reports on policy and scholarly research. The project is on-line at <http://gechs.org>

³ See also Dalby (2002).

REFERENCES

- Adams, Paul G. (Ed.). (2000). *Climate change and America foreign policy*. New York: St. Martins.
- Baechler, Günther. (1998). "Why environmental transformation causes violence: A synthesis." *Environmental Change and Security Project Report 4*, 24-44.
- Baechler, Günther. (1999). *Violence through environmental discrimination: Causes, Rwanda arena, and conflict model*. Dordrecht: Kluwer Academic Publishers.
- Barnett, Jon. (2000). "Destabilizing the environment-conflict thesis." *Review of International Studies* 26(2), 271-288.
- Barnett, Jon. (2001). *The meaning of environmental security: Ecological politics and policy in the new security era*. London: Zed Books.
- Barnett, Jon & Dovers, Stephen. (2001). "Environmental security, sustainability and policy." *Pacific Review* 13(2), 157-169.
- Böge, Volker. (1999). "Mining, environmental degradation and war: The Bougainville case." In Mohamed Suliman (Ed.), *Ecology, politics and violent conflict* (pages 211-227). London: Zed Books.
- Brugman, Jeb. (2001). "Agenda 21 and the role of local government." In Felix Dodds (Ed.), *Earth summit 2002: A new deal* (pages 40-48). London and Sterling, VA: Earthscan.
- Buzan, Barry; Wæver, Ole; & de Wilde, Jaap. (1998). *Security: A new framework for analysis*. Boulder: Lynne Rienner.
- Carius, Alexander & Lietzmann, Kurt M. (Eds.). (1999). *Environmental change and security: A European perspective*. Berlin: Springer.
- Dalby, Simon. (2002). *Environmental security*. Minneapolis: University of Minnesota Press.
- de Soysa, Indra. (2000). "The resource curse: Are civil wars driven by rapacity or paucity?" In Mats Berdal and David M. Malone (Eds.), *Greed and grievance: Economic agendas in civil wars* (pages 113-135). Boulder: Lynne Rienner.
- Deudney, Daniel & Matthew, Richard. (Eds.). (1999). *Contested grounds: Security and conflict in the new environmental politics*. Albany: State University of New York Press.
- Diehl, Paul & Gleditsch, Nils Petter. (Eds.). (2001). *Environmental conflict*. Boulder: Westview.
- Gadgil, Madhav & Guha, Ramachandra. (1995). *Ecology and equity: The use and abuse of nature in contemporary India*. London: Routledge.
- Grove, Richard. (1997). *Ecology, climate and empire: Colonialism and global environmental history, 1400-1940*. Cambridge: White Horse.
- Harrison, Paul & Pierce, Fred. (2000). *AAAS atlas of population of environment*. Berkeley: University of California Press.
- Homer-Dixon, Thomas. (1999). *Environment, scarcity and violence*. Princeton: Princeton University Press.
- Homer-Dixon, Thomas. (2000). *The ingenuity gap: How can we solve the problems of the future?* New York: Knopf.
- Homer-Dixon, Thomas & Blitt, J. (Eds.). (1998). *Ecoviolence: Links among environment, population and security*. Lanham, Maryland: Rowman and Littlefield.
- International Geosphere Biosphere Program (IGBP). (2001). *IGBP Science 4*. "Global change and the earth system: A planet under pressure." [On-line] Available: http://igbp.kva.selluploads/ESO_IGBP4.pdf
- Kahl, Colin. (1998). "Population growth, environmental degradation and state sponsored violence." *International Security* 23(2), 80-119.
- Kaldor, Mary. (1999). *New and old wars*. Stanford: Stanford University Press.
- Kaldor, Mary. (2001). "Globalization: Good or bad?" [On-line]. Available: <http://www.globaldimensions.net/articles/debate/kaldortext.html>
- Kaplan, Robert. (1994). "The coming anarchy." *The Atlantic Monthly* 273(2), 44-76.
- Kaplan, Robert. (2000). *The coming anarchy: Shattering the dreams of the post cold war*. New York: Random House.
- Klare, Michael. (2001). *Resource wars: The new landscape of global conflict*. New York: Metropolitan Books.
- LeBillon, P. (2001). "The political ecology of war: Natural resources and armed conflicts." *Political Geography* 20(5), 561-584.
- Lietzmann Kurt M. & Vest, Gary D. (Eds.). (1999). *Environment and security in an international context*. (Committee on the Challenges of Modern Society, Report No. 232). Bonn: North Atlantic Treaty Organization.
- Loneragan, Steve C. (Ed.). (1999). *Environmental change, adaptation and security*. Dordrecht: Kluwer Academic Publishers.

Feature Articles

- Lonergan, Steve C. (2001). "Water and conflict: Rhetoric and reality." In Paul F. Diehl & Nils Petter Gleditsch (Eds.), *Environmental Conflict* (pages 109–124). Boulder: Westview.
- Lowi, Miriam & Shaw, Brian (Eds.). (2000). *Environment and security: Discourses and practices*. London: Macmillan.
- Matthew, Richard. (2001). "Environmental stress and human security in Northern Pakistan." *Environmental Change and Security Project Report 7*, 17–31.
- McNeill, John R. (2000). *Something new under the sun: An environmental history of the twentieth-century world*. New York: Norton.
- Miller, Marian. (2001). "Tragedy for the commons: The enclosure and commodification of knowledge." In Dimitris Stevis & Valerie J. Assetto (Eds.), *The international political economy of the environment* (pages 111–134). Boulder: Lynne Rienner.
- Peluso, Nancy & Watts, Michael (Eds.). (2001). *Violent environments*. Ithaca: Cornell University Press.
- Petzold-Bradley, Ellen; Carius, Alexander; & Vincze, Arpod (Eds.). (2001). *Responding to environmental conflicts: Implications for theory and practice*. Dordrecht: Kluwer Academic Publishers.
- Polanyi, Karl. (1957). *The great transformation*. Boston: Beacon.
- Redclift, Michael. (1996). *Wasted: Counting the costs of global consumption*. London: Earthscan.
- Renner, M. (1996). *Fighting for survival: Environmental decline, social conflict and the new age of insecurity*. New York: Norton.
- Rønnfeldt, Carsten F. (1997). "Three generations of environment and security research." *Journal of Peace Research* 34(4), 473–482.
- Sachs, W.; Loske, R.; & Linz, M. (1998). *Greening the north: A post-industrial blueprint for ecology and equity*. London: Zed Books.
- Scott, J.C. (1998). *Seeing like a state: How certain schemes to improve the human condition have failed*. New Haven: Yale University Press.
- Stares, Paul B. (Ed.). (1998). *The new security agenda: A global survey*. Tokyo: Japan Centre for International Exchange.
- Talbott, Kirk & Brown, Melissa. (1998). "Forest plunder in southeast Asia: An environmental security nexus in Burma and Cambodia." *Environmental Change and Security Project Report 4*, 53–60.
- United Nations Development Program (UNDP). (1994). *Human development report 1994*. New York: Oxford University Press.
- Walther, Gian-Reto; Post, Eric; Convey, Peter; Menzel, Annette; Parmesani, Camille; Beebee, Trevor J.C.; Fromentin, Jena Marc; Guldburg, Ove Hoegh; & Bairlein, Franz. (2002, 28 March). "Ecological responses to recent climate change." *Nature* 416, 389–395.



IN DEFENSE OF ENVIRONMENT AND SECURITY RESEARCH

By **Richard A. Matthew**

Abstract

Since the end of the Cold War, many policymakers and researchers have been rethinking and pushing the boundaries of the definition of security. Perhaps the most extensive and controversial part of this project has been the numerous and varied attempts to identify links among environmental change, conflict, and security. But concern has recently been raised about whether a decade of environmental security research, debate, and policy experimentation has produced worthwhile results. This article argues that such concern is premature. Environmental security has (a) reinvigorated important elements of security research and policy; (b) made pioneering contributions to understanding the shifting sources of global violence and the changing requirements of security; (c) contributed to a broader debate about the social and political effects of transnational change; and (d) been a conceptual and political boon for the environmental movement. Now is the time to build on these gains instead of abandoning them.

In the past year, U.S. policymakers have made a rapid and dramatic effort to devote sufficient attention and resources to the threat of terrorism.¹ While the attacks of September 11 give a special validity and urgency to this effort, they are not its sole justification. In fact, the current retooling of U.S. security policy fits squarely into the general project of rethinking security that has been pursued by policymakers and researchers since the end of the Cold War. Phenomena such as nuclear proliferation, Islamic fundamentalism, rogue states, failed states, infectious disease, currency meltdowns, global mafias, computer hackers, terrorism, and environmental scarcity have all been identified in the last decade as urgent threats to U.S. national security—threats that need to be taken more seriously. At the same time, many of the analyses and scenarios that have sought to provide empirical and theoretical support to claims about these diverse and unconventional security threats have been criticized as weak and exaggerated.

Perhaps the most extensive and controversial part of this project has been the numerous and varied attempts to identify links among environmental change, conflict, and security. In spite of the enormous enthusiasm that has surrounded this effort, many of

today's security pundits are retreating from the strong assertions and commitments made in the late 1990s.² This is not simply because terrorism has made a shift in priorities essential, or because the current administration is less concerned about environmental change than its predecessor. It is also—and perhaps most significantly—due to concern about whether a decade of environmental security research, debate, and policy experimentation has produced any worthwhile results. This concern has clear implications for other attempts to rethink security.

The following pages argue that the retreat is premature. Environmental security has reinvigorated important elements of security research and policy that were marginalized or abandoned during the Cold War period. Much of the recent research also has made important and pioneering contributions to understanding the shifting sources of violence and changing requirements of security in an age of unprecedented inequality and interdependence. Work on environmental security thus contributes to a broader—and crucially important—debate about the social and political effects of globalization and other processes of transnational change. Moreover, the environmental security literature has recovered

*Richard A. Matthew is associate professor of international relations and environmental politics in the Schools of Social Ecology and Social Science at the University of California at Irvine (UCI); he also is director of the Global Environmental Change and Human Security Research Office at UCI (<http://www.gechs.uci.edu>). Recent works include the edited volumes *Contested Grounds: Security and Conflict in the New Environmental Politics* (1999) and *Conserving the Peace: How Resource Management Today Can Help Prevent Conflict Tomorrow* (2002) as well as the book *Dichotomy of Power: Nation versus State in International Relations* (2002).*

Feature Articles

connections between environmentalism and peace that were prominent 40 years ago and that continue to be valuable; brought new perspectives and stakeholders into debates on environmental change; underscored the possible security implications of global phenomena such as climate change and biodiversity loss; and boosted the political capital of certain sectors of the environmental movement.

Criticisms of the research and policy efforts of the 1990s have raised many valid points that have enriched the discourse and sharpened the insights of this field. Unfortunately, the field has also been characterized by intense rivalry and remarkable pettiness, both of which have focused undue attention on those imperfections, overstatements, and other weaknesses that are an inevitable but often inconsequential part of any ambitious research and policy undertaking. It

is important to assess the general and constructive contributions of this work and not to be misled by efforts to discredit it that rely heavily on distortion and misrepresentation.

Critical Scarcities

The bibliography maintained since 1995 in the Woodrow Wilson International Center for Scholars' *Environmental Change and Security Project Report* makes clear the variety of recent contributions to environment and security studies. These contributions have come from scholars and policymakers throughout the world and include markedly different perspectives, approaches, and claims. Nonetheless, the dominant and most public perceptions of the field have largely been shaped by the work of two widely read and widely cited authors. In 1994, Robert Kaplan

Port au Prince, Haiti, 1994



The first U.S. soldier walks through the gate of the city's seaport: "The insecurities to which environmental stress contributes in places such as Cambodia, Zimbabwe, Pakistan, and Haiti are grounded in patterns of insecurity based on longstanding practices of exclusion and exploitation."

Credit: Rob Heibers/Panos Pictures



In Defense of Environment and Security Research

published an article in *The Atlantic Monthly* arguing that factors such as demographic change, urbanization, environmental degradation, and easy access to arms were combining in West Africa to produce chronic violence, state failures, and a steady flow of miserable people seeking to escape from situations that have become uninhabitable (Kaplan, 1994).³ Even more alarming, Kaplan argued, this volatile and destructive mixture was gaining critical mass elsewhere in the world. Kaplan suggested that not even the rich states of the industrial North were immune to the growing threat of violent anarchy.

Kaplan's essay had tremendous influence within the first Clinton administration. U.S. Under Secretary of State for Global Affairs Timothy Wirth had a copy sent to every U.S. embassy, and President Clinton and Vice President Gore saw in Kaplan's worldview a concise account of the sort of crisis they had encountered in Somalia and were then struggling to address in Haiti. For months, the Kaplan thesis was enthusiastically discussed at security meetings, taught on Washington, DC campuses, and championed by an array of inside-the-Beltway security specialists. Outside Washington, however, Kaplan's essay stimulated some immediate and remarkably pointed criticism on the grounds that it was culturally insensitive, one-dimensional, analytically impoverished, and unduly alarmist.⁴

In developing his worldview, Kaplan drew heavily on the work of Thomas Homer-Dixon (Homer-Dixon, 1991; 1994; 1999; and Homer-Dixon & Blitt, 1998).⁵ The insight that impressed Kaplan is presented very clearly in the concluding chapter of Homer-Dixon's major work on the subject:

[E]nvironmental scarcity...can contribute to civil violence, including insurgencies and ethnic clashes...[T]he incidence of such violence will probably increase as scarcities of cropland, freshwater, and forests worsen in many parts of the developing world. Scarcity's role in such violence, however, is often obscure and indirect. It interacts with political, economic, and other factors to generate harsh social effects that in turn help to produce violence (Homer-Dixon, 1999, p. 177).

The argument that leads to these conclusions is quite straightforward. Homer-Dixon regards environmental scarcity as the product of an insufficient supply of, an unequal distribution of, or too much

demand for a resource that forces some sector of a society into a condition of deprivation. These three sources of scarcity are in turn caused by variables such as population growth, economic development, and pollution. They interact in various ways—for example, declining supply can prompt one group to seize control of a resource, simultaneously forcing another group onto an ecologically marginal landscape. Faced with growing scarcity, societies may experience health problems, social segmentation, and declines in agricultural and economic productivity. People may be compelled to move, often intensifying ethnic and other group-identity tensions in the receiving areas of this migration. Demands on government may increase while tax bases are being eroded. Violence may ensue or, if already present, worsen.

It is in such volatile, interactive, and complicated contexts that environmental scarcity can be described as a cause of conflict. Scarcity is not, Homer-Dixon stresses, likely to be a sufficient or necessary catalyst, but its presence in the causal network that generates violence is evident and growing. Where is this condition found? Homer-Dixon contends that developing countries with small supplies of social and technical ingenuity are most vulnerable to the negative effects of environmental scarcity. He concludes that, unless we find ways to increase their amount of ingenuity—that is, “ideas for new technologies and new and reformed institutions”—we can expect more of this type of violence in the years ahead (Homer-Dixon, 1999, p. 180). Homer-Dixon's reception in Washington was perhaps even warmer than that accorded Kaplan. As his biography indicates, he was invited to the White House twice to brief a very supportive Vice President Gore—two of an enormous number of high-profile presentations he made in the United States and abroad during the 1990s.⁶ But like Kaplan, Homer-Dixon's work has also been the subject of a fair amount of criticism on methodological, rhetorical, and analytical grounds.⁷

The enormous attention accorded Kaplan and Homer-Dixon has obscured the range and sophistication of the larger intellectual enterprise to which they contributed—an enterprise that is itself part of an analytical perspective that extends back to antiquity. This attention has not been confined to policy circles or media outlets. For example, a 2001 scholarly volume edited by Nancy Peluso and Michael Watts entitled *Violent Environments* begins with a discussion of Kaplan and Homer-Dixon but also acknowledges that “environmental security is a



Feature Articles

complex field” (Peluso & Watts, 2001, p. 12). Within a few pages, however, it is clear that Peluso and Watts are using the claims of Kaplan and Homer-Dixon to represent environmental security as a whole. Thus, they are comfortable abandoning the complexity they themselves acknowledge:

Typically, the environmental security literature makes efforts to link conflicts and environmental degradation. The latter is understood to mean the overuse of renewable resources, overstrain of the environment’s sink capacity (pollution), and impoverishment of the living space. However, [the literature’s] exclusion of the most substantial forms of environmental transformation and degradation caused by nonrenewable resource extraction (mining in particular), dam construction, and industrial activity is at once noteworthy and curious (Peluso & Watts, 2001, p. 26).

It is important to point out that while Homer-Dixon’s focus on renewable resources is well-known

It reiterates ideas presented in the Brundtland Report in 1987 as well as in many earlier and later analyses (World Commission on Environment and Development, 1987). Sadly, the narrowing and distorting of the field so that it encompasses little more than the work of Homer-Dixon (followed by a second narrowing and distortion of Homer-Dixon’s arguments) is extensive and even commonplace.

At least part of the explanation for all this attention and simplification lies in the fact that several other prominent studies have reiterated the Homer-Dixon thesis, albeit with subtle differences, making this position an obvious target in the field.¹⁰ But prominence does not make an argument representative, and using the scarcity-conflict thesis to discredit environmental and security research is unfortunate for at least four reasons. First, this move breaks the field into constitutive, adversarial, and incommensurable camps that are largely imaginary and that do not begin to capture the richness of environment and security literature. Second, it both contextualizes contemporary environment and security

While Homer-Dixon’s focus on renewable resources is well-known, it is somewhat misleading to claim that that focus is typical or representative of environmental security research.

in the field, it is somewhat misleading to claim that focus is typical or representative of environmental security research.⁸ Significant and highly visible research has also been conducted on non-renewable resources.⁹ Peluso and Watts’ simplification of the field has been echoed in the broader literatures on security and international relations, in which the work of Homer-Dixon is commonly used to represent the entire body of environment and security work.

Homer-Dixon’s argument is itself often simplified, further complicating matters. Peluso and Watts illustrate this tendency when they make claims such as the following: “Conditions of resource scarcity do not, contrary to the claims of Homer-Dixon and others, have a monopoly on violence” (Peluso & Watts, 2001, p. 5). But neither Homer-Dixon nor any other environmental security researcher of note has made this claim. On the contrary, Homer-Dixon (and many others) regards environmental scarcity as something that, in combination with other variables, *may* contribute to *some* violent conflicts. The image he evokes is one of conflict resulting from complex interactions among several natural and social variables.

research in a misleading way and severs the rich connections that research has to a two-millennia old body of work. Third, using Homer-Dixon’s thesis as the fulcrum point for environment and security diverts attention away from other contemporary arguments (such as those advanced by Peluso and Watts themselves regarding the pervasiveness and destructiveness of certain forms of structural violence) that are generally very compelling and valuable. Fourth, this distortion misses the opportunity to engage in a productive discussion, something that is intrinsic and essential to the dialogic tradition of studying political phenomena. Such a discussion would refine the insights of environmental security research and help bring them into other sectors of international relations research, security studies, and foreign policymaking.

There is no doubt that Homer-Dixon’s work has been very influential in Western policy circles, and that it has inspired several weak and inconclusive research efforts such as the NATO study *Environment and Conflict in an International Context* (1999).¹¹ There is also no doubt that Homer-Dixon’s work can be criticized on many grounds.¹² Indeed, it may have been





In Defense of Environment and Security Research

important in the 1990s to question how both Kaplan's anarchy thesis and a simplified version of Homer-Dixon's scarcity-conflict thesis guided the policy selection and defense priorities or some politicians and policymakers.¹³ But rather than suggest that environmental security research can be judged mainly on the basis of these two linked concepts, researchers and policymakers should place them in the much broader context of other environment and security research and debate.

The Roots of Environmental Security

This broader context has an important historical dimension that has received remarkably little attention. In his article "Bringing Nature Back In: Geopolitical Theory From the Greeks to the Global Era," Daniel Deudney provides a brief historical overview of several related strands of environment and security thought. He suggests that insights from earlier eras can supplement contemporary work and yield richer understandings of complex issues such as the potential for economic development and the likelihood of conflict in much of the southern hemisphere (Deudney, 1999).

The concept of geopolitics frequently evokes the early 20th century work of Friedrich Ratzel, Alfred Mahan, Rudolf Kjellen, and Halford Mackinder—writers associated with (a) simple concepts (alleged to be universal) relating military power, security, and geography; (b) the contest between land and sea powers that Thucydides discussed in the fifth century B.C.; and (c) notions of "heartland," "rimland," and "shatterbelt" that would later define the worldviews of strategists like Henry Kissinger. But as Deudney points out, geopolitical thought—the idea that geography and climate have security implications—has a much longer lineage.¹⁴

Deudney also notes the existence of "a diverse array of claims about the natural environment as a cause of political, economic, and social outcomes" that he describes as *naturalist theories*. (Deudney, 1999, p. 27). Today, insights from the naturalist and geopolitical theories discussed by Deudney are evident in the work of prominent environmental historians such as Alfred Crosby, Jared Diamond, Brian Fagan, John McNeill, and Clive Ponting (Diamond, 1997; Fagan, 1999; McNeill, 2000; & Ponting, 1991). But these insights are frequently ignored in the so-called mainstream environment and security literature; and this ignorance has meant a lack of research and policy focus on how the historical distribution of natural resources (as well

as human attempts to control and exploit these resources) have predisposed certain regions of the world to the precise forms of violence and conflict studied by Homer-Dixon and others.¹⁵

For example, although much has been written about unconstrained population growth, political corruption, institutional failure, and lack of ingenuity in the South, rather less has been said about the highly destructive patterns of colonialism that preceded and perhaps enabled these phenomena. The world's hot zones, from South and Southeast Asia through East and West Africa and the Middle East to Central and South America, are inadequately described and explained by theories that are generally ahistorical. Each of the countries in these regions is also the product of a particularly violent colonial experience that was in large measure shaped by four centuries of Western competition to control the planet's natural resources.

Consider, for example, Paul Collier's excellent statistical analysis of 47 civil armed conflicts that took place from 1965 to 1999. Collier identifies a set of variables that are strongly correlated to violent conflict. These include three economic factors ("dependence upon primary commodity exports, low average income of the country, and slow growth"); ethnic dominance; and diaspora (Collier, 2000, p. 9). Collier argues that the combatants in the civil conflicts singled out by Homer-Dixon, Kaplan, and others "either have the objective of natural resource predation, or are critically dependent upon natural resource predation in order to pursue other objectives" (Collier, 2000, p. 21).

Collier's clever insight suggests that debates over whether resource scarcity or abundance is more likely to be linked to violent conflict (a key split in simplified accounts of environment and security research) may be misleading.¹⁶ In a fundamental way, abundance and scarcity are both naturally and socially constructed conditions, and may at times be two sides of the same coin. That is to say, water is scarce in Saudi Arabia by any measure, while oil, gold, and diamonds are naturally abundant in some parts of the Middle East and Africa. But the latter minerals are irrelevant until a society assigns value to them. Moreover, people living in any of these areas may experience real or relative resource scarcity if they are not able to gain access to resources or otherwise benefit from their existence.

Who might benefit from a given struggle for resource control and access (and whether that struggle is violent or procedural) depends to some extent on

the region's political history and the socio-economic structures that have developed over time. In some parts of the world, the institutional and economic legacies of colonialism might play the lead role in determining whether environmental change contributes to conflict and insecurity. In these cases, desalination plants and reforestation programs may be necessary but insufficient foundations for reducing such threats. Policymakers must also address the perennial political problems of entrenched inequalities, institutional weaknesses, and historical grievances. In many cases, instigators of violence link their political agendas and ambitions for personal gain to a rhetoric of social justice designed to mobilize groups that have been exploited, coerced, ignored, or otherwise poorly treated by the state or by external entities. Often these groups—and the livelihoods they depend upon—are also extremely vulnerable to the insecurities and hardships caused by rapid environmental change.

The practice of dehistoricizing conflict and violence (especially in the South) and of obscuring its structural aspects is evident in simplified renderings of environment and security literature and almost certainly depresses the field's value. It fosters the misleading impression that when poor states cross certain thresholds of resource scarcity, they are likely to succumb to violence or, if violence is already present, that it is likely to escalate—scenarios that suggest an endpoint with the sort of dire imagery popularized by Kaplan, Raspail, and others. This tendency to ignore research that includes historical analysis has generated an underappreciation—particularly in the policy world—of the remarkable capacities of all types of societies to adapt to environmental change. Recovering the antecedents to contemporary environment and security literature, as Deudney has sought to do for over a decade, generates a more complicated but also more plausible analysis.¹⁷ Incorporating this marginalized perspective into mainstream discussions of environmental security reminds us that environmental change, resource scarcity, and resource abundance have been linked to insecurity and violence through social processes of greed and grievance for a very long time; that contemporary conflicts build on and are shaped by histories that might have to be understood in order for the conflict to be resolved; and that societies of all types have usually proven resilient and innovative in the face of environmental change.¹⁸

Why has so much credibility been given to simplified versions of Homer-Dixon's work and so

little attention paid to the historical approaches of people like Deudney, Diamond, and Crosby? First, historical analysis has not been prominent in the field of international relations in the United States, and so ahistorical social science research is not unusual or suspect. Second, naturalistic theories were largely discredited by the modern idea that technology had overcome most natural constraints (as well as by concerns over the extent to which certain nature-based and geopolitical theories had been used by the Nazis during World War II). Third, during the Cold War the fundamentals of conflict appeared directly linked to ideological and other social variables. Environmental change did not seem especially salient to the Cold War rivalry or even to the two world wars that preceded it—an attitude that has persisted among many security analysts.

But people have incorporated environmental variables into security analysis since antiquity, and this practice will not disappear for an obvious reason: it is both sensible and useful. Rather than reject environment and security research on the specious grounds that it makes ridiculously simple causal arguments about scarcity and conflict, researchers and policymakers should step back and look at the ways in which the field is recovering productive historical perspectives. The structural and ideological theories that seemed so enlightening during the 20th century are considerably less interesting today, and efforts to broaden security analysis ought to be encouraged.¹⁹

The Contributions of Environmental Security

This broader approach to environment and security yields a different and perhaps more compelling account of the ecological dimensions of violent conflict and national and human security. This account has three important dimensions.

The first dimension emphasizes the complex ongoing interplay between natural geography and human history and focuses attention on the environmental underpinnings of those historical patterns of conflict and insecurity that are linked to processes of economic development, colonialism, and state-building.²⁰ Aaron Bobrow-Strain captures this dimension well when he writes:

Unlike analysts who speak of “the Chiapas conflict” as a unitary phenomenon, I argue that the “Chiapas conflict” is, in fact, a constellation of temporally and spatially differentiated conflicts. Chiapas is truly a “warscape”—something that



In Defense of Environment and Security Research

can only be understood by examining the ways conflict unfolds, changes, and takes multiple forms across time and space (Bobrow-Strain, 2001).

Later, Bobrow-Strain notes “that the focus on environmental scarcity obscures important dynamics that shape the trajectories of violence in Chiapas” (Bobrow-Strain, 2001, p. 157). He situates the 1994 Chiapas conflict in the context of “land invasions” that have shaped political struggle in the region since the 1930s (Bobrow-Strain, 2001). The crucial point is that all conflicts have histories that are in some measure constitutive. The image of conflict being triggered when a community crosses an environmental threshold (an image associated with but somewhat unfair to Homer-Dixon) is simple but unrevealing (Homer-Dixon, 1991).

In his analysis, Collier notes that past conflict and diaspora correlate strongly to present conflict. Again the implication here is that history matters—when we ignore it, our capacity to explain and predict conflict is diminished. The same claim is almost certainly relevant to concerns about security in its national and

evident in the NATO and Environment and Conflict Project (ENCOP) studies tends to reiterate very general conditions that one can find in much earlier writings, such as Fairfield Osborn’s *Our Plundered Planet*. Writing in 1948, Osborn concludes his overview of environmental insecurity by asking:

When will it be openly recognized that one of the principal causes of the aggressive attitudes of individual nations and of much of the present discord among groups of nations is traceable to diminishing productive lands and to increasing population pressures (Osborn, 1948, pp. 200-201)?

Osborn’s analysis also focused on weak or misguided political institutions and a willingness to use coercion (Osborn, 1948). These factors, in combination with unchecked population growth and unsustainable economic practices, provoked Osborn to predict that “[e]very country, [over] all the world, is met with the threat of an oncoming crisis” (Osborn, 1948, p. 201). That much contemporary environmental security writing reiterates Osborn’s argument does not

New and more virulent forms of environmental degradation wrought through human activities are aggravating practices of violence and insecurity that have long histories.

human formulations. The insecurities to which environmental stress contributes in places such as Cambodia, Zimbabwe, Pakistan, and Haiti are grounded in patterns of insecurity based on longstanding practices of exclusion and exploitation. The British, for example, set up institutions in South Asia and Africa that gave some groups greater access to natural resources such as water and arable land. Independence and a cascade of political reform efforts have not been able to efface these inequalities from the fabric of social and economic life in countries such as Pakistan and India. In fact, this pattern is evident throughout Africa, Asia, Australia, and the Americas. From this perspective, it is clear that new and more virulent forms of environmental degradation wrought through human activities are aggravating practices of violence and insecurity that have long histories.

A second dimension of a broader environment and security perspective focuses on the current conditions that are conducive to conflict and insecurity. The popularized account linked to Homer-Dixon and

undermine the insights of either generation. Indeed, this set of relationships—concerning above all population growth, environmental degradation, and conflict—has worried analysts for decades. But the field has also been stuck for decades at a high level of generality, making claims that are obvious to every observer.

Fortunately, more quantitatively oriented studies (such as the ones by Collier, Hauge, and Ellingsen) and the State Failure Task Force’s *Phase II Report* have succeeded in adding some specificity to this portion of the literature (Hauge & Ellingsen, 1998; Esty et al., 1998; 1999). Although further quantitative research is required, one can generalize from the existing literature a typical scenario that is highly prone to conflict. This scenario includes: (a) an economy dependent on a lucrative natural resource (gold or oil rather than water or biodiversity) to which access can be controlled; (b) a fractious ethnic cleavage that the dominant group has been unable to resolve; (c) low education and high infant-mortality rates; (d) inadequate dispute-

resolution mechanisms and corrupt governance institutions; (e) a history of violent conflict; and (f) a diaspora community of angry emigrants and refugees forced to leave and willing to back one side in a civil war. Under these conditions, individuals accustomed to the use of force may be motivated by greed, injustice, or scarcity to take up arms. Indeed, conflict may be most likely in those situations in which a range of motivations converge to persuade sufficiently large numbers of people that violence may be justified, profitable, inevitable, or transformative. Environmental stresses will figure in some, but not all, of these motivations, and hence these stresses will be an elusive but often significant element of the causal network that generates conflict and insecurity.

Of course, under such volatile, overdetermined conditions it is difficult to “prove” that environmental change plays a major causal role. But this uncertainty is true of any single conflict-salient variable. The Correlates of War Project sought unsuccessfully for decades to isolate the precise variable or variable mix that caused war. An influential set of essays on the causes of World War I make it very clear that causality is (a) complex, and (b) something that can be approached at many different analytical levels using many different time frames (Miller, 1985). There is no definitive answer to the question, “What caused conflict X?” Environmental conflict and security literature suggests that many constellations of variables can generate, trigger, or amplify violence and insecurity; it is therefore unproductive to seek a single causal model with universal explanatory and predictive power unless one is satisfied with a very high level of generality at all points in the model. At the same time, however, there exists today a constellation of interactive variables that, when associated with severe environmental stress, are foreboding.

But the outcome of such situations is never assured. The third dimension of this general account of the theory of environment and security concerns the remarkable capacity of communities at all scales to adjust and adapt to many forms of stress, including those related to environmental change. The simplified scarcity-conflict story culled by critics, journalists, and policymakers from the environment and security literature obscures, ignores, and (in some cases) explicitly denies this capacity. But recent human history identifies few Easter Islands (i.e., states confronted with severe environmental stress that have collapsed and disappeared) and many Haitis and Rwandas (states confronted with severe environmental

stress that have collapsed and then recovered). In fact, many of the cases used to demonstrate the validity of the simple scarcity-conflict thesis are not nearly as straightforward as has been suggested.²¹

For example, in 1969 Honduras and El Salvador clashed in a conflict often attributed to land scarcity, which had pushed a large number of Salvadorans across the border into Honduras (Myers, 1993). But today it appears that both countries have found ways to adapt to continuing environmental stress. These adaptive strategies include migration to the United States, development assistance from the United Nations and other sources, bilateral development projects, and democratization. These strategies have brought in skills and knowledge, strengthened political institutions, encouraged internal and cross-border cooperation, and fostered economic growth—all of which have bolstered the adaptive capacity of these two countries.

The case of Chiapas made for a dramatic rendering of environmentally induced conflict as armed and masked guerillas fought for farmland; but this image is somewhat less gripping when it is situated in a larger time frame. Today one might well describe the conflict in Chiapas in 1994 as a single moment in a larger struggle for political power and institutional reform. From an analytical perspective, the image of Subcomandante Marcos waving a machine gun has proven less telling than the image of him marching into Mexico City to exchange his arms for political voice. It is not that the conflict was insignificant, but rather that analyses limited to the moment of conflict are incomplete.

The Turbot War between Canada and Spain is another popular example of scarcity induced conflict, one often used to show that the industrialized North is not safe from this threat. But as Beth Desombre and Samuel Barkin make clear, the larger and more accurate story is one of two states finding a viable institutional solution to the common pool resource problem of overfishing in the North Atlantic. The shots fired and ships seized were a brief and theatrical departure from decades of complex negotiations—negotiations that were reinvigorated by the clash and soon thereafter arrived at a regulatory regime satisfactory to all concerned parties.²²

Although different researchers have focused on different parts of the general narrative presented above, it is now possible—and far more productive—to bring together some of the findings of this field. The result is not an unstable bricolage of competing and incommensurable ideas and agendas, but a potentially



In Defense of Environment and Security Research

powerful theory that situates contemporary environment/conflict/scarcity situations into broader histories of violence, insecurity, change, and adaptation as well as broader contexts of dynamic, interactive social and ecological forces. From this perspective, the position commonly attributed to Homer-Dixon is a chapter in a larger and more complicated story. The larger story provides potentially important bridges from the work on environmental security to at least three other contemporary research and policy foci:

Human security. The concept of human security received its most familiar early definition in UNDP's *Human Development Report 1994*:

[S]ecurity has far too long been interpreted narrowly: as security of territory...or as protection of national interests or as global security from the threat of nuclear holocaust...Forgotten were the legitimate concerns of ordinary people who sought security in their daily lives (UNDP, 1994, p. 22).

Since it is entirely reasonable to relate the success of the modern state to its unprecedented capacity for bringing security in its most basic sense—freedom from danger—to the lives of ordinary people, this century's retreat from that constitutive role may well be deemed unacceptable and alarming.²³ The authors of the UNDP report suggest human security as a concept that can recover the earlier on-the-ground focus of the state's security practices:

Human security can be said to have two main aspects. It means, first, safety from such chronic threats as hunger, disease and repression. And second, it means protection from sudden and hurtful disruptions in the patterns of daily life (UNDP, 1994, p. 23).

This sentiment was immediately seized upon in the environment and security field and became a guiding principle for the Global Environmental Change and Human Security Project (GECHS), established in 1996.²⁴ Within three years, GECHS had refined a theoretical accommodation of environmental security and human security and had set up participatory research offices in Australia, Canada, Costa Rica, Norway, and the United States. Although the concept of human security has been criticized as too

broad to be analytically useful—and it certainly has not proven to have the immediate inside-the-Beltway appeal of Kaplan's "coming anarchy" thesis—it development has been steady and it has attracted a considerable number of scholars, policymakers, and activists in the developing world and Europe.²⁵

Tariq Banuri, for example, offers a concise argument in defense of human security:

[S]ecurity denotes conditions which make people feel secure against want, deprivation, and violence; or the absence of conditions that produce insecurity, namely the threat of deprivation or violence. This brings two additional elements to the conventional connotation (referred to here as political security), namely human security and environmental security (Banuri, 1996, pp. 163-164).

Banuri's conception combines (a) structural insecurities and violence associated with the world economy and the legacies of colonialism, with (b) modalities of violence and insecurity associated with environmental change—two sets of dynamics that are themselves interactive and historically related. These elements combine in today's world to ensure that large portions of humankind—primarily in the South but not exclusively so—are rarely, if ever, free from danger. That the term "human security" embodies a great deal may make it less analytically interesting to some scholars; but it would be wrong to suggest that there is not much analytical value in broad inclusive concepts that tell a compelling general story.²⁶ While Roland Paris notes that such inclusiveness can "hobble the concept of human security as a useful tool of analysis," he ultimately concludes that

[d]efinitional expansiveness and ambiguity are powerful attributes of human security...human security could provide a handy label for a broad category of research...that may also help to establish this brand of research as a central component of the security studies field (Paris, 2001, p. 102).

Much of the effort to focus the concept of human security and use it as a basis for analysis has been undertaken by scholars in the field of environmental security.²⁷



Feature Articles

Globalization. The second research and policy area to which environmental security has made substantive contributions relates to the issue of globalization. Globalization is another broad and overdetermined concept that nonetheless is contemporarily powerful and valuable for both researchers and policymakers. This article defines globalization as a process driven largely by technological innovation (in the global context of expanding capitalism and democracy) that has empowered non-state actors in ways that have no precedent during the modern age of the state.²⁸ Globalization is characterized in large measure by an

level of confidence in a given economy. Other threats are clearly intentional, such as terrorism and computer hacking. The environment stands at the crossroads of intentionality and non-intentionality: while many dangers emanating from environmental change are the unfortunate externalities of economic processes and other human practices, the environment is also a viable conduit or target for intentional attacks by angry non-state actors.³³

Finally, it is worth briefly noting that the literature on environment and security has also made contributions to a range of more specific intellectual,

Rather than look for reasons to abandon environmental security research and policy agenda, now is the time to recognize and to build on the field's remarkable achievements.

enormous increase in the speed, density, and character of cross-border transactions that sovereign states have not been able to regulate or manage (e.g. information flows and sales of goods and services via the Internet). Its impacts on fundamental human issues such as justice, security, welfare, and environmental quality have been mixed, and debate has raged over whether its negative effects will overwhelm its positive ones.²⁹ Transnational processes can strengthen local communities fighting injustice or insecurity; they can also exploit communities and transformed them into hubs for sex tourism or cheap labor.³⁰

Much environmental security analysis investigates the ecological impacts of globalization—the negative effects these environmental changes are having on human and national security, and the transnational opportunities that exist for addressing this problem. In this regard, Peluso and Watts's *Violent Environments* is an excellent example of the way this field contributes to a more general understanding of globalization.³¹

Transnational security challenges. The third focus area to which research on environmental security contributes concerns the larger set of transnational security challenges named at the outset of this article.³² Transnational security challenges are unconventional, non-military threats to national and human security that have been enabled or amplified by processes of technological innovation and empowerment. Some are clearly unintentional: the spread of infectious diseases like HIV; climate change; and national and regional economic problems linked to global currency trading and rapid fluctuations in the global private sector's

policy, and activist pursuits. For example, efforts to harness security assets to environmental goals have been praised in some quarters.³⁴ These efforts fall into two broad categories: (1) greening the military, and (2) making military and intelligence assets available for environmental activities. In the first case, Kent Butts argues that compliance with environmental regulations, military base clean-up, and green technology research have all increased in the U.S. Department of Defense as part of the effort to integrate environmental security into its programs. The most widely cited example of the second case is the Medea Project initiated by Vice President Al Gore, which brought together CIA analysts and civilian scientists to assess the value of archived satellite imagery for assessing phenomena such as deforestation rates and climate change. Additionally, the U.S. Army Corps of Engineers has publicized (perhaps excessively) its role in restoring the ecology of the Chesapeake Bay area; and reforestation programs have been undertaken throughout the world with military support.

Environmental security may have had two other positive impacts on military and intelligence communities in the United States and abroad. First, it has encouraged unprecedented levels of interagency cooperation, leading to such outcomes as the 1996 Memorandum of Understanding signed by the U.S. Departments of Energy and Defense and the U.S. Environmental Protection Agency. As it becomes increasingly clear that the planning and implementation of the September 11 attacks were made easier because of the poor flows of communication within and among government





In Defense of Environment and Security Research

agencies such as the FBI, CIA, and INS, the 1990s experimental interagency cooperation on environmental security issues may prove very useful in reducing learning curves elsewhere. The most obvious examples of this—(a) the Medea project uniting CIA analysts and civilian scientists; and (b) the CIA's decision to establish a Center for Environmental Security that would make data available to a wider range of consumers, including non-profits and private-sector actors—have not been entirely successful. But they do provide models that can inform the next round of attempts to improve information flows and communication systems across agencies and between governmental and non-state actors.

Second, throughout the 1990s, NATO as well as the militaries of the United States, Australia, and other countries organized many workshops and conferences on the topic of environmental security. These conferences brought together representatives of many defense organizations for discussions about the need to build trust, encourage dialogue, and exchange information. Today, the war on terrorism is expanding upon such cooperative practices. Just how great a contribution these practices will make to world peace cannot be estimated today, and there are obvious concerns about intrusions of the military into other policy arenas.³⁵ But frank dialogue, higher levels of trust among military establishments, a sense of shared fate, trans-state networks of cooperative practices and institutions, and better information flows may ultimately lead to peaceful outcomes in at least some cases.

In addition, environmental security's language and findings can benefit conservation and sustainable development.³⁶ Much environmental security literature emphasizes the importance of development assistance, sustainable livelihoods, fair and reasonable access to environmental goods, and conservation practices as the vital upstream measures that in the long run will contribute to higher levels of human and state security. The Organization for Economic Cooperation and Development (OECD) and the International Union for the Conservation of Nature (IUCN) are examples of bodies that have been quick to recognize how the language of environmental security can help them. The scarcity/conflict thesis has alerted these groups to prepare for the possibility of working on environmental rescue projects in regions that are likely to exhibit high levels of related violence and conflict. These groups are also aware that an association with security can expand their acceptance

and constituencies in some countries in which the military has political control. For the first time in its history, the contemporary environmental movement can regard military and intelligence agencies as potential allies in the struggle to contain or reverse human-generated environmental change. (In many situations, of course, the political history of the military—as well as its environmental record—raise serious concerns about the viability of this cooperation.)

Similarly, the language of security has provided a basis for some fruitful discussions between environmental groups and representatives of extractive industries. In many parts of the world, mining and petroleum companies have become embroiled in conflict. These companies have been accused of destroying traditional economies, cultures, and environments; of political corruption; and of using private militaries to advance their interests. They have also been targets of violence. Work is now underway through the environmental security arm of the International Institute for Sustainable Development (IISD) to address these issues with the support of multinational corporations.

Third, the general conditions outlined in much environmental security research can help organizations such as USAID, the World Bank, and IUCN identify priority cases—areas in which investments are likely to have the greatest ecological and social returns. For all these reasons, IUCN elected to integrate environmental security into its general plan at the Amman Congress in 2001. Many other environmental groups and development agencies are taking this perspective seriously (e.g. Dabelko, Lonergan & Matthew, 1999). However, for the most part these efforts remain preliminary.³⁷

Conclusions

Efforts to dismiss environment and security research and policy activities on the grounds that they have been unsuccessful are premature and misguided. This negative criticism has all too often been based on an excessively simplified account of the research findings of Homer-Dixon and a few others. Homer-Dixon's scarcity-conflict thesis has made important and highly visible contributions to the literature, but it is only a small part of a larger and very compelling theory.

This broader theory has roots in antiquity and speaks to the pervasive conflict and security implications of complex nature-society relationships. The theory places incidents of violence in larger structural and historical contexts while also specifying

contemporarily significant clusters of variables. From this more generalized and inclusive perspective, violence and conflict are revealed rarely as a society's endpoint and far more often as parts of complicated adaptation processes. The contemporary research on this classical problematic has helped to revive elements of security discourse and analysis that were marginalized during the Cold War. It has also made valuable contributions to our understanding of the requirements of human security, the diverse impacts of globalization, and the nature of contemporary

transnational security threats. Finally, environmental security research has been valuable in myriad ways to a range of academics, policymakers, and activists, although the full extent of these contributions remains uncertain.

Rather than look for reasons to abandon this research and policy agenda, now is the time to recognize and to build on the remarkable achievements of the entire environmental security field. **W**

NOTES

¹Visit Global Environmental Change and Human Security at the University of California, Irvine (www.gechs.uci.edu) for a series of working papers on terrorism prepared by senior scholars and policymakers from the United States and abroad. These working papers focus on the motivations and capabilities of current terrorist networks and on how the United States is and should be responding.

²For examples of these assertions and commitments, see Wirth (1994), Perry (1996), Deutch (1996), Albright (1998), and Gore (1999).

³This threatening, neo-Malthusian image of hordes of underfed, underemployed, angry people on a rampage has been popularized in many works, including Ehrlich (1968), Kennedy & Connelly (1994), and Raspail (1995).

⁴See, for example, Dalby (1996).

⁵Portions of this summary of Homer-Dixon appeared previously in Matthew (1999).

⁶For details, see www.homerdixon.com

⁷See in particular Levy (1995), Deudney (1999), Dalby (1999), and Hartmann (2001).

⁸It is also debatable whether nonrenewable resource extraction has had more "substantial" impact on the environment than agriculture, ocean fishing, and deforestation, as Peluso and Watts (2001) assert. In a recent article, Jackson et al. (2001) argue that overfishing—that is, the excessive extraction of a renewable resource—is primarily responsible for the poor health of the world's largest ecosystem.

⁹See in particular Stoff (1980), Lipschutz (1989), Gedicks (1993; 2001), Calder (1996), Klare (2001) Collier (2000), and Le Billon (2001).

¹⁰The following studies make the argument that environmental scarcity can indirectly contribute to conflict under conditions

in which inadequate ingenuity or social capital or wealth exists to mitigate its impacts: Baechler (1998), NATO Committee (1999), Esty et al. (1999), and de Soysa & Gleditsch (1999).

¹¹The often sharp critiques of this study generally fail, however, to appreciate the complex interstate process through which it developed and its political importance as a consensus document.

¹²See, for example, Gleditsch (1998) and the response to this by Schwartz, Degliannis, & Homer-Dixon (2000). For further critiques, see Homer-Dixon (1999).

¹³See, for example, Dalby (1996).

¹⁴For an overview of geopolitics see O'Loughlin (1994) and Dodds & Atkinson (1999). For an introduction to critical geopolitics, which investigates the tradition of geopolitics as well as contemporary processes such as globalization, see Agnew (1998) and Tuathail, Dalby, & Routledge (1998).

¹⁵The volume edited by Peluso & Watts (2001) takes important steps in the direction of reintegrating some of these ideas and perspectives.

¹⁶See, for example, Berdal & Malone (2000).

¹⁷My own recent experiences in Pakistan, Cambodia, Jordan, Brazil, and Central America have suggested to me that violent conflict has a powerful historical basis that can be missed or undervalued by focusing on simple, present, measurable variables.

¹⁸This is not to suggest that societies have always adapted well to environmental change. Indeed, at a very high level of generality, one might well argue that the historical intensification of inequality within and among societies may be directly linked to the rate and magnitude of environmental change. In other words, as environments become more unstable and insecure, safe havens may be monopolized by relatively small groups of people that are able to use various strategies



In Defense of Environment and Security Research

to control access. For discussion, see Matthew, Gaulin, & McDonald (forthcoming).

¹⁹Among the important works in this regard are: Kahl (2000); Diehl & Gleditsch (2001); Barnett (2001); and Peluso & Watts (2001). Environment and security research also has connections to peace activism and peace studies that are ignored in its simplified versions but which are valuable and may be worth recovering. See Matthew & Gaulin (2002).

²⁰See, for example, Diamond (1997) and Deudney (1999).

²¹See Matthew, Gaulin, & McDonald (forthcoming) for a full discussion of this point.

²²See Desombre & Barkin (forthcoming).

²³For a discussion of security and the origins of the modern state, see Poggi (1978) and Tilly & Matthew (2002).

²⁴See Lonergan et al. (1999).

²⁵See, for example, Thomas & Wilkins (1999), Tehranian (1999), Suhrke (1999), and Khong (2001). A more explicit union of environmental security and human security is evident in Naqvi (1996).

²⁶Other concepts such as “class relations,” “human rights,” and “democracy” are broad and inclusive and do an enormous amount of work in contemporary political analysis.

²⁷Details available at www.gechs.org

²⁸That is to say, at least since 1648, when the Treaty of Westphalia

acknowledged the political primacy of the sovereign state in Europe. For a pioneering discussion, see Rosenau (1990).

²⁹On the primacy of the negative effects of globalization, see Kaplan (1994) and Huntington (1997). On the primacy of the positive effects, see Fukuyama (1997) and Friedman (1999). For an influential overview, see Barber (1995).

³⁰Compare, for example, Wapner (1996) and Nettle & Romaine (2001).

³¹See, for example, Rajan (2001).

³²Commonalities among transnational threats are examined in detail in Matthew & Shambaugh (1998) and updated in “Al-Qaeda versus McWorld” (2002). On this topic, see also Klare & Thomas (1994); Klare (2001); Williams & Black (1994); and the special issue of *National Security Studies Quarterly* on new security threats (IV: 4, Autumn 1998). The ease with which specialists in environmental security have brought their analytical expertise to bear on the challenge of terrorism is evident in the recent work by Thomas Homer-Dixon.

³³See Chalecki (2002).

³⁴See, for example, Butts (1999).

³⁵On this see Deudney (1999) and Dalby (1996).

³⁶This issue is well-covered in Halle et al. (forthcoming).

³⁷Some attempts to help establish priorities by mapping areas of high vulnerability have received considerable attention. See, for example, Lonergan, Gustavson, & Carter (2000).

REFERENCES

- Agnew, John. (1998). *Geopolitics*. London: Routledge.
- Albright, Madeleine. (1998, April 21). “Earth Day 1998: Global problems and global solutions.” Remarks on Earth Day 1998 at the National Museum of Natural History, Washington, DC. [On-line]. Available: <http://secretary.state.gov/www/statements/1998/980421.html>
- Baechler, Günther. (1998). “Why environmental transformation causes violence.” *Environmental Change and Security Project Report 4*, 24–44.
- Banuri, Tariq. (1996). “Human security.” In Nauman Naqvi (Ed.), *Rethinking security, rethinking development* (pages 163–167). Islamabad: Sustainable Development Policy Institute.
- Barber, Benjamin. (1995). *Jihad vs. McWorld: How globalism and tribalism are reshaping the world*. New York: Ballantine.
- Barnett, Jon. (2001). *The meaning of environmental security: Ecological politics and policy in the new security era*. London: Zed Books.
- Berdal, Mats & Malone, David. (Eds.). (2000). *Greed and grievance: Economic agenda in civil wars*. Boulder: Lynne Rienner.
- Bobrow-Strain, Aaron. (2001). “Between a ranch and a hard place: Violence, scarcity, and meaning in Chiapas, Mexico.” In Nancy Lee Peluso & Michael Watts (Eds.), *Violent environments* (pages 155–185). Ithaca: Cornell University Press.
- Butts, Kent. (1999). “The case for DOD involvement in environmental security.” In Daniel Deudney & Richard A. Matthew (Eds.), *Contested grounds: Security and conflict in the new environmental politics* (pages 109–126). Albany: SUNY Press.
- Calder, Kent. (1996, March/April). “Asia’s empty tank.” *Foreign Affairs* 75, 55–68.

Feature Articles

- Chalecki, Beth. (2002, February). "A new vigilance: Identifying and reducing the risks of environmental terrorism." *Global Environmental Politics* 2(1), 46-64.
- Collier, Paul. (2000, June 15). "Economic causes of civil conflict and their implications for policy." A paper for the World Bank Group. [On-line]. Available: <http://www.worldbank.org/research/conflict/papers/civilconflict.pdf>
- Dabelko, Geoffrey D.; Lonergan, Steve; & Matthew, Richard. (1999). *State of the art review on environment, security and development cooperation*. IUCN/OECD. [On-line]. Available: http://www.iisd.org/pdf/2002/envsec_oecd_summary.pdf
- Dalby, Simon. (1996). "The environment as geopolitical threat." *Ecumene* 3(4), 472-96.
- Dalby, Simon. (1999). "Threats from the south? Geopolitics, equity, and environmental security." In Daniel Deudney & Richard A. Matthew (Eds.), *Contested grounds: Security & conflict in the new environment politics* (pages 155-185). Albany: SUNY Press.
- Desombre, Beth & Barkin, Samuel. (Forthcoming). "The Turbot war." In Mark Halle, Richard Matthew, & Jason Switzer (Eds.), *Conserving the peace*. Geneva: IISD.
- Deudney, Daniel H. (1999). "Bringing nature back in: Geopolitical theory from the Greeks to the global era." In Daniel H. Deudney & Richard A. Matthew (Eds.), *Contested grounds: Security and conflict in the new environment politics* (pages 25-57). Albany: SUNY Press.
- Deudney, Daniel H. (1999). "Environmental security: A critique." In Daniel Deudney & Richard A. Matthew (Eds.), *Contested grounds: Security and conflict in the new environmental politics* (pages 187-219). Albany: SUNY Press.
- Deutch, John. (1996, July 25). "The environment on the intelligence agenda." Speech presented to the World Affairs Council. [On-line]. Available: http://www.odci.gov/cia/public_affairs/speeches/archives/1996/dci_speech_072596.html
- Diamond, Jared. (1997). *Guns, germs, and steel: The fates of human societies*. New York: Norton.
- Diehl, Paul & Gleditsch, Nils Petter. (Eds.). (2001). *Environmental conflict*. Boulder, CO: Westview Press.
- Dodds, Klaus & Atkinson, David. (1999). *Geopolitical traditions: Critical histories of a century of geopolitical thought*. London: Routledge.
- Ehrlich, Paul R. (1968). *The population bomb*. New York: Ballantine.
- Esty, Daniel C.; Goldstone, Jack A.; Gurr, Ted Robert; Harff, Barbara; Levy, Marc; Dabelko, Geoffrey D.; Surko, Pamela T.; & Unger, Alan N. (1999). "State failure task force report: Phase II findings." *Environmental Change and Security Project Report 5*, 49-72.
- Fagan, Brian. (1999). *Floods, famines, and emperors: El Nino and the fate of nations*. New York: Basic.
- Friedman, Thomas L. (1999). *The Lexus and the olive tree*. New York: Farrar, Straus, Giroux.
- Fukuyama, Francis. (1997). "The end of history?" In Foreign Affairs Agenda, *The New Shape of World Politics* (pages 1-25). New York: Norton.
- Gedicks, Al. (1993). *New resource wars: Native and environmental struggles against multinational corporations*. Cambridge: South End Press.
- Gedicks, Al. (2001). *Resource rebels: Native challenges to mining and oil corporations*. Cambridge: South End Press.
- Gleditsch, Nils Petter. (1998). "Armed conflict and the environment: A critique of the literature." *Journal of Peace Research* 35, 381-400.
- Gore, Albert. (1999, January 29). "Remarks prepared for the World Economic Forum, Davos." [On-line]. Available: <http://clinton3.nara.gov/WH/EOP/OVP/speeches/davos.html>
- Halle, Mark; Matthew, Richard; & Switzer, Jason. (Eds.). (Forthcoming). *Conserving the peace*. Geneva: IISD.
- Hartmann, Betsy. (2001). "Will the circle be unbroken?" In Nancy Lee Peluso & Michael Watts (Eds.), *Violent environments* (pages 39-62). Ithaca: Cornell University Press.
- Hauge, Wenche & Ellingsen, Tanya. (1998). "The causal pathway to conflict: Beyond environmental security." *Journal of Peace Research* 35, 299-317.
- Homer-Dixon, Thomas. (1991). "On the threshold: Environmental changes as causes of acute conflict." *International Security* 16, 76-116.
- Homer-Dixon, Thomas. (1994). "Environmental scarcities and violent conflict. Evidence from cases." *International Security* 19, 5-40.
- Homer-Dixon, Thomas. (1999). *Environment, scarcity and violence*. Princeton: Princeton University Press.
- Homer-Dixon, Thomas & Blitt, Jessica. (Eds.). (1998). *Ecoviolence: Links among environment, population and security*. Lanham:

- Rowman and Littlefield.
- Huntington, Samuel. (1997). "The clash of civilizations?" In *The New Shape of World Politics: Contending Paradigms in International Relations* (pages 67-91). New York: Norton.
- Jackson, Jeremy B.C.; Kirby, Michael X.; Berger, Wolfgang H.; Bjorndal, Karen A.; Botsford, Louis W.; Bourque, Bruce J.; Bradbury, Roger H.; Cooke, Richard; Erlandson, Jon; Estes, James A.; Hughes, Terence P.; Kidwell, Susan; Lange, Carina B.; Lenihan, Hunter S.; Pandolfi, John M.; Peterson, Charles H.; Steneck, Robert S.; Tegner, Mia J.; & Warner, Robert R. (2001, July 27). "Historical overfishing and the recent collapse of coastal ecosystems." *Science* 293(5530), 629.
- Kahl, Colin. (2000). *States, scarcity, and civil strife in the developing world*. Unpublished doctoral dissertation. New York: Columbia University.
- Kaplan, Robert. (1994, February). "The coming anarchy: How scarcity, crime, overpopulation, and disease are rapidly destroying the social fabric of our planet." *The Atlantic Monthly*, 44-76.
- Kennedy, Paul & Connelly, Matthew. (1994, December). "Must it be the west against the rest?" *The Atlantic Monthly*, 61-83.
- Khong, Yuen Foong. (2001, July/September). "Human security: A shotgun approach to alleviating human misery?" *Global Governance* 7(3), 231-236.
- Klare, Michael & Thomas, Daniel C. (Eds.). (1994). *World security: Challenges for a new century*. New York: St. Martin's Press.
- Klare, Michael. (2001). *Resource wars: The new landscape of global conflict*. New York: Henry Holt.
- Le Billon, Philippe. (2001). "The political ecology of war: Natural resources and armed conflicts." *Political Geography* 20, 561-584.
- Levy, Marc. (1995). "Is the environment a national security issue?" *International Security* 20, 35-62.
- Lipschutz, Ronnie. (1989). *When nations clash: Raw materials, ideology and foreign policy*. New York: Ballinger.
- Loneragan, Steve; Brklacich, Mike; Cocklin, Chris; Gleditsch, Nils Petter; Gutierrez-Espeleta, Edgar; Langeweg, Fred; Matthew, Richard; Narain, Sunita; & Soroos, Marvin. (1999). *Global environmental change and human security science plan*. (IHDP Report 11). Bonn, Germany: International Human Dimensions Programme on Global Environmental Change.
- Loneragan, Steve; Gustavson, Kent; & Carter, Brian. (2000). *AVISO 6: The index of human insecurity*. [On-line]. Available: <http://www.gechs.org/aviso/AvisoEnglish/six.shtml>
- Matthew, Richard. (1999). "Recent books on environment, conflict and security." *Journal of Political Ecology* 6. [On-line]. Available: http://dizzy.library.arizona.edu/ej/ipe/volume_6/matthewvol6.html
- Matthew, Richard & Gaulin, Ted. (2002). "The ecology of peace." *Peace Review* 14, 33-39.
- Matthew, Richard; Gaulin, Ted; & McDonald, Bryan. (Forthcoming). "The elusive quest: Linking environmental change and conflict." *Canadian Journal of Political Science*.
- Matthew, Richard & Shambaugh, George. (1998, Summer). "Sex, drugs and heavy metal: Transnational threats and national vulnerabilities." *Security Dialogue* 29, 163-175.
- Matthew, Richard & Shambaugh, George. (2002). "Al Qaeda versus McWorld: A third front in the war on terrorism." (GECHS Working Paper). Irvine, CA: University of California-Irvine.
- McNeill, John. (2000). *Something new under the sun: An environmental history of the twentieth century world*. New York: Norton.
- Miller, Steven E. (1985). *Military strategy and the origins of the First World War*. Princeton: Princeton University Press.
- Myers, Norman. (1993). *Ultimate security: The environmental basis of political stability*. New York: Norton.
- Naqvi, Nauman. (Ed.). (1996). *Rethinking security, rethinking development*. Islamabad: Sustainable Development Policy Institute.
- NATO's committee on the challenges of modern society. (1999). *Environment and security in an international context*. Brussels: NATO.
- Nettle, Daniel & Romaine, Susan. (2001). *Vanishing voices: The extinction of the world's languages*. Oxford: Oxford University Press.
- O'Loughlin, John. (Ed.). (1994). *The Dictionary of Geopolitics*. Westport, CT: Greenwood.
- Osborn, Fairfield. (1948). *Our plundered planet*. New York: Grosset and Dunlap.
- Paris, Ronald. (2001, Fall). "Human security: Paradigm shift or hot air?" *International Security* 26, 87-102.
- Peluso, Nancy Lee & Watts, Michael. (2001). *Violent environments*. Ithaca: Cornell University Press.

Feature Articles

- Perry, William. (1996, November 20). "Remarks on environmental policy presented to the Society of American Military Engineers, Washington, D.C." [On-line]. Available: http://www.defenselink.mil/news/Nov1996/b112096_bt650-96.html
- Poggi, Gianfranco. (1978). *The development of the modern state: A sociological introduction*. Stanford: Stanford University Press.
- Ponting, Clive. (1991). *A green history of the world: The environment and the collapse of great civilizations*. New York: Penguin.
- Rajan, S. Ravi. (2001). "Toward a metaphysic of environmental violence: The case of the Bhopal gas disaster." In Nancy Lee Peluso & Michael Watts (Eds.), *Violent environments* (pages 380-398). Ithaca: Cornell University Press.
- Raspail, Jean. (1995) *The camp of the saints*. (Trans. Norman Shapiro). Petoskey, MI: The Social Contract Press.
- Rosenau, James. (1990). *Turbulence in world politics: A theory of continuity and change*. Princeton, Princeton University Press.
- Schwartz, Daniel M.; Degliannis, Tom; & Homer-Dixon, Thomas. (2000). "The environment and violent conflict: A response of Gleditsch's critique and some suggestions for future research." *Environmental Change and Security Project Report 6*, 77-94
- de Soysa, Indra & Gleditsch, Nils Petter. (1999). "To cultivate peace: Agriculture in a world on conflict." *Environmental Change and Security Project Report 5*, 15-33.
- Stoff, Michael. (1980). *Oil, war and American security*. New Haven: Yale University Press.
- Suhrke, Astri. (1999, September). "Human security and the interests of states." *Security Dialogue 30*, 265-276.
- Tehrani, Majid. (Ed.). (1999). *Worlds apart: Human security and global governance*. London: I.B.Tauris.
- Thomas, Caroline & Wilkins, Peter. (Eds.). (1999). *Globalization, human security and the African experience*. Boulder: Lynne Rienner.
- Tuathail, Gearoid ÓDalby, Simon; & Routledge, Paul. (Eds.). (1998). *The geopolitics reader*. London: Routledge.
- Tilly, Charles & Matthew, Richard. (2002). *Dichotomy of power: State versus nation in world politics*. Lanham: Rowman and Littlefield.
- United Nations Development Programme (UNDP). (1994). *Human development report 1994*. Oxford: Oxford University Press.
- Wapner, Paul. (1996). *Environmental activism and world civic politics*. Albany: SUNY Press.
- Williams, Phil & Black, Stephen. (1994, April). "Transnational threats: Drug trafficking and weapons proliferation." *Contemporary Security Policy 15*, 127-151.
- Wirth, Timothy. (1994, July 14). "Sustainable development vital to new U.S. foreign policy." Speech presented to National Press Club. Washington, DC: Author.
- World Commission on Environment and Development. (1987). *Our common future*. Oxford: Oxford University Press.



SPECIAL REPORT

FIRE & WATER

Technologies, Institutions, and Social Issues in Arms Control and Transboundary Water-Resources Agreements

By Elizabeth L. Chalecki, Peter H. Gleick, Kelli L. Larson, Arian L. Pregenzer, and Aaron T. Wolf

The world of environmental security is bringing the science of natural resources in ever-closer contact with the policy issues of international stability and foreign affairs. Many U.S. and international agencies—including the U.S. Departments of State and Defense, the North Atlantic Treaty Organization, and the Southern African Development Community—now analyze foreign policy in part through the lens of environmental resources. In October 2001, three organizations—the Pacific Institute for Studies in Development, Environment, and Security; the Department of Geosciences of Oregon State University; and the Cooperative Monitoring Center (CMC) at

Sandia National Laboratories—sponsored a workshop designed to highlight the closeness of national security and environmental concerns through explicitly comparing the technologies, institutions, and social issues in two seemingly disparate fields: arms control and transboundary water resources. With generous support from the Carnegie Corporation of New York, “Fire & Water” workshop participants compared and contrasted these two fields and then identified questions for further analysis. Workshop sessions focused on three specific topics: (a) scientific and technological advances, (b) treaties and institutions, and (c) social and cultural issues.

Elizabeth L. Chalecki is the research associate for the Environment & Security Program at the Pacific Institute for Studies in Development, Environment, and Security. She is currently working on issues of environmental terrorism, climate change and its effects on U.S. security, and regional watershed security and diplomacy.

Peter H. Gleick is co-founder and president of the Pacific Institute for Studies in Development, Environment, and Security. He is an internationally recognized expert on global freshwater resources, including the hydrologic impacts of climate change, sustainable water use, privatization and globalization, and international conflicts over water resources.

Kelli L. Larson is a doctoral student in the Geography Program at the Department of Geosciences, Oregon State University. Her research interests relate to human dimensions of water-resources management and planning.

Arian L. Pregenzer is senior scientist at the Cooperative Monitoring Center at Sandia National Laboratories in Albuquerque, NM. Her responsibilities include leading the labs’ Regional Security Program with a focus on the Middle East, South Asia, and Northeast Asia.

Aaron T. Wolf is an associate professor of geography in the Department of Geosciences at Oregon State University. His research focuses on the interaction between water science and water policy, particularly as related to conflict prevention and resolution. He also coordinates the Transboundary Freshwater Dispute Database, an electronic compendium of case studies of water conflicts and conflict resolution, international treaties, national compacts, and indigenous methods of water-dispute resolution (www.transboundarywaters.orst.edu).



SUMMARY OF KEY FINDINGS

These two fields are fundamentally different in their structure and outlook. The arms-control regime deals with a man-made, artificial resource and has states as its main players. Its significance is political and military, and the somewhat arbitrary rules and norms that have grown up around this regime have meaning only to other players in the regime (e.g., a treaty limit that states that 5,000 missiles make a nation secure but 4,999 do not defines security only subjectively). The water-resources regime, on the other hand, deals with a natural resource that has paramount ecological and cultural significance. The main players in the water regime can be states, nongovernmental organizations (NGOs), or individual citizens. More importantly, there is a true and objective need for 50 liters of fresh water per person per day (Gleick, 1998) as a component of human security.

Nevertheless, both water-resources management and arms control can be the subject of intense international negotiations, and both require a willingness to cooperate and perhaps to make short-term sacrifices to gain long-term benefits. Negotiators for both types of regimes need a general understanding of the initial conditions (e.g., average water-flow or -use data; general military capability) as a critical foundation. Negotiations in both fields must address topics such as lack of trust and/or data, transparency versus opaqueness in process, and appropriate feedback loops and conflict-resolution mechanisms.

Conference participants also explored areas where actors in each field might be able to learn from the other. For example, arms-control agreements rely heavily on the use of modern technologies such as remote sensing and real-time monitoring. Water-resources agreements have not traditionally applied these types of technology, but could benefit greatly from the objective data they provide. The arms-control regime strives to induce every country to sign the same agreements as a way of promoting universality of international norms. Water treaties, however, involve only those countries that contain part of the disputed watershed, often resulting in innovative regional solutions. Finally, the water regime has offered far more opportunities for public participation through professional organizations and NGOs than has the arms-control regime. Military secrecy regarding arms information and state sensitivity to revealing national security matters has made arms-control agreements generally weak in official opportunities for civic participation.

INTERNATIONAL WATER RESOURCES 101

Two hundred sixty-one watersheds cross the political boundaries of two or more countries. These international basins cover a portion of the earth's surface nearly equal to half of the earth's land. They affect about 40 percent of the world's population and account for approximately 60 percent of global river flow (Wolf et al., 1999). Certain conditions make management of these basins especially difficult—most notably, regional politics that tend to exacerbate the already difficult task of understanding and managing complex natural systems.

Disparities between riparian nations (i.e., those containing a freshwater boundary)—whether in economic development, infrastructural capacity, or political orientation—further complicate water-resources development, institutions, and management. As a consequence, many people dealing with this regime view treaties and institutions as inefficient, ineffective, and occasionally yet another source of friction. Despite the tensions inherent in the international setting, however, riparians have shown tremendous creativity in approaching regional development, often through preventive diplomacy.

Generalized legal principles for transboundary water management are currently defined by the Convention on the Non-Navigational Uses of International Watercourses, which was ratified by the UN General Assembly in 1997 (International Watercourses, 1997). The convention took several decades to develop, highlighting the difficulty of combining legal and hydrologic intricacies. Although the convention provides many important principles (including responsibility for cooperation and joint management), it is also vague and occasionally contradictory. To date, only a handful of water negotiations and treaties have explicitly invoked these principles. The Convention offers few practical guidelines for water allocations—the central issue in most conflicts over water.

In the absence of detailed water law, adequate institutional capacity, or warfare, the countries that contain or border the world's international waterways have managed to “muddle through,” creating remarkably cooperative water institutions in the process. In contrast with more general international conventions and principles, these institutions—including bilateral and multilateral agreements, transboundary-management institutions, and unofficial arrangements—have successfully focused on specific regional conditions and concerns.

The Food and Agricultural Organization of the United Nations (FAO) has identified more than 3,600 treaties negotiated between A.D. 805 and 1984 relating to international water resources. (The majority of these treaties deal with some aspect of navigation). Since 1814, nations have also negotiated a smaller body of treaties that address non-navigational issues of water management—including flood control, hydropower projects, and allocations for consumptive or non-consumptive uses. The Transboundary Freshwater Dispute Database Project at Oregon State University¹ houses the largest collection of water-related treaties, including the full text of about 300 treaties that deal with water resources *per se*. Figure 1 shows the world's international basins, along with the number of treaties might have been signed in each.

Despite their rich history, a reading of these treaties reveals that the legal management of transboundary rivers remains in its conceptual infancy. More than half of these treaties lack monitoring provisions; perhaps as a consequence, two-thirds fail to delineate specific allocations, and four-fifths have no enforcement mechanism. Moreover, the treaties that do address allocations assign a fixed amount to all riparian nations but one, and that one nation must then accept the balance of the river flow, regardless of fluctuations. Finally, multilateral basins are (almost without exception) governed by bilateral treaties,

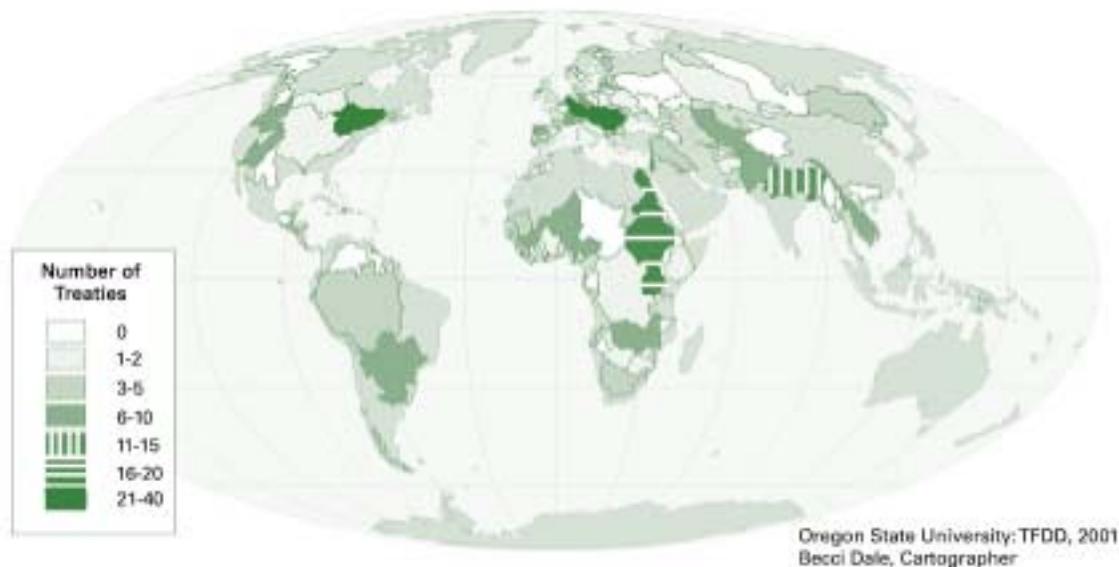
precluding the integrated basin management long advocated by water managers. Nevertheless, once treaties establish cooperative water regimes, they prove impressively resilient over time—even between otherwise hostile riparians and even as conflict wages over other issues.

ARMS CONTROL AND NONPROLIFERATION TREATIES 101

Arms-control and nonproliferation treaties—such as the Chemical Weapons Convention (CWC) and the Nuclear Nonproliferation Treaty (NPT)—are legally binding agreements negotiated between states (CWC, 1993; NPT, 1970). In the United States, the President is authorized to sign a treaty, but the treaty will not become law until the Senate has given its advice and consent. In many cases, international organizations manage treaty implementation and perform monitoring and verification activities. However, these international organizations do not make decisions about treaty compliance. While *verification* involves information collection and oversight activities to ensure compliance with treaty obligations, national governments reserve the right to make *compliance* decisions (i.e., whether treaty obligations have actually been violated).

Most arms-control and nonproliferation treaties have several basic elements, including three critical

Figure 1. Number of Treaties per International Basin



components: obligations, declarations, and verification measures:

- *Treaty obligations* are the terms of the treaty. For example, the CWC obligates countries not to produce or stockpile chemical weapons. The Strategic Arms Reduction Treaties (START) require the United States and Russia to reduce the number of deployed nuclear warheads. And nuclear testing treaties obligate the parties to refrain from atmospheric nuclear weapons tests and from underground tests above a particular yield.
- *Declarations* are the requirements on treaty parties to disclose information relevant to the treaty's terms about their existing capabilities. For example, a treaty may require parties to declare quantities and locations of weapons, test facilities, and weapon production facilities.
- *Verification measures* are activities and procedures to determine the accuracy of declarations and to verify that parties meet their obligations under the treaty. Depending on the treaty, verification can include the use of satellite imagery, on-site inspections, unattended monitoring, and aerial overflights. Negotiators agree on verification measures (including exact monitoring procedures, specific technologies, and the methods for managing data) in the actual treaty, making them difficult to change even as new capabilities become available. These measures can be highly contentious, even within a specific country. Because all parties have the same rights of verification and inspection, tradeoffs must be made between intrusive verification and protecting sensitive information. In addition, some countries may agree to treaty membership and/or verification measures as a *quid pro quo*—in exchange for receiving technical assistance or other benefits.

Whereas signatory states generally implement bilateral treaties, international organizations implement many multilateral treaties. Examples include: (a) the International Atomic Energy Agency (IAEA) associated with the Nuclear Nonproliferation Treaty, and (b) the Organization for the Prohibition of Chemical Weapons for the CWC. Responsibilities for these international organizations include: organizing and conducting verification activities, managing and analyzing data collected during verification, and recommending measures to ensure compliance in suspicious circumstances. As mentioned previously, these organizations do not make compliance decisions.

SYNTHESIS 101

The Sandia workshop's goals were (a) to explore each field in the context of the changing definition of security, and (b) to identify useful lessons and tools each set of actors might explore further. Military security—and arms control in particular—has traditionally viewed the state as the object of security. The consequences of compliance and failure redound onto the state. Water treaties, on the other hand, are often negotiated from the premise that the object of security is no longer solely the state, but includes the people of the state. With almost 3,600 water-related treaties, the water world has a more robust institutional history. Only several dozen arms-control treaties exist, and these have been assessed primarily against classic security parameters.

Yet each regime—arms control and water-resources management—deals with similar issues. A detailed comparison of these two seemingly unrelated fields can illuminate better methods of achieving both state and human security. The similarities are striking, and could lead to the successful transfer of technologies and methodologies from one field to the other. Both water management or water allocation and arms control represent interstate issues negotiated between governments; and successful agreements require both an understanding of national and international politics and an atmosphere of cooperation. Both sets of actors negotiate around topics such as lack of trust and/or data, transparency versus opaqueness in process, and appropriate feedback loops and conflict-resolution mechanisms.

The differences, however, are equally striking: water is a shared resource, and water-resources treaties generally involve geographically contiguous states that share an international watershed. Arms are not a shared resource, so arms-control agreements involve states that are not necessarily contiguous. Water management involves resource control and conflicts at the sub-national level, whereas arms of the kind regulated by international agreement have not generally been available to sub-national groups or the public. However, this last point may be changing with the efforts of terrorist groups to obtain biological and chemical weapons.

SCIENTIFIC AND TECHNOLOGICAL ADVANCEMENTS

Summary

Both arms-control agreements and water agreements must start with a clear and shared



understanding of the definition of the relevant items or resources. Both must also specify monitoring procedures and verification measures as an integral part of the agreement. However, arms control and water differ markedly in their use of technology for monitoring and verification. Arms-control treaties generally call for extensive use of technology and only allow organizations identified in the treaty to engage in monitoring. Water treaties, on the other hand, generally prescribe neither types of technology nor how the technology will be used to monitor compliance.

Definitions

Establishing and clarifying agreed-upon definitions for terms at the outset of both water and arms-control negotiations can prevent misunderstandings and disagreements throughout the negotiation process and beyond. Successful agreements also require accurate baseline “capabilities and facilities” data. For arms-control negotiations, this refers to the best information possible on each nation’s weapons stockpiles and production capabilities. For water negotiations, this can include information on yearly hydrological flows, water-usage data, and water-quality and -quantity information. However, the inherent seasonal and yearly fluctuations in such water data can prove problematic for agreement negotiations. For this reason, water agreements need flexible baselines that can adapt to changing water conditions in the signatory countries.

Verification

Verification is the most critical issue for a successful treaty in either regime, and must be recognized as an integral part of negotiations from the beginning. In addition, the difference between “monitoring” (gathering data on water quality, weapons locations, etc.), “verification” (determining whether a treaty obligation has been met), and “compliance” (deciding whether a party has violated the agreement) is important, because political considerations play a significant role in determining compliance. Importantly, while technological measures, inspections, and other intelligence-gathering methods can greatly increase a state’s monitoring capability, merely collecting data does not usually suffice for verification. In arms control, verification decisions usually fall to a political or executive body (such as the State Department or Ministry of Foreign Affairs) within individual countries. For both regimes, a

determination of non-compliance does not automatically mean that a country will be charged with a violation. In each case, political, economic, and other considerations intervene.

Negotiating verification is usually the most contentious point for governments, who may hesitate to surrender any part of their national sovereignty to intrusive inspections. The fluctuating baseline issue in the water regime complicates this reluctance, since in years of drought it may be impossible to comply with a treaty based on fixed allocations.

Finally, changing a formal treaty regime to accommodate new technologies and policies can prove difficult. Signatories rarely modify a treaty once it has entered into force. Negotiating sides often see last-minute changes or revisions as (a) obstacles to successful treaty completion, or (b) attempts by one side or the other to obscure or delay implementation. Surmounting this hurdle requires treaty language that stipulates procedures for incorporating new technologies as they become available. Such language permits a mechanism for review and adoption of new technologies.

Technology

Various tools and technologies from arms-control regimes would transfer well to water treaties. Advances in technology (such as remote sensing) originally used in arms control can now aid in non-military applications, including hydrologic monitoring. Such technology is likely to play a more significant role in future cooperative water-resource agreements. Water-related information portrayed and/or derived from satellite imagery includes (but is not limited to) the following: topographic data, evapotranspiration, land use/cover, water distribution/flow, and snow pack (Perry & Kite, 1999; Schultz, 2000). For example, when Wolf et al. (1999) recomputed the numbers and extent of internationally-shared river basins, they used recently declassified digital elevation maps obtained from several countries’ military satellite archives.

The complete spatial coverage provided by satellite imagery is especially important in view of the current use of point data to model or portray entire catchment areas (Schultz, 2000). The potential to obtain complete spatial coverage is particularly critical in those developing countries with less-systematic data collection and monitoring. Political sensitivity relating to information sharing also emphasizes the potential role of remotely-sensed data in both international water negotiations (Perry & Kite, 1999) and arms-

control treaty verification. Given the role that information often plays in negotiations, the perceived objectivity of remotely-sensed imagery may prove critical in dispute resolution.

Moreover, the “real-world” visualization of information provided by satellite imagery may also be valuable in the context of negotiations. While access to new technologies and data cannot replace the political goodwill necessary for creative solutions, user-friendly 21st-century technology (such as water-systems

Structure of Negotiations

A variety of (a) formal agreements, (b) informal Memoranda of Understanding (MOUs) and verbal agreements, (c) Cooperative Threat Reduction arrangements, and (d) lab-to-lab partnerships can function to diffuse tensions over both arms-control and water-management issues. These mechanisms can be bilateral or multilateral—though as issues become more comprehensive, more parties may find it in their interest to participate. Additionally, both formal and

In the absence of detailed water law, adequate institutional capacity, or warfare, the countries that contain or border the world’s international waterways have managed to create remarkably cooperative water institutions.

models, remotely-sensed data, and geographic information systems) can assist in the process of negotiating and managing international water-resource systems. In addition, the negotiating sides should make an effort to develop technologies and procedures cooperatively, so that each party has a stake in their deployment and use. Sensitive data should be kept in a secured place to minimize the risk of unnecessary information leakage, and all data gathered for treaty purposes should be accounted for so as to allay suspicion as to uses of “unused” data.

TREATIES AND INSTITUTIONS

Summary

Both arms control and water utilize a number of regime structures, from bilateral informal partnerships to formal multilateral treaties. By addressing issues of informational equity and reciprocity and providing significant benefits for participation, negotiating parties can overcome historical mistrust and make progress on critical issues. With the exception of bilateral arms-control treaties between the United States and Russia, both water and arms-control agreements involve almost every country in the world. Arms control, at least in the developed countries, usually benefits from a well-developed bureaucratic and institutional infrastructure that water regimes do not possess. In addition, arms-control agreements benefit far more from traditional national security funding than do agreements on water resources.

informal negotiations succeed best when phased in over time, allowing parties to build a history of cooperation and mutual interests. Sometimes, negotiations can utilize an existing institution (such as the United Nations’ Conference on Disarmament). The adjudicating institution may also proceed from the negotiations. For example, the International Joint Commission was established by the United States and Canada under the 1909 Boundary Waters Treaty to manage transboundary water issues.

Whatever the shape of the arrangement, collaboration over arms control or water resources tends to precede either: (a) a *problem* that makes the *status quo* unacceptable (such as naval confrontations between the United States and U.S.S.R. that gave rise to the Incidents at Sea Agreement); or (b) an *opportunity* (such as the decision by the United States to destroy all its chemical weapons, motivating that country to bind others to do the same). For example, a drought can bring countries to the table to negotiate an agreement to prevent or alleviate future water crises. In the early 1940s, negotiations over the Colorado River between the United States and Mexico were accelerated due to both water shortages in Mexico and President Roosevelt’s desire to improve relations with that country during World War II.

In order to share often-sensitive information about water supply or arms capability, each country must see a benefit to participating in an agreement. However, each country’s emphasis on its individual sovereignty often presents a barrier to data sharing and information exchange. By (a) addressing issues of informational equity and reciprocity directly, and (b) providing significant benefits for participation, parties



can overcome historical mistrust and make progress on critical issues. Lack of data sharing was an historical barrier between India and Bangladesh in their dispute over the Farakka Barrage on the Ganges River; and their recent formal agreement explicitly calls for exchanges of hydrologic information.

Defining Success

Finally, when parties reach agreement and set up an implementing body, both water resources and arms control can benefit from a clear definition of “success.” Some treaties can be declared a success (even in the face of subsequent “technical” violations) because the affected parties negotiated the agreement instead of going to war over the issue. Sometimes the success of a treaty depends on efforts and activities over time rather than on single measures of success. In either case, the development and application of performance criteria can aid in determining the “success” of a treaty or agreement, which can ultimately improve the efficacy of treaties in the future.

Funding

Arms control falls within traditional notions of national security; as such, it is usually very well-funded by governments. But conflicts over water resources—indeed the whole idea of environmental resources and their security implications—fall outside traditional notions of “national security.” Because many governments (including that of the United States) have been slow to recognize this “soft” aspect of security, water-resource agreements and negotiations have not been well funded in comparison with “hard” security topics such as arms control. In some instances, international organizations (rather than the countries directly involved) fund water security activities. The ongoing Nile Basin Initiative, for example, is funded by the United Nations Development Programme, the World Bank, the FAO, Canadian International Development Agency, and the Italian government.²

Questions for Further Discussion

The workshop raised a variety of other questions. How do crises become opportunities for negotiation between states? What will bring states to the table to negotiate? How are such a crisis and its attendant negotiations precipitated? Does it require the intervention of an individual to bring about an agreement (such as with Jodi Lynn Williams and the international ban on land mines)? Or are agreements more likely to be precipitated when the public

demands action (such as when the discovery of significant amounts of strontium-90 in children’s teeth in the 1950s led to the Limited Test Ban Treaty of 1963)? More specifically, since water is a global resource, should there be a global cooperative water-monitoring agreement? Is this politically possible? Could an international cooperative monitoring program overcome national sovereignty and data secrecy issues, and if so, how? What would be sufficient incentives for countries to cooperate? These questions and others could be the focus of additional work and discussion.

SOCIAL AND CULTURAL CONSIDERATIONS

Summary

While both water and arms control benefit from public input, the arms-control arena offers fewer opportunities for such input. In addition, public input to reduce both arms and large-scale water-development projects may meet some resistance from governments and other entrenched interests. All forms of agreements can benefit from confidence-building measures, increased transparency, and citizen involvement in verification (if applicable).

Public and NGO Participation

Traditionally, “experts” have negotiated arms control and nonproliferation treaties on behalf of national governments and with relatively little input from the general population. Several factors may have influenced this situation. The regulated or controlled items have generally been military activities and weapons. Government agencies “own” these items and activities. In recent years, treaties like the CWC also regulate material and activities of the private sector. In the case of the CWC, representatives of the chemical industry had a significant though indirect effect on the agreed verification measures. For treaties that concern limiting military equipment and activities, the defense industry can influence decisions through lobbying and other congressional testimony. Water issues also have come under their fair share of lobbying. The recent report from the World Commission on Dams (WCD, 2000) was influenced by representatives from both the dam construction industry and the environmental community. Both sides have challenged its conclusions as biased (Cushing, 2002; Patrick McCully, personal communication, March 1, 2002).

Both arms control and water-resource management have experienced an increase in public

attention and involvement in decision-making activities in the last few decades—particularly facilitated by a global increase in the numbers of NGOs. For example, NGOs such as the National Resources Defense Council and the Pugwash Conferences have sought to give citizens a voice in matters of nuclear war.

Given the political and military secrecy involved in most arms-control negotiations (as well as the greater role that the public plays in water management as water-users), the water field has more public input than arms control does. The water field contains an impressive range of NGOs—from the World Water

increases the number of stakeholders with economic interests in the field. These “entrenched interests” are often resistant to new methods and policies.

Moving Forward

There are several trends in arms control and nonproliferation that may change both implementation and the degree of citizen involvement.

- *Confidence-building measures*, designed to reassure neighbors and the international community that a country is not a threat, need not be legally binding.

The difficulty of ratifying arms-control treaties in the U.S. Senate reflects in part a lack of broad public participation in their design.

Council and the Global Water Partnership (whose members include government water agencies, utilities, and private water providers) to the Freshwater Action Network (whose members are other environmental NGOs) to the International Water Resources Association and the International Water Association (which are professional organizations of scientists, engineers, and other water specialists). These organizations can help funnel public input into official government-level negotiations. As arms-control treaties evolve to address issues such as land mines and small arms—weapons that more directly affect the public—public input will likely rise.

Entrenched Interests

Measuring the input that public citizens should or could have on the formation and execution of policy in the areas of both water management and arms control is complicated by several factors. Both the development and accumulation of powerful weapons such as nuclear warheads and the construction of large-scale water-diversion projects such as dams carry a certain symbolism. Both require a government capable of a certain outlay of wealth and technological prowess; therefore, such symbolic actions might signal both to other nations and to its own citizens that this nation is now a world power, a state to be reckoned with. Such symbolic acts might also fuel either an arms race or a development spree. In addition, the more prestige these fields can garner, the more likely they are to develop an exclusive cadre of persons that institutionalize the field’s knowledge and viewpoint. Such institutionalization is often accompanied by the establishment of large-scale industries and jobs, which

These measures could include notification of military exercises, invitations to observe military exercises or facilities, and establishing hotlines.

- *Unilateral measures and increased transparency* could be loosely coordinated among countries to avoid lengthy, costly, and contentious negotiations about verification measures. Such an approach could hasten weapons reductions and preserve flexibility.
- *Treaties limiting small arms and other destructive equipment* such as the Land Mines Treaty have a much greater immediate impact on ordinary citizens than do treaties limiting nuclear weapons (Land Mine Treaty, 1997). They are also much more difficult to verify. Citizen involvement in treaty initiation, negotiation, and verification could be critical to the success of such treaties.

Non-Treaty Mechanisms

Water-resources management treaties can be supplemented by a number of non-treaty mechanisms such as cultural festivals, sister watersheds, and trade agreements. People everywhere enjoy celebrating their local water resources, and water festivals have sprung up in venues as far flung as Stockholm, Sweden, and Centerville, Alabama. The 3rd World Water Forum planned for March 2003 in Kyoto, Japan will have an associated “water fair” that is expected to bring over 100,000 visitors. A possible UNESCO program promoting “sister watersheds” (similar to the now-widespread sister-cities programs) would allow communities to exchange information. All of these types of activities add to local ownership of water-



resources issues; if harnessed, they can also further strengthen commitments to international agreements.

CONCLUSION

What have these two sides learned from one another? With regard to scientific and technological advancements, two things are clear: (1) the strength of the arms-control community in the area of science and technology, and (2) the need for such tools and techniques in the water community. The heavy emphasis on technology found in arms-control treaties would translate well to water-resources treaties. Remote sensing, satellite imagery, and real-time on-line data collection and dissemination would be extremely useful to determine water availability, flows, diversions, and quality. For example, CMC participates in a pilot project designed to monitor basic water-quality parameters in Central Asian transboundary watersheds. Begun in March 2000, the project aims at “facilitating the development of scientific methodology for cooperation and understanding of transboundary resource issues. This is a precursor to cooperative transboundary natural resource management” (CMC, 2000). By facilitating regional scientific cooperation and collaboration in these independent republics of the former Soviet Union, CMC is helping improve regional relationships and promote cooperation on difficult issues that would enhance security and stability in the contentious region of Central Asia.

Arms control again has much to offer with regard to treaties and institutions, although the great number and diversity of water agreements also provide useful tools and concepts. The formalized structures of the arms-control regime give the attendant treaties a high-profile stability and permanence. Organizations such as the (former) U.S. Arms Control and Disarmament Agency (ACDA) at the national level and the IAEA at the international level have proven invaluable—both to make sure that governments focus on particular security issues and (in the case of the IAEA) to ensure cooperation among nations facing the same issue. In addition, these types of organizations serve a useful purpose beyond merely fulfilling the functions of a treaty. If the treaty were ever to become defunct, the organization might still fulfill a useful role for information exchange or as a starting point for further negotiations.

The informality of water-resources regimes, on the other hand, offers the flexibility to either: (a) use existing organizations such as the World Meteorological Organization to fulfill treaty functions,

thereby making successful treaty execution a less daunting job; or (b) create organizations for specific treaty obligations (such as the International Boundary and Water Commission, designed to implement the various treaties governing boundary waters between the United States and Mexico). Another piece of knowledge that could be transferred from water regimes to arms control is that “treaties” themselves might not always be the most useful mechanism to resolve conflict or address an issue. Conflict-management processes and other informal measures may work to overcome mistrust between parties that would otherwise be chary of signing a formal, binding agreement.

With regard to social and cultural considerations, experience in water negotiations is deeper and more complex. Water-resources treaties have generally attempted to incorporate public participation and nongovernmental groups more directly in the decision-making process. In a few progressive regional cases, these treaties have adopted cooperative modeling (i.e., including public input in forming assumptions and building models). While most people are still willing to leave technical fields such as arms control to “experts,” many NGOs—armed with a greater level of knowledge than ever before—are pressuring governments to display more transparency in these negotiations. Including opportunities for public participation or adopting cooperative modeling may satisfy these demands while permitting negotiations to go forward.

In addition, water-resources projects have increasingly been required to compensate those displaced by dams or affected by poor water quality. Financial compensation for the negative ecological and public-health impacts of weapons testing and other weapons development is less widespread. But non-financial public compensation techniques such as ecological remediation could be transferred to the arms-control regime in response to increased public acknowledgement of the environmental and public-health damage from security projects (such as the nuclear weapons production sites at Hanford, WA or Rocky Flats, CO).

We also note two key differences between the two regimes. First, the water-resources regime receives input from many different and often conflicting interests such as agriculture, domestic ratepayers, industry, and ecosystem users. These conflicting interests may make negotiating international water agreements more difficult, since each country might not have a



unified position on water issues. While the plethora of voices is a challenge for developing a comprehensive multilateral water agreement, it can also make the final result more robust and palatable. The difficulty of ratifying arms-control treaties in the U.S. Senate reflects in part a lack of broad public participation in their design.

Second, though industrial development can augment a country's biological or chemical production ability, arms-control agreements generally concern static baseline numbers of weapons or capabilities that are limited by the treaty. As such, they can be verified through inspection. Water agreements, on the other hand, may be predicated upon measuring the yearly

supply of water in a given watershed, or water quality at specific locations or times. These factors can fluctuate dramatically on a yearly scale because of climatic conditions, or on a longer time scale because of anthropomorphic activity. If such a treaty is to function in reality, its definitions and verification procedures must take this variability into account.

The unusual comparison of these two seemingly disparate fields reveals many similarities and useful lessons. Comparing other such disparate fields (such as water resources and energy, arms control and food, or arms control and climate change) might offer other lessons of value to help us meet our goals of both national security and environmental protection. **W**

ACKNOWLEDGEMENTS

The authors would like to thank Amy Sands of the Monterey Institute for International Studies and Patrick McCully from the International Rivers Network for useful discussion, and Steve Del Rosso of the Carnegie Corporation of New York for lending his participation to this unusual project.

NOTES

¹ The Project's Web site is available at <http://www.transboundarywaters.orst.edu>

² A detailed description of this partnership is available at <http://www.nilebasin.org/nbipartners.htm>

REFERENCES

Convention on the Non-Navigational Uses of International Watercourses ("International Watercourses"). (1997). [On-line]. Available: <http://www.un.org/law/ilc/texts/nnavfra.htm>

Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction (CWC). (1993). [On-line]. Available: <http://www.cwc.gov/treaty>

Convention on the Prohibition of the Use, Stockpiling, Production and the Transfer of Anti-Personnel Mines and on their Destruction ("Land Mine Treaty"). (1997). [On-line]. Available: http://www.un.org/Depts/dpko/mine/UNDocs/ban_trty.htm

Cooperative Monitoring Center (CMC). (2000). Cooperative Monitoring Center, Sandia National Laboratories. [On-line]. Available: <http://www.cmc.sandia.gov/Central/centralasia.html>

Cushing, Katherine Kao (2002). "The World Commission on Dams report: What next?" In Peter H. Gleick (Ed.), *The world's water: The biennial report on freshwater resources 2002-2003* (pages 149-172). Washington, DC: Island Press.

Gleick, Peter H. (1998). *The world's water: The biennial report on freshwater resources 1998-1999*. Washington, DC: Island Press.

Perry, Chris & Kite, Geoff. (1999). "Water rights: Importance, difficulties, and new approaches to data collection and analysis." *Water International* 24(4), 341-347.

Schultz, Gert A. (2000). "Potential of modern data types for future water resources management." *Water International* 25(1), 96-109.

Treaty on the Non-Proliferation of Nuclear Weapons (NPT). (1970). [On-line]. Available: <http://www.state.gov/www/global/arms/treaties/npt1.html>

Wolf, Aaron; Natharius, Jeffrey A.; Danielson, Jeffrey J.; Ward, Brian S.; & Pender, Jan K. (1999). "International river basins of the world." *International Journal of Water Resources Development* 15(4), 387-427.

World Commission on Dams. (2000). *Dams and development: A new framework for decision-making*. [On-line]. Available: <http://www.dams.org/report/contents.htm>



NEW PUBLICATIONS

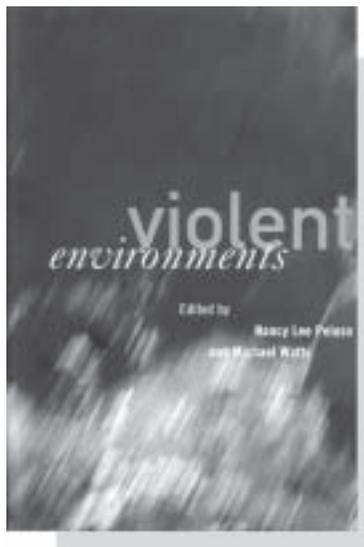
Violent Environments

Nancy Lee Peluso and Michael Watts (Eds.)
Ithaca, NY: Cornell University Press, 2001.
453pp.

Reviewed by **Colin Kahl**

According to co-editors Nancy Lee Peluso and Michael Watts, *Violent Environments* is meant to provide “both a critique of the school of environmental security and alternative ways of understanding the connections between environment and violence” (p. 5). This new and thought-provoking book takes particular aim at the neo-Malthusian approach to studying environmental conflicts (an approach that many of the contributors refer to as the “greenwar” perspective). The book’s harshest criticisms target the influential neo-Malthusian writings of three individuals: Robert Kaplan, the author of the infamous *Atlantic Monthly* article “The Coming Anarchy” (1994); Thomas Homer-Dixon, the North American pioneer of recent academic efforts to study environment-violence linkages; and Günther Baechler, the lead European researcher of the Environmental Conflicts Project (ENCOP). Homer-Dixon’s work receives the lion’s share of attention.

The first two theoretical chapters—Peluso and Watts’ introductory essay and Betsy Hartmann’s “Will the Circle Be Unbroken?”—advance a series of scathing criticisms of neo-Malthusian scholarship; they also put forth an alternative political-ecology approach to studying the environment-violence connection. These chapters frame the fourteen empirical ones that follow. Since the book is set up as a response to neo-Malthusian views, this review focuses on the merits of the book’s major theoretical critiques and contributions as well as the degree to which the empirical chapters substantiate these arguments. Although numerous criticisms of the neo-Malthusian approach are advanced in *Violent Environments*, the following sections emphasize what I see as the most general and serious indictments. After



assessing these criticisms, the review then addresses the merits of the proposed theoretical alternative.

In the end, I conclude that, while *Violent Environments* presents a series of powerful and challenging insights, it ultimately fails in its stated goal of overturning dominant approaches to environmental security.

Environmental Determinism

Peluso and Watts criticize the current neo-Malthusian literature for its tendency toward environmental determinism. This criticism takes two forms. First, the authors claim that neo-Malthusians (Homer-Dixon in particular) tend to advance models that describe automatic and simplistic causal linkages between resource scarcity and violent intrastate conflict (i.e., models that formulate the relationship as follows: population growth + environmental degradation → resource scarcity → social, economic, and political dislocations → violence). Simple and direct models such as this, according to Peluso and Watts, ignore or downplay crucial intervening processes.

Second, Peluso and Watts accuse Homer-Dixon of arguing that scarcity is the only cause of violence. Together, these criticisms amount to a claim that neo-Malthusians naively believe that population growth, environmental degradation, and resource scarcity are necessary and sufficient conditions for violent conflict.

Although these criticisms have some merit, it is simply wrong to argue that Homer-Dixon (or those scholars who have built on his research) treats demographic and environmental pressures as universally necessary or wholly sufficient causal variables. As Homer-Dixon clearly states in his recent book:





New Publications

“environmental scarcity produces its effects within extremely complex ecological-political systems...[W]hen it does contribute to violence...it always interacts with other political, economic, and social factors. Environmental scarcity’s causal role can never be separated from these contextual factors, which are often unique to the society in question” (Homer-Dixon, 1999, p. 178).

In a similar vein, Baechler notes that “passing the threshold of violence definitely depends on *sociopolitical* factors and not on the degree of environmental degradation as such” (Baechler, 1998, p. 32, emphasis in original). There is still much to find problematic about this formulation, but the problems are related to how researchers underspecify the causal dynamic involved rather than how they omit intervening processes altogether. Moreover, the charge of determinism also ignores more recent neo-Malthusian scholarship that clearly identifies important intervening variables. Indeed, Homer-Dixon does discuss one intervening factor—the degree of political exclusion—that many of the contributors to *Violent Environments* repeatedly argue makes violence more likely. Political exclusion has also been systematically integrated into the general neo-Malthusian model by more recent work (e.g., Kahl, 1998; Kahl, 2000).

Conflating Sources of Scarcity

The chapters in *Violent Environments* by Peluso, Watts, and Hartmann (as well as a latter essay by James Fairhead entitled “International Dimensions of Conflict over Natural and Environmental Resources”) all chastise Homer-Dixon for his definition of “environmental scarcity.” This definition includes scarcities that emerge from population growth (demand-induced scarcity), environmental degradation (supply-induced scarcity), and unequal resource distribution (structural scarcity). The authors reiterate a common claim: that Homer-Dixon’s conceptualization of environmental scarcity folds the causes of scarcity into its definition.

More damaging, according to all of these authors, is the way Homer-Dixon conflates social, economic, and political sources of scarcity related to maldistributions of resources (i.e., situations in which a resource may be plentiful in an absolute sense) with conditions in which resources are rapidly consumed or degraded. The authors allege that this conflation frustrates efforts to account for the differentiated effects

of population growth, environmental degradation, and inequality. In his chapter, Fairhead goes so far as to claim that “[e]xamining issues of resource scarcity, degradation, and population in one concept is tantamount to analytical obfuscation” (p. 217). Hartmann also argues that to incorporate social distribution of resources into the definition of environmental scarcity creates too automatic a link between scarcity and conflict:

[P]olitical conflict often revolves around issues of resource control. This is the main tool by which [Homer-Dixon] is able to force very disparate conflictual situations into his universalizing model. The result is a model that is so inclusive as to be banal (p. 43).

Finally, Peluso and Watts contend that Homer-Dixon’s definition promotes a tendency to “naturalize” and “depoliticize” scarcity, thereby masking the ways in which scarcity is socially, economically, and politically constructed.

These criticisms are fair in many respects. The causes of variables should never be incorporated into their definition, since doing so invites tautological analyses. Moreover, it is very important to consider the differentiated effects of both natural and social sources of scarcity. Nevertheless, even if Homer-Dixon’s particular definition is flawed, it is still important to consider how population growth, environmental degradation, and maldistributions of resources *interact with one another* in ways that potentially contribute to both absolute and relative scarcity for vulnerable individuals and groups.

In their efforts to criticize Homer-Dixon’s penchant for exaggerating the importance of population growth and environmental degradation, the contributors to *Violent Environments* commit an equally problematic error—they focus mainly on questions of distribution without fairly considering the ways in which rapid population growth and environmental degradation exacerbate conditions of inequality. In fact, Peluso and Watts go so far as to suggest that natural and social sources of scarcity are “wholly unrelated processes” (p. 18), and Hartmann asserts that distributional considerations are always more important.

Population growth, environmental degradation, and resource inequality are certainly different types of natural and social processes, and these natural and social processes do not always produce resource



scarcity. Demographic and environmental pressures, for example, sometimes encourage conservation, rehabilitation, substitution, and other adaptation efforts. But none of this negates the fact that, under many circumstances, the synergy of population growth, environmental degradation, and resource inequality *does* produce scarcity.

A simple hypothetical situation demonstrates this argument. Imagine two forty-hectare areas of arable land, each with ten farmers. One area has land distributed equally across the population (four hectares each), while in the second area 20 percent of the population controls 60 percent of the land (leaving eight farmers with only two hectares each). Now

should still all be considered in any comprehensive analysis of scarcity's emergence.

Unfortunately, most of the contributors to *Violent Environments* are so opposed to any argument remotely associated with Malthusianism (and so fixated on demonstrating that resource distribution and resource value are all that matter) that they fail to offer a complete account of the sources and consequences of scarcity. Hartmann's brief discussion of Philippine deforestation offers a prime example of this myopic emphasis on resource distribution. Hartmann begins by rejecting Homer-Dixon's claim that population growth and upland migration contributed to extensive deforestation in the Philippines. Hartmann instead

The contributors to *Violent Environments*... focus mainly on questions of distribution without fairly considering the ways in which rapid population growth and environmental degradation exacerbate conditions of inequality.

—Colin Kahl

imagine that each farmer requires at least one hectare to support his/her family. Under conditions of zero population growth and zero environmental degradation, there will be sufficient land to support each farmer's family, *even in the area with a highly skewed distribution of land.*

In contrast, if both areas have an annual population growth rate of three percent, the populations of each will double every 23 years. In less than fifty years, land will become scarce (relative to the survival needs of farmers) *even in the egalitarian area.* Poor farmers in the skewed area will experience scarcity in half that time. Now imagine that the supply of arable land in each area is not constant but in gradual decline due to soil erosion. In this scenario, poor farmers will experience scarcity even sooner under *both* scenarios.

Explaining or understanding the timing and magnitude of scarcity experienced by poor farmers in these two hypothetical areas requires a thoughtful consideration of inequality. But a full account *also* requires a consideration of the effects of population growth, environmental degradation, and the adaptive capacities of local communities and institutions; it also requires consideration of the various interactions among different types of demographic and environmental pressures. While demand-induced, supply-induced, and structure-induced sources of scarcity should not be collapsed into a single definition of "environmental scarcity," these different processes

argues that corrupt timber-licensing practices under Marcos and the voracious international demand for wood products combined to produce unsustainable deforestation by landed elites and logging companies. In her analysis, upland farmers were thus *victims* of environmental degradation rather than its source.

Hartmann's analysis is in most respects accurate, but her account fails to respond to the neo-Malthusian analysis of the Philippines' environment-violence connection—a connection that does not hinge on the causes of deforestation *per se*. Instead, Homer-Dixon and others are interested in the demographic and environmental sources of the communist insurgency in the Philippines. They claim that population growth and land inequality interacted with *many* different sources of environmental degradation (including the ones Hartmann mentions) to economically marginalize the swelling upland population in the Philippines, making peasants and indigenous communities there much more susceptible to recruitment by communist guerillas.

Beginning in the late 1960s, rapid population growth and significant land inequality in lowland Philippine growing areas forced millions of poor farmers to migrate to ecologically-vulnerable upland areas. Once in the uplands, many peasants had to rely on slash-and-burn agriculture to survive. Although slash-and-burn was not the main technique used to clear *primary* forests (since getting access to agricultural

plots in upland areas required prior clearing and road access provided by logging companies), slash-and-burn agriculture *did* result in the removal of residual *secondary* forests—a process that itself contributed to substantial soil erosion. Population growth and unequal land tenure in the lowlands thus combined with logging practices, migration, and slash-and-burn agriculture in the uplands to degrade the environment.

This degradation, in turn, made desperate farmers more desperate by forcing them to move to ever-more vulnerable land as soil fertility declined. Consequently, by the mid-1980s, thousands of marginalized individuals in upland areas had come to see communist rebels as the last best hope for ensuring their economic and physical survival (Kahl, 2000: chapter 3).

Rather than assuming *a priori*—as many *Violent Environments* contributors do—that only inequality is important, this discussion illustrates the utility of analyzing the various ways in which population growth, environmental degradation, and resource inequality interact with one another.

Ignoring the International Political Economy

Neo-Malthusian analyses and case studies often focus more on local processes than international ones. According to some chapters in *Violent Environments*, this focus results in “blaming the poor” for environmental degradation and resource scarcity. These authors also argue that the neo-Malthusian approach masks the activities of rich industrial states and their local allies in developing countries—activities that destroy the environment and deny the poor access to critical resources. Fairhead, for example, argues that international demand for certain raw materials and products often puts a greater strain on the natural resource base than “local” sources of environmental degradation.

This criticism is on target. Many neo-Malthusian authors explicitly or implicitly posit models lacking an international dimension. There is, however, no reason in principle to prevent a neo-Malthusian analysis from considering the international sources of demand-induced, supply-induced, and structure-induced pressures on resources.

Resource Use, Abundance, and Violence

Peluso, Watts, Hartmann, and Fairhead all argue that the neo-Malthusian preoccupation with scarcity forecloses the analytic possibility that violence centered on natural resources can occur under conditions other than resource shortage. In its empirical chapters, *Violent*

Environments provides numerous examples of disputes over the use and distribution of relatively abundant natural resources. James McCarthy’s chapter (“State of Nature and Environmental Enclosures in the American West”) analyzes the periodic violence over the past two decades deployed by both the “Wise Use” movement (ranchers, loggers, and miners) and radical environmentalists in their dispute over use of federal land in the western United States. In “Damaging Crops,” Iain Boal discusses the neo-Luddite sabotage campaign directed against field trials for genetically-engineered plants in the British Isles. Both chapters detail very low levels of violence that stem from disputes over resource allocation and exploitation rather than from a quantitative decline in the resource base.

Similarly, in his chapter on the effects of India’s Joint Forest Management policy (“Beyond the Bounds?”), Nandini Sundar argues that it is not scarcity but the assignment of rights over particular patches of forestland to individual villages that has contributed to forms of conflict over these resources. Finally, in “Violence, Environment, and Industrial Shrimp Farming,” Susan Stonich and Peter Vandergeest study how industrial shrimp-farming in Southeast Asia and Central America has contributed to clashes (sometimes violent) between shrimp farmers and local communities, conflicts within local communities, and conflicts among shrimp farmers themselves. Unlike the other chapters, however, much of this conflict appears to be at least partially related to the environmental degradation produced by shrimp farming as well as the structural scarcity produced by shutting off access to valuable coastal areas formerly used by poor fishermen and farmers.

In other cases detailed in *Violent Environments*, relatively abundant but also incredibly valuable natural resources appear to be a source of much greater levels of violence. Michael Watt’s empirical chapter (“Petro-Violence”) points to the violence surrounding rich supplies of oil, especially in Nigeria. In “Are ‘Forest’ Wars in Africa Resource Conflicts?” Paul Richards analyzes the role that abundant sources of valuable minerals (most notably diamonds) play in Sierra Leone’s longstanding civil war. In both analyses, locally abundant supplies of valuable minerals produce a “honey pot” effect, tempting the government, local communities, and rebel groups to violently vie to control these resources.

Since neo-Malthusians admit that scarcity is not necessary for conflict, the claim that disputes over



resource *use* can lead to violence does not, in and of itself, seem to challenge neo-Malthusian thinking. But cases of violence involving resource abundance are more challenging to neo-Malthusians, since they seem to invert the posited causal relationship between resource shortages and violence. Indeed, this exact point has been made by other recent neo-Malthusian critics working in the tradition of neoclassical economics (e.g., Collier, 2000; de Soysa, 2000).

Upon closer analysis, though, the abundance/“honey pot” argument is less damning for neo-Malthusians than it appears. First, the claim that these resources are “abundant” does not match the global perspective advocated throughout *Violent Environments*. Certain mineral resources like oil and diamonds may or may not be locally abundant, but they are certainly scarce at the *global* level. This global scarcity (partially manufactured in the case of diamonds) helps explain why the resources are so valuable in the first place.

Second, even at the local level, the logic of the honey pot clearly applies more to conditions of scarcity than abundance. If natural resources were truly abundant locally, they would be worth less to opposing sides. However, as natural resources are consumed or degraded at unsustainable rates, their value increases, and rival social groups confront greater incentives to seize them. Michael Klare’s (2001) recent research of contemporary clashes over non-renewable and renewable resources in Angola, Indonesian, and Malaysian regions of Borneo, Congo-Kinshasa, Sierra Leone, and elsewhere addresses this question. Klare has found that rising prices associated with declining resource supplies provide greater incentives for contending social groups and elites to capture control of valuable mines, oil fields, and timber stands (Klare, 2001).

Finally, the logic of the honey-pot argument applies much more to *non*-renewable resources than to the renewable ones at the center of most contemporary neo-Malthusian arguments (with the partial exception of timber). Because mineral resources tend to be much more valuable, geographically concentrated, and mobile than renewable resources (especially arable land), both the incentive and the capability to capture such non-renewable resources is especially high. Fairhead’s chapter in *Violent Environments* appears to recognize this distinction, but its implications for the book’s critique of neo-Malthusianism are not explored. In fact, none of the book’s contributors articulate a reason why abundant supplies of arable land, fresh water, or

other renewable resources would create *greater* incentives for resource conflicts than conditions of scarcity.

State-Sponsored Violence

Most neo-Malthusians locate the source of violence in “bottom-up” dynamics emanating from the grievances of (and animosities among) social groups. Neo-Malthusians contend that population and environmental pressures have the potential to disadvantage certain social groups while also placing strains on governing institutions. Together, pressures on society and the state encourage—and provide opportunities for—anti-state or inter-group violence.

Many of the chapters in *Violent Environments*, however, point out that the state itself can also be an agent of violence (i.e., violence can be “top-down”). The state may use violence to fend off threats to its legitimacy and survival stemming from resource competition in society.

According to Watts, Nigeria provides an excellent example of this dynamic. Here, the combination of (a) severe environmental degradation stemming from oil production, and (b) the transfer of almost all material benefits from the oil industry into central government coffers helps account for the high level of Ogoni grievances directed against the Nigerian state. Seeing Ogoni challenges as a threat, Nigerian elites have responded with harsh and violent forms of repression. Violence in this case thus stems less from the Ogoni grievances themselves than the Nigerian state’s response to these grievances.

In other instances, the state and its allies may use (or at least rationalize) violence as a means of protecting the environment itself. The clearest example of this dynamic is Tanzania, where, according to Roderick Neumann (“Disciplining Peasants in Tanzania”), the government has deployed various types of violence against local communities, all in the name of protecting the country’s valuable wildlife conservation parks.

Understanding that states can also be agents of repression and violence as well as order is vital to understanding contemporary armed conflicts in many parts of the world. *Violent Environments* is not alone in making this point. Similar arguments are common in the general literature on internal wars (e.g., Brown, 2000; Gagnon, 1994/95). And the role of state-sponsored violence has also been addressed by some recent neo-Malthusian accounts (e.g., Kahl, 1998; Kahl, 2000).

Essentializing Individuals and Groups In Conflict

Many chapters in *Violent Environments* also explicitly or implicitly criticize mainstream neo-Malthusian scholars in the environmental security field (most often political scientists and/or security specialists) for their tendency to treat individuals and social groups (especially ethnic and religious groups) as unproblematic, essentialized entities that crudely respond to deprivation and resource competition by resorting to violence. The authors argue that this analytical move offers very little insight into the “lived experiences of actors” and ignores the role of specific histories and historical processes.

Not surprisingly, the contributors to *Violent Environments*—who are anthropologists, sociologists, historians, geographers, and political ecologists—spend

(Re)Conceptualizing Violence

The sub-set of the environmental security literature that analyzes violent conflict tends to focus on sustained and organized physical violence (killing) between contending social groups. *Violent Environments* (re)conceptualizes violence to include *any* act that substantially threatens the physical or psychological well-being of individuals. Thus, environmental degradation and environmental enclosures are themselves acts of “violence” to the extent that they threaten human health, economic livelihoods, or certain cultural practices. Other types of violence cited in *Violent Environments* include: (a) general “structural violence” emerging from economic and political inequality; as well as (b) “discursive violence” related to the oppressive reproduction of certain historical

Most of these criticisms are not fatal to the neo-Malthusian enterprise.
—Colin Kahl

considerably more time dissecting the local histories and practices of the relevant actors in their case studies. This rich cultural and historical approach is refreshing, and the contributors’ careful attention to the social contexts in which the environment and violence intersect should be emulated. However, every event is not completely idiosyncratic. It is clearly possible—and in many instances desirable—to make generalizations about social processes and the motivations of individuals and social groups in particular temporal and spatial contexts. (Indeed, many of the contributors to *Violent Environments* make these generalizations, at least implicitly.) Rich cultural-historical accounts do not always or necessarily provide better explanations or understanding than spare theoretical models.

Moreover, while political scientists and security specialists are rightly criticized for paying insufficient attention to work by anthropologists, sociologists, and others, the contributors to *Violent Environments* also ignore a rich tradition of sociological and political theory on the causes of anti-state and inter-group violence. The contributors focus so much on neo-Malthusian writings that they almost completely ignore the treasure-trove of insights from the broader study of civil and ethnic wars in the fields of sociology, comparative politics, and international relations. In other words, both sides should listen more to each other.

memories, rhetorics, and experiences.

For example, most of the violence in Tanzania described in Neumann’s essay is structural. The violent act in question here is the exclusion of marginalized communities from access to certain land. In his chapter on Central India (“Written on the Body, Written on the Land”), Amita Baviskar also provides a general indictment of the structural and discursive violence committed by the modern(izing) state. Baviskar argues that the state’s boundary-drawing activities: (a) tend to create categories of tribe, caste, and gender based on an essentialist conceptualization of their qualities; and (b) simultaneously classify lands and forests for specific uses in the state’s development project. According to Baviskar, these practices are themselves acts of violence against marginalized peoples—acts made even more violent by the repressive measures often used to enforce these boundaries.

The book’s proliferation of different conceptions of “violence” reaches its height in S. Ravi Rajan’s chapter on the 1984 Bhopal Gas accident in India (entitled “Toward a Metaphysics of Environmental Violence”). Rajan argues that this act of “environmental violence” involved and originated from: (a) *technological violence* (the direct human-health harms arising from prior decisions related to technical design and safety measures); (b) *corporate violence* (the reckless behavior and lackluster response by Union Carbide); (c) *distributive violence* (power asymmetries that worked to the advantage of large corporations



and exposed marginalized populations to disproportionately high-hazard risks); (d) *bureaucratic violence* (the absence of effective governmental regulation or preparation prior to the disaster as well as the inadequate post-disaster response); and (e) *discursive violence* (the rhetorical prioritization of economic development above all else by government officials, the rhetorical attempts by NGOs to appropriate suffering related to the accident to advance their own agendas, and the silence by social scientists who failed to propose workable solutions to these various problems).

Broadening the definition of violence in this way may help highlight the many threats to individuals (and the environment). But this act of conceptual stretching makes the study of “environmental violence” a study of almost everything bad rather than a study of environmentally-induced conflicts. In doing so, this analytic move complicates efforts at developing commensurable theories (i.e., theories that attempt to explain the same types of phenomena or “dependent variable”). After all, there is no reason to expect that the same theories would be able to simultaneously explain all forms of organized physical violence between contending groups *and* all forms of structural and discursive oppression: these phenomena are not analytically similar enough. Therefore, broadening the conceptualization of violence in the manner suggested by *Violent Environments* might undermine the ability of social scientists to test commensurable theories against one another as a means of accumulating knowledge.

It is also unfair to criticize neo-Malthusian theories of armed conflict for defining violence solely as physical violence between groups. Doing so amounts to criticizing neo-Malthusians for failing to explain something (all forms of oppression and harm to individuals) that they never claimed to explain. In short, the myriad ways in which people and the environment are harmed are all worth studying; but it is not clear that the best means of doing so involves lumping all such studies under the label of “environmental violence.”

Other essays in *Violent Environments* reverse the direction of the environment-violence connection (as conventionally defined), arguing that physical violence (and especially preparations for physical violence) often degrade the environment. In “Invisible Spaces, Violent Places,” for example, Valerie Kuletz looks at the ways in which nuclear testing and nuclear-waste disposal in the United States despoil the environment

and threaten the health of rural communities and indigenous populations in surrounding areas. The chapter on the consequences of nuclear weapons development in Russia by Paula Garb and Galina Komarova (“Victims of ‘Friendly Fire’ at Russia’s Nuclear Weapons Sites”) raises similar themes. These chapters clearly demonstrate the capacity of war and war preparation to damage the environment and imperil human well-being. Nevertheless, because these case studies focus on a different dependent variable (the violent causes of environmental degradation, rather than the violent consequences—conventionally defined—of this degradation) they do little to advance the book’s anti-Malthusian position.

Summarizing the Implications for Neo-Malthusian Theory

The editors of *Violent Environments* explicitly frame the book as a comprehensive rebuttal to neo-Malthusian views, so the book should be assessed in this light. Although I have argued that many of the book’s major criticisms are overblown, they are still valuable in pointing to some of the limitations of existing scholarship. However, most of these criticisms are not fatal to the neo-Malthusian enterprise. A more careful neo-Malthusian analysis (one that took seriously all the local and international sources of—and interactions between—population growth, environmental degradation, and resource inequality while simultaneously theorizing the role of the state and specifying critical intervening processes) could address most of these concerns while building on the insights of Homer-Dixon, Baechler, and others.

The Alternative: Post-Marxist Political Ecology

Ultimately, *Violent Environments* seeks to do much more than just critique dominant approaches to studying environment-violence linkages. The volume’s more ambitious goal is to overturn neo-Malthusianism in favor of a self-described “radical” alternative—which could be described as post-Marxist political ecology (although Peluso and Watts simply refer to it as “political ecology”).

This perspective contends that particular environments and environmental processes “are constituted by, and in part constitute, the political economy of access to and control over resources” (p. 5). Consequently, to understand the complex relationship between the environment and violence, *Violent Environments* recommends that analysts study both: (a) the political and economic structures and

processes (both international and local) that make certain resources valuable (and thus worth fighting over); as well as (b) the unequal distributions of natural resources that arise from political and economic structures and processes at the international and local level. The argument is informed by Marxist social theory to the extent that it places matters of production, labor, and distribution of material resources at the center of analysis. It is “post-Marxist” to the extent that the editors and contributors (often drawing on the writings of Michel Foucault) are also interested in the particular ways in which culture and discourse structure social relations and make certain material conditions meaningful.

This alternative perspective is important, and many of the chapters demonstrate that it can produce useful empirical insights about contemporary conflicts and violence. Nevertheless, as presented in *Violent Environments*, the post-Marxist alternative suffers from at least two major limitations. First, it is not a causal theory, at least not in any systematic sense. There is very little conceptual elaboration or theoretical operationalization of most of the approach’s central features and posited causal connections. Although Peluso and Watts argue that

the contours of the broad political economy (under which complex class and social forces operate) and how the rhythms of environmental change and accumulation shape the processes of exclusion, disenfranchisement, and displacement must be specified (p. 20),

neither the editors nor the contributors make those specifications in a very satisfying manner. Definitions of crucial concepts—capitalism, regimes of accumulation, production, labor, culture, and discourse—are not provided. The causal relationships among these factors and key social actors—such as the state, firms, middle and upper classes, peasants, and workers (not to mention indigenous cultural communities, religious organizations, NGOs, and other subsets of local and transnational civil society)—are also not described in much detail. In addition, the causal logic whereby political, economic, and discursive practices and structures constitute particular environments and patterns of violence is underspecified. Perhaps most importantly, the complex relationship *between* material processes and discursive ones (possibly the most perplexing and controversial analytical relationship in contemporary social theory)

is simply asserted rather than carefully theorized.

Consequently, *Violent Environments* fails to offer a systematic causal theory that can be tested against dominant approaches. Instead, at best, the book presents an alternative *ontology*—that is, an alternative set of underlying assumptions about the world and a laundry list of common concerns and themes. As Peluso and Watts admit, “[i]n our account, there is no single theory of violence as such...[W]e examine how causal powers, located in two spaces of production and power relations, create forms of social mobilization and conflict in specific circumstances” (p. 29). But until a more systematic theory is developed from this ontology, many of its insights will appear ad hoc and unfalsifiable; and its comparative analytic value for explaining or understanding the relationship between the environment and all forms of violence will remain limited.

Second, with a few notable exceptions, most of the empirical chapters of *Violent Environments* that seek to demonstrate the relative merits of the post-Marxist perspective over neo-Malthusian accounts of environmental conflicts simply fail to do so persuasively. To be clear, this is *not* because the chapters fail to demonstrate the importance of political and economic factors. For example, the chapters on resource-related conflicts in Borneo (Peluso and Emily Harwell), Nigeria and Ecuador (Watts), and Sierra Leone (Richards) all suggest that the structure of the international and local political economy, the nature of political and economic exclusion, local cultural dynamics, and discursive practices all play important roles in inter-group and anti-state violence.

Unfortunately, these chapters never evaluate the relative causal weight of political and economic structures and processes, culture, and discourse compared to the influence of demographic pressures and environmental degradation. They provide almost no detailed demographic data (e.g., data on population growth, population density, rural-to-rural migration, urbanization, changes in age structure, etc.). These chapters also provide little or no data on the extent of environmental degradation, and include no systematic data on trends in resource availability over time. In addition, the authors offer little or no analysis of the interaction effects among demographic pressures, environmental degradation, and resource distribution—an analysis that is essential if one is to establish the relative causal importance and relationships among these variables. Thus, the empirical case for the post-Marxist perspective is most



often presented without providing a persuasive case against the neo-Malthusian position.

The one exception to this tendency is Aaron Bobrow-Stein's excellent chapter on the conflict in Chiapas (Mexico) entitled "Between a Ranch and a Hard Place." Bobrow-Stein carefully evaluates the arguments and evidence put forth in Howard and Homer-Dixon's (1996) earlier study of Chiapas. After a review of available demographic and environmental data, Bobrow-Stein concludes that the underlying structure of the rural political economy was a more important driver of local grievances. (His evidence also suggests, however, that population growth—in the context of land inequality and a system of production that favored cattle ranching requiring little labor—contributed to peasant mobilization.) The theoretical and empirical conclusions of *Violent Environments* would have been much more compelling had more of its contributors followed the lead of Bobrow-Stein by carefully testing their claims against neo-Malthusian ones.

Conclusions

Violent Environments is a thought-provoking if not wholly satisfying volume that should be read carefully by all those interested in the various debates over environmental security. Many of the book's theoretical arguments and empirical findings provide important and timely challenges to mainstream approaches to studying the environment-violence nexus. Neo-Malthusian critics will find much to build upon in their efforts to develop a more systematic political economy/political ecology alternative. Although *Violent Environments* ultimately fails in its effort to overturn dominant approaches, neo-Malthusians ignore this book at their peril. **W**

Colin Kahl is an assistant professor in the Department of Political Science at the University of Minnesota.

REFERENCES

- Baechler, Günther. (1998). "Why environmental transformation causes violence: A synthesis." *Environmental Change and Security Project Report 4*, 24-44.
- Brown, Michael. (2000). "The causes of internal conflict: An overview." In Michael E. Brown, et al. (Eds.), *Nationalism and ethnic conflict* (pages 3-25). Cambridge, MA: The MIT Press.

Collier, Paul. (2000). *Economic causes of civil conflict and their implications* (Working Paper). Washington, DC: World Bank.

De Soysa, Indra. (2000). "The resource curse: Are civil wars driven by rapacity or paucity?" In Mats Berdal & David M Malone (Eds.), *Greed and grievance: Economic agendas in civil wars* (pages 113-36). Boulder, CO: Rienner.

Gagnon, V.P. Jr. (1994/95). "Ethnic nationalism and international conflict: The case of Serbia." *International Security 19*(3), 130-66.

Homer-Dixon, Thomas F. (1999). *Environment, scarcity, and violence*. Princeton, NJ: Princeton University Press.

Howard, Philip & Homer-Dixon, Thomas. (1996). *Environmental scarcity and violent conflict: The case of Chiapas, Mexico* (Occasional Paper). Washington, DC: Project on Environment, Population, and Security; University of Toronto; and the Academy of Arts and Sciences.

Kahl, Colin H. (1998). "Population growth, environmental degradation, and state-sponsored violence: The case of Kenya, 1991-93." *International Security 23* (2), 80-119.

Kahl, Colin H. (2000). *States, scarcity, and civil strife in the developing world*. Unpublished doctoral dissertation, Columbia University.

Kaplan, Robert. (1994, February). "The Coming Anarchy." *Atlantic Monthly*, 44-76.

Klare, Michael T. (2001). *Resource wars: The new landscape of global conflict*. New York: Metropolitan Books.



Sacrificing the Forest: Environmental and Social Struggles in Chiapas

By Karen L. O'Brien
Boulder, Colorado: Westview Press, 1998.
210 pp.

Reviewed by James D. Nations

Karen O'Brien's *Sacrificing the Forest: Environmental and Social Struggles in Chiapas* is an eminently readable description of the social, political, and economic forces that have produced the massive deforestation of the last remaining tropical moist forest in Mexico—a forest known both in Mexico and

internationally as the Selva Lacandona. Now a senior research fellow at the Center for International Climate and Environmental Research in Oslo, Norway, O'Brien conducted most of the research for this book as part of her Ph.D. dissertation at Pennsylvania State University on deforestation and climate change.

O'Brien uses the lens of political ecology to make the case that too many environmental researchers simplify the complex process that leads to tropical forest loss. She points to an ongoing paradigm shift in the way other researchers view deforestation—away from actor- or agency-oriented explanations and toward an emphasis on underlying forces. As O'Brien explains, this paradigm shift reflects increased understanding of the entangled interactions that produce tropical deforestation. A political ecology approach tends to show that tropical deforestation is not the result of single causes—logging corporations, rapid population growth, or national land-use practices—but rather a rational response to underlying forces that “span from the local to the global in scale.”

O'Brien's analysis of the Selva Lacandona argues that its tropical forests “have been sacrificed to economic and social realities,” and that these realities “are shaped by land and labor relations forged by state politics in Chiapas, land-use regulation established by the Mexican government, and the integration of Chiapas into the global economy” (p. 13). In *Sacrificing the Forest*, she presents a detailed analysis of the region's forest loss—focusing on the interwoven roles of: (a) road construction for logging and oil exploration, (b) farmer colonization, (c) cattle ranching, and (d) the market economy.

O'Brien also painstakingly demonstrates that deforestation patterns vary substantially by subregion within the Selva Lacandona. These variations depend on “both external pressures and internal dynamics” and include such factors as “extractive industries, agricultural transformations, agrarian politics, political upheaval, and conservation policies” (p. 59). One of the book's nine chapters compares satellite images representative of the Selva Lacandona in 1974 and 1989 to illustrate the progressive but variable deforestation in different sectors of the forest. In specific cases, these satellite images illustrate the impact of armed conflict on deforestation patterns. A 1979 image of the border between Chiapas and Guatemala shows growing colonist communities and forest clearing on the Guatemalan side, but very little deforestation in Mexico. Images from ten years later, however, show that the Guatemalan settlements have all but

disappeared; most of the Guatemalan colonists have fled into Chiapas to escape the Guatemalan Army's counterinsurgency campaign. Meanwhile, deforestation on the Mexican side of the border has expanded dramatically—the result of refugee settlements, Mexican road construction, and a conscious program of settling Mexican farmers along sensitive border areas to guarantee national sovereignty.

O'Brien then expands her discussion of political impacts on the Selva's forest cover by focusing on the 1980s guerilla war in neighboring Guatemala, which forced 46,000 Maya across the international border into Chiapas. She also examines the 1994 Zapatista revolt, noting that the socio-economic and political conditions that prompted that rebellion continue to extract a negative toll on the region's environment, resulting in an increasingly denuded landscape. The situation, she adds, is exacerbated by an ongoing struggle in Chiapas among government officials, conservationists, and those social organizations that were created to effect demands for more land and social services in this last frontier of 21st-century Mexico. “The distinction between environmental struggles and social struggles,” O'Brien writes, “is emerging as one of the most critical challenges facing Chiapas today” (p. 34). She concludes that, without coordination, neither the conservationists' struggle to save the forest nor the social activists' struggle to improve human conditions can prevent the demise of the Selva Lacandona's natural environment—or any other tropical forest. Instead, she states that “[u]nless the two struggles can develop a common ground, tropical forests will continue to be sacrificed to the realities of the day” (p. 14).

While pointing to the complexity of forces that have led to massive deforestation in the Selva Lacandona, O'Brien tends to underplay the role of human population growth in forest colonization and deforestation. Although she notes that human numbers rose from fewer than 50,000 in 1950 to 300,000 in 1990 (today they are approaching 400,000), she defuses this point by concluding that colonization of the forest “reflects historical structures brought about by agricultural transformations and the ability of a landowning elite to amass and preserve large estates, at the same time maintaining access to a cheap labor force” (p. 116).

Still, O'Brien's success in explaining the interconnected forces that produce forest loss in the Selva Lacandona has allowed her to create a book that makes a solid contribution to the literature on global



tropical deforestation while also providing the best case study to date of Mexico's last remaining tropical moist forest. *Sacrificing the Forest* will be of solid interest to social scientists, political analysts, and conservationists alike. **W**

James D. Nations is Conservation International's vice president for development agency relations in Washington, DC. Trained as an anthropologist at Southern Methodist University, he lived five years in Chiapas, including three years as a Lincoln-Juárez Scholar with an indigenous Maya group in the Selva Lacandona and two years in highland Chiapas as a post-doctoral fellow with the Center for Latin American Studies, University of California, Berkeley.



Environmental Change, Social Conflicts and Security in the Brazilian Amazon: Exploring the Links

By Alexander López

Oslo: Department of Political Science, University of Oslo, 2001. 228 pp.

Reviewed by Thomaz G. Costa

In *Environmental Change, Social Conflicts and Security in the Brazilian Amazon*, Alexander López studies the link between environmental change and social conflict in the Brazilian Amazon since the 1970s. During this period, Brazil's central and regional governments have continued to open the Amazon to development through a diverse set of strategies—including new models of populating selected areas in the region with immigrant-farmer colonization as well as agricultural production and natural-resource exploitation. In this published doctoral dissertation, López strives to explain the region's social conflict through an integrated model that includes such independent variables as the social distribution of land and income, population growth and migration, and resource allocation.

Through richly descriptive material, the author illustrates the impact on the Amazon of (a) deforestation, (b) the introduction of new and extensive agricultural practices, and (c) the continued development of mining projects in the region. He also outlines how Brazilian public policy has induced migration and development in the region through

subsidies and projects from hydroelectric dams and logging parcels to roads and electrification facilities. This new wave of human presence and economic activity has affected not only the Amazon's natural environment but also its social relations. As López notes, Brazil now has to cope with environmental management problems and simmering conflict (among colonists, indigenous populations, landowners, and federal and local political actors) in many sub-regions of the Amazon.

López details how these dynamics have played out in the state of Roraima, where the federal government offered incentives to attract ranchers and miners to a new agricultural frontier in order to generate quick economic growth as well as provide employment for migrant Brazilians. As a result, Roraima is now beset with large land tracts that have poor vegetal cover, weakening the protection of its river's headwaters and exposing unfertile soil to erosion. Public policies and subsidies also brought increased settlement and the construction of hydroelectric dams and road links to the interior of the state of Pará, exposing unfertile soil there to erosion as well as impacting negatively on biodiversity.

López also outlines how the Brazilian federal government's incentives for greater exploration of the mining province of Carajás in the 1970s led to an explosive influx of migrant miners who were forced to live under poor conditions. Violent social conflicts ensued as disputes for land pitted traditional residents (both *caboclos* and native Indians) against newcomers. Two decades later, Carajás is still plagued with: (a) tension over land disputes and property rights; (b) an expansion of deforestation and resulting unfertile cover; and (c) a lack of proper control over the exploration and commercialization of natural resources—including the labeling of some wood exports as ecologically friendly.

Indeed, the Brazilian Amazon's human face has changed dramatically in the last thirty years. The region now boasts two metropolises (Manaus and Belém) and several regional centers with large urban populations of 100,000 to 500,000 people (such as Porto Velho, Santarem, Tefé, and Cuiabá e Boa Vista). Yet poverty remains endemic in rural and river-bank areas. Despite traditional Brazilian optimism about developing the Amazon (Faulhaber & Mann de Toledo, 2001), López contributes to an prevailing pessimism about *sustainable* development in the region (see Hall, 2000); he stresses the continued failure of Brazilian public policies to preserve the Amazon's

natural environment while advancing its economic development. López also reinforces arguments by Hurrell (1991), Brigagão (1996), and Costa (2001) about how the Brazilian government is making the Amazon a national security concern without addressing its internal social conflict.

By combining descriptive material with an examination of the interplay among a wide range of variables, the author does risk reducing the academic rigor of his work. The myriad of arguments and relationships presented in *Environmental Change* somewhat confuses the linkages Lopez is trying to make. Despite this difficulty, López's dissertation adds to our understanding of the relationship between environmental change and social conflict as well as of the interactions between humans and, the natural environment in the Brazilian Amazon. **W**

Thomaz G. Costa is a professor of national security affairs at the National Defense University (NDU) in Washington, DC. He is also a lecturer and course director at the NDU's Center for Hemispheric Defense Studies.

REFERENCES

- Brigagão, Clovis. (1996). *O Caso SIVAM* ("The case of SIVAM"). Rio de Janeiro: Editora Record.
- Costa, Thomaz G. (2001). "Brazil's SIVAM: Will it fulfill its human security promise?" *Environmental Change and Security Project Report 7*, 47-58.
- Faulhaber, Priscila & Mann de Toledo, Peter. (2001). *Conhecimento e Fronteira: História da Ciência na Amazônia* ("Knowledge and frontier: History of science in the Amazon."). Belém: Museu Paraense Emílio Goeldi.
- Hall, Anthony. (2000). *Amazonia at the Crossroads*. London: Institute of Latin American Studies.
- Hurrell, Andrew. (1991). "The politics of Amazonian deforestation." *Journal of Latin American Studies 23*, 117-215.

Gender, Peace and Conflict

Inger Skjelsbaek and Dan Smith (Eds.)

London: Sage Publications, 2001. 228 pp.

Reviewed by J. Ann Tickner

In spite of the stereotypical association of women with peace and the substantial numbers of women in peace movements, relatively little scholarship in the area of peace and conflict research has paid attention to women or gender. And while feminist scholars have addressed issues of gender, peace, and security, this body of literature has remained on the margins of international relations and peace research.

Gender, Peace and Conflict is therefore a welcome addition to the peace research literature. Co-edited by Dan Smith, the then-director of the International Peace Research Institute, Oslo (PRIO) and Inger Skjelsbaek, a researcher at PRIO, *Gender, Peace and Conflict* includes contributions from both female and male academics, international policymakers, and human rights activists from a wide range of countries. The book is based on the proceedings of a 1996 joint meeting organized by the United Nations Division for the Advancement of Women (DAW) and PRIO—an example of productive collaboration between a research institution and an intergovernmental organization. Five of the book's 10 chapters are primarily theoretical, while four others present case studies drawn from recent or ongoing conflicts in South Asia, Colombia, Sri Lanka, and the former Yugoslavia. One of the central questions of the book (discussed in some detail in a case-study about women policymakers in Scandinavia) concerns whether greater participation by women in agenda-setting and decision-making would make a difference with respect to conflict resolution.

Theoretical chapters by Dorota Gierycz, Dan Smith, Inger Skjelsbaek, Michael Salla, and Errol Miller each challenge the problematic essentialist association of women with peace that has long haunted feminists. Many feminists have claimed that equating women with peace has the effect of idealizing women and rendering their voices less authentic in the "real world" of security politics. The equation has also contributed to the perception of women either as a "protected" category (a perception that today's wars have severely discredited) or as victims devoid of agency. In *Gender, Peace and Conflict*, a variety of women's voices bears witness to the many and varied ways women contribute to conflict resolution, often



outside our focus of attention.

The book also attests to the many ways in which conflict negatively affects women's lives. For example, during war there is usually reduced access to basic services—such as food, education, and health care. Under these conditions, women (as primary caregivers)

government. While it is often easier for women than for men to forge linkages and travel across ethnic boundaries, women rarely participate in setting the official agendas for conflict resolution. In “Integrating a Gender Perspective in Conflict Resolution: The Colombian Case,” Svetlana Slapsak tells how women

None of the authors endorse the problematic equation of women and peace, but all in one way or another suggest that women constitute a still largely untapped potential for peacebuilding.

—J. Ann Tickner

face severe challenges in providing for their families. In cases where men have gone off to fight, women are left as sole supporters of families. Militarized societies are more hierarchical and patriarchal; frequently, the hatred and violence of ethnic wars are directed against women's bodies.

All of the authors in *Gender, Peace and Conflict* define gender as variable—a socially, historically, and culturally constructed relationship between women and men. Not only does this definition allow them to get beyond the problematic association of women with peace, it also offers the possibility of more nuanced ways to discuss class as well as race and ethnic identities—all important contributors to many of today's conflicts. Defining identities as socially constructed and variable allows us to envisage ways of changing these identities and thus to envisage possible paths to a less conflictual world. While most of the authors are skeptical about whether individual women make a difference in the policy process, all agree that peace and security would be better served by greater representation of women in national and international policymaking. An important theme throughout *Gender, Peace and Conflict* is that peace is not just the absence of conflict but also involves economic justice, human rights, political participation, and gender justice. The authors also argue that gender justice (which requires struggle by both women and men) should be part of any comprehensive definition of peace and security.

Most of the case studies of the volume suggest that, while women are actively working on the ground for peace and justice, they tend to be shut out from official processes of peacebuilding. For example, in “Gender Difference in Conflict Resolution: The Case of Sri Lanka,” Kumudini Samuel tells us that women took an active role in the 1980s Sri Lankan peace movements but were completely left out of official negotiations between the Tamils and the Sri Lankan

in the Yugoslav conflict challenged stereotypical ethnic identities by taking over everyday interethnic-group communication—a move motivated partly by their marginalization from high politics. And, as Eva Irene Tuft suggests in her discussion of the conflict in Colombia (“Integrating a Gender Perspective in Conflict Resolution: The Colombian Case”), women are affected by conflict differently than men. While men tend to suffer from a violation of civil and political rights, women are at particular risk of socio-economic rights violations, particularly when those women are displaced.

The case studies use a broad definition of security. In the context of the India-Pakistan conflict, Anuradha Mitra Chenoy and Achin Vanaik challenge us (“Promoting Peace, Security and Conflict Resolution: Gender Balance in Decisionmaking”) to move away from a state-centric definition of national security to one that includes the material needs of people as well as their need for participation in decisions that affect their lives. Chenoy and Vanaik suggest a model of conflict resolution based on people-to-people-level contact—an area in which, the authors claim, women's organizations have been playing a particularly important role. For all of these authors, moving societies in more peaceful directions requires transforming gender relations.

Running through the various chapters are two questions frequently asked of feminists: First, what would happen if women were more equally represented in positions of power? Second, would this change improve chances for peace and enhance efforts to resolve conflicts? The Scandinavian countries are among the few nations in which women in leadership are close to a critical mass and from which we might be able to find some answers to these questions. While claiming that it is still too early to tell if women's empowerment will lead to fundamental changes,



Drude Dahlerup suggests in “Women in Political Decisionmaking: From Critical Mass to Critical Acts in Scandinavia” that a critical mass of women may have some effect on the political culture and the political agenda. None of the authors endorse the problematic equation of women and peace, but all in one way or another suggest that women constitute a still largely untapped potential for peacebuilding. These authors also go beyond advocating adding more women to existing social, political, and economic structures. They all realize that achieving peace and security involves changing these structures themselves in ways that diminish violence—including gender violence and the many ways in which women suffer from hierarchical and patriarchal structures of inequality and oppression.

While most of the theoretical insights in this book are probably already familiar to feminists, they will be less familiar to those working in peace and conflict research. *Gender, Peace and Conflict* is therefore an important contribution. Its message—that we need to take gender seriously to better understand the causes of conflict as well as possible paths to its resolution—deserves more attention. This book should be read by all those interested in security and conflict resolution.



J. Ann Tickner is professor of international relations and director of the Center for International Studies at the University of Southern California. She recently published *Gendering World Politics: Issues and Approaches in the Post-Cold War Era* (Columbia University Press, 2001).



Resource Wars: The New Landscape of Global Conflict

By Michael T. Klare

New York: Henry Holt and Company, 2001.
289 pp.

Reviewed by Leslie Johnston

In examining the potential for emerging conflicts, Michael T. Klare’s *Resource Wars* uses a natural-resource lens. Klare argues in the book that competition and control over critical natural resources will be the guiding principle behind the use of military force in the 21st century.

Klare explores this “new emerging landscape” with a three-part framework: (1) the relentless expansion in worldwide demand (*globalization/increased consumer consumption*); (2) the emergence of significant resource shortages (*scarcity*); and (3) the proliferation of ownership contests (*elite competition*). These three factors have already received extensive treatment in both political-ecology and resource-scarcity debates concerning the multifaceted role of natural resources in conflict (Diehl & Gleditsch, 2001; Peluso & Watts, 2001). Although Klare’s contribution raises important issues for policymakers, *Resource Wars* does not substantively contribute new insights to the existing discourse.

As Klare highlights throughout, natural resources have indeed been an underlying factor in many conflicts. These resources can contribute to conflict through either greed-induced or grievance-induced incentives; they have also been used as strategic military targets as well as financial resources for conducting war. Each of these pathways differs fundamentally and thus presents different implications for analysis.

However, Klare fails to make clear distinctions between these different pathways and even confusingly conflates them by using broad terms such as “resource wars” or “water wars.” For example, his discussion concerning “water wars” merges the issues of (a) water as a strategic military target, and (b) water scarcity as a source of conflict. Historically, water has been a strategic military target; water supplies have also been damaged as a consequence of military activity. However, water scarcity has rarely caused or contributed significantly to conflict between countries. Indeed, Aaron Wolf has concluded that, “[a]s near as we can find, there has never been a single war fought over water” (Wolf, 1999).

Additionally, a broader discussion of those factors that *inhibit* such resource conflict would have put the potential of “water wars” in perspective. Such factors include not only the balance of power in a given situation, but also the costs (economically and politically) of going to war over water. In fact, tensions over water at the *sub-national* level are much more likely, and Klare fails to explore this aspect sufficiently with respect to either intrastate conflict or regional instability. While the likelihood of conflict in certain geographical regions over water cannot be ignored, the relationship of water scarcity to conflict is more complex than suggested in *Resource Wars*.

More broadly, Klare’s discussion of various natural-resource conflicts oscillates between interstate and



intrastate conflict without providing a clear distinction of the processes associated with each type of conflict and their potential relationship to one another. In some cases, the author neglects the implications of natural-resource extraction for potential intrastate conflict. For example, in South America, a substantial amount of oil and gas reserves are located under indigenous peoples' lands and are therefore highly politically and ecologically sensitive. In other cases, Klare mentions

Rights Watch estimated that the violence killed at least 500 people, the majority of whom were Madurese. Two years later, violence erupted again, leaving over 200 dead. This latest period of violence was initially between Madurese and Malays, with the non-Muslim Dayaks eventually joining with the Malay side. The violence ended following the departure of virtually all of the Madurese (International Crisis Group, 2001).

Research has revealed that the conflict between

While the likelihood of conflict in certain geographical regions over water cannot be ignored, the relationship of water scarcity to conflict is more complex than suggested in *Resource Wars*.

—Leslie Johnston

examples of resource extraction and conflict (such as those surrounding oil extraction in Nigeria and Colombia) only in passing.

When Klare does discuss intrastate conflict in more depth, he focuses primarily on grievance-induced incentives without adequately treating other essential factors. Although minimum thresholds of grievance are indeed required for conflict, the capacity of groups to translate their grievances into violent collective action depends on their ability to secure resources—human, financial, military and other assets—in pursuit of group objectives. However, *Resource Wars* offers only a limited discussion on the ability of state institutions (a) to address the root causes of conflict, (b) to manage pressures that might generate it, or (c) to mediate among potentially conflictual parties. Aggrieved groups with access to resources may, of course, choose to channel their grievances peacefully and constructively within the political system in order to achieve a political objective. But whether these groups take that path occurs depends in large measure on both the state's ability to control or demobilize conflict entrepreneurs as well as the existence of legitimate channels for conflict resolution.

For example, Klare's examination of fighting in the West Kalimantan region of Borneo only treats how logging and associated resource wealth contributed to the conflict. But to understand fully this situation's complex set of underlying dynamics, it is important to know why only the Madurese of West Kalimantan were targeted when other transmigrant groups were equally if not more involved in logging activities there. In early 1997, violence erupted in West Kalimantan between Dayaks and Madurese in the district of Sambas, spilling over to adjoining districts. Human

the Dayaks and Madurese in West Kalimantan can be attributed to the clash of discourses of territorial control and the specific relations of territory to political and cultural identities.¹ Residing in a state that lacked political will and the capacity to deter the violence, the Dayaks translated their grievances into violent collective action. Local police did not react quickly enough to effectively prevent isolated clashes between individuals from developing into a wider conflict. Thus, an increasingly bloody set of interethnic relations served as an expression of the Dayak community's lost power. Dayaks also viewed the Madurese as refusing to take community responsibility for the criminal acts of individuals, whereas the Madurese saw this responsibility as belonging to the state. Additionally, the Dayaks saw only the Madurese and not other transmigrant groups as disrespecting and dishonoring their culture and identity. A full understanding of these roots to the conflict is necessary if one wants to devise appropriate conflict-prevention or mitigation interventions. In this context, logging is a proxy for these underlying issues, and Klare's strictly natural-resource analysis focusing on timber extraction loses the complexities of the situation.

Such elisions are the consistent and major flaw of *Resource Wars*. By painting globally with a broad brush of green, black, red, white and blue—colors symbolizing timber, oil/coal, copper/iron/minerals, diamonds/gems and water—the book fails to sufficiently explore the complexity of factors contributing to (and inhibiting) conflict at both inter- and intrastate levels. This weakness is further enhanced by such broad generalizations such as “The modern era has known its share of water wars as well” that only appear to sensationalize the topic for the general



public. To understand the full potential for conflict in any of the situations Klare’s analysis requires the consideration of other factors: (a) whether organizations can recruit manpower, weapons, and other resources to advance their interests; (b) whether the state can address root causes of violence at the national or international level; (c) whether conflict entrepreneurs can be controlled or demobilized; and (d) whether opportunities exist for legitimately channeling grievances.



Leslie Johnston is a senior environmental policy advisor for the U.S. Agency for International Development’s (USAID) Bureau of Policy and Program Coordination. The opinions expressed herein are solely those of the author and do not represent the views, positions, or policies of USAID or the U.S. government.

NOTES

¹These comments draw heavily from Peluso & Harwell (2001).

REFERENCES

Diehl, Paul F. & Gelditsch Nils Peter (Eds.) (2001). *Environmental Conflict*. Boulder, CO: Westview Press.

International Crisis Group. (2001, June 27). *Communal violence in Indonesia: Lessons from Kalimantan*. Jakarta/Brussels: International Crisis Group.

Peluso, Nancy L. & Watts, Michael (Eds.) (2001). *Violent Environments*. Ithaca, NY: Cornell University Press.

Peluso, Nancy L. & Harwell, Emily. (2001). “Ethnic war in West Kalimantan, Indonesia.” In Nancy L. Peluso & Michael Watts (Eds.), *Violent Environments* (pages 83–116). Ithaca, NY: Cornell University Press.

Wolf, Aaron, T. (1999). “‘Water wars’ and water reality: Conflict and cooperation along international waterways.” In Steve Lonergan (Ed.), *Environmental change, adaptation, and human*

Environmental Peacemaking

Ken Conca and Geoffrey D. Dabelko (Eds.)
Baltimore and Washington, DC:

The Woodrow Wilson Center Press and
Johns Hopkins University Press, 2002.
200 pp.

Reviewed by Rodger A. Payne

Ken Conca and Geoffrey Dabelko have put together an interesting and useful volume on the potential linkages between environmental cooperation and peace. From the outset, they seek to discover whether shared environmental problems might set in motion social and political changes that would promote peace rather than violence in this issue area.

More specifically, in the introductory chapter to the volume, Conca hypothesizes that environmental peacemaking might occur through two pathways. First, pollution and/or resource degradation might create opportunities for mutual gains through cooperation. The challenges are to address the real and potential problems related to environmental scarcities and to overcome broader problems often said to be endemic to international politics: distrust, uncertainty, self-interest, and exploitation of short-term gains. Conca theorizes that environmental problems might create opportunities because of issue-specific technical complexity, ecological interdependence, and the need for anticipatory action to head off future disasters.

Second, Conca argues that shared environmental problems might strengthen what he calls “post-Westphalian”¹ dimensions of global politics: various political and social actors can build and exploit trans-societal linkages in order to construct new norms of environmental responsibility as well as peaceful conflict resolution in this issue area. In practice, these results would likely occur because such linkages would create shared collective identities. A post-Westphalian world would also entail the probable transformation of various institutions—and perhaps even states—into more open, inclusive, and accountable entities.

To explore these two pathways empirically, *Environmental Peacemaking* includes half a dozen case-study chapters covering many of the most important parts of the world. Specifically, the case chapters examine: shared seas in the Baltic and Caspian; complex river systems in South and Central Asia; pollution management along the United States-Mexico border; and interrelated land, energy, and water issues in southern Africa. These chapters are



authored by scholars with substantial expertise in the various regions. (Ashok Swain, for instance, has published extensively on water issues in India and South Asia.) The editors also intentionally focus on regional cooperation because the transformations they are looking for require interstate changes. Moreover, a regional perspective allows them to examine shared-commons and upstream/downstream concerns. Thus, even though the ecoviolence literature often examines subnational processes, the regional level of analysis

between Conca's theoretical hypotheses and the real world data. They find that environmental cooperation does at least sometimes offer prospects for changing strategic dynamics and strengthening post-Westphalian tendencies. More precisely, they find that cooperative endeavors are most promising when they are constructed so as to promote cooperative habits, change interstate negotiating dynamics, and deepen nonviolent trans-societal relationships.

Students, scholars and policy actors interested in a

Much more needs to be learned about burgeoning environmental cooperation, and this is a sound, forward-looking early contribution.

—Rodger A. Payne

studied here seems necessary. Conca and Dabelko do not look for global changes because they justifiably see ecological problems as having a real and more recognizable effect at regional levels.

The cases in *Environmental Peacemaking* were selected at least in part because the regions discussed already exhibited at least nascent environmental cooperation. So the editors perhaps stand guilty of selecting their data on the dependent variable—an accusation often levied by critics against scholars engaged in research on ecoviolence. However, Conca and Dabelko already warn against making too much of their results, since even the cooperation in the regions they study is at best incipient. They freely admit that they are not engaged in formal testing of various hypotheses. The project is nonetheless valuable for a variety of fairly obvious reasons. Much more needs to be learned about burgeoning environmental cooperation, and this is a sound, forward-looking early contribution. Additionally, even tentative conclusions might be useful to policymakers looking to resolve conflicts peacefully.

In general, the case chapters of *Environmental Peacemaking* are informative and well written. As is true of most edited volumes, the individual authors tend to emphasize different actors, interests, and processes related to the questions at hand, and they do not always faithfully stick to the theoretical concerns raised by the editors. At worst, the additional ideas and themes included by the chapter authors serve as a minor distraction. Sometimes, however, their tangents offer potentially valuable ways of thinking about and understanding related questions concerning the environment and the various regions and institutions discussed in the case studies. In their concluding chapter, Conca and Dabelko briefly review the fit

number of research areas will value *Environmental Peacemaking* for the indirect contributions it makes to broader literatures. Indeed, the empirical descriptions offered in the cases suggest a number of potentially rich future research threads. For instance, Conca and Dabelko conclude that the evidence from several cases raises the potential problem of unsustainable environmental cooperation, which certainly merits serious future consideration.

Another prospective line of research might involve explicit examination of transgovernmental networking. Several of the case chapters identify important cooperation of this type in the regions. In “Environmental Cooperation and Regional Peace: Baltic Politics, Programs and Prospects,” Stacy VanDeveer demonstrates that ministerial meetings involving environment, defense, health, transportation, economic, finance, and even cultural officials in the Baltic region helped establish important goals and policy innovations that often account for a substantial volume of like-minded national-level activity. Similarly, Larry Swatuk (“Environmental Cooperation for Regional Peace and Security in Southern Africa”) finds the roots of the Southern African Power Pool (a common electricity market among the countries of the South African Development Community) in an intergovernmental Memorandum of Understanding, signed in 1995. And in “Beyond Reciprocity: Governance and Cooperation around the Caspian Sea,” Douglas Blum refers frequently to the transgovernmental cooperation in the Caspian Environmental Program (which has deputy national environment ministers or their equivalent on its steering committee as well as high-level finance and foreign affairs ministries playing significant roles as well).



As Slaughter's (1997) work demonstrates, these kinds of interstate networks have been growing in a variety of issue areas, and might provide uniquely effective, flexible, and timely opportunities for concerted action—even as they pose challenges related to their potential lack of accountability and legitimacy. Nonetheless, transgovernmental networking tends to bolster national legal initiatives, and therefore does not typically lead to the creation of formal international institutions. To employ the terminology of Conca and Dabelko, transgovernmental networking needs to be distinguished from post-Westphalian order, since Slaughter sees these networks as posing an alternative to both traditional interstate organizations and less formal notions of global governance.

With a few modest changes, *Environmental Peacemaking* could have been a stronger volume. First, given renewed global attention to ongoing conflicts in the Middle East, and the prominence of Middle East water scenarios in the ecoviolence literature, the volume would have benefited from the inclusion of an additional case focused on the region. Next, despite the fact that the manuscript made available for this review was dated January 2002, neither the chapter by Erika Weinthal on Central Asia (“The Promises and Pitfalls of Environmental Peacemaking in the Aral Sea Basin”) nor Blum's on the Caspian region devote any attention to the new political dynamics of the post-September 11 world. It now seems apparent that U.S. policy towards that part of the world is changing significantly, and concerns about oil and military security will quite possibly trump any nascent environmental cooperation. Similarly, Pamela Doughman's chapter (“Water Cooperation in the U.S.–Mexico Border Region”) analyzes United States' immigration concerns along its Mexican border; but her analysis ends with the September 2001 meeting between Presidents Bush and Fox that many saw as a major step towards a far more open border. If new security concerns cause even tighter border controls to be implemented, those actions will surely undermine efforts to build collective identity in the area.

Finally, the editors could have elaborated on what a “post-Westphalian” order might look like based on the incipient processes they might see in world politics. Given the brief discussion in *Environmental Peacemaking* of institutional transparency, inclusion, and accountability, Conca and Dabelko seem to have in mind some sort of democratization of global politics. However, this point is never made explicit. If the authors

had embraced such a vision, this empirically-grounded project could perhaps be gainfully linked to other much more theoretical efforts on “cosmopolitan” governance (Held, 1995) and community (Linklater, 1998). The case chapters, which sometimes discuss the effects of “top-down” decisions rendered by officials at the World Bank or Global Environment Facility, sometimes serve to undercut the notion that democratizing forces are at work in world politics. That, too, is a point worth making more explicitly.

In all, this is an interesting and valuable book that should be read by scholars and policy actors interested in the potential ways that environmental cooperation might promote peace rather than violence. Though the findings are offered somewhat tentatively, the volume is nonetheless sufficiently provocative to merit serious attention. *Environmental Peacemaking* successfully illuminates two important potential pathways to non-violent outcomes, which means that readers intent on conducting research in this field will surely want to use this book as a guide. **W**

Rodger A. Payne is an associate professor of political science at the University of Louisville and director of the \$200,000 Grawemeyer Award for Ideas Improving World Order. His most recent articles have appeared in the *European Journal of International Relations*, *Journal of Peace Research*, and *International Studies Perspectives*.

NOTES

¹The editors and authors of *Environmental Peacemaking* use the term “Post-Westphalian” to describe a potential shift in politics away from interstate dynamics towards trans-societal relations or transnational civil society. The field of international relations generally credits the Treaty of Westphalia (1648) with establishing the states system.

REFERENCES

- Held, D. (1995) *Democracy and the global order: From the modern state to cosmopolitan governance*. Stanford, CA: Stanford University Press.
- Linklater, A. (1998). *The transformation of political community: Ethical foundations of the post-Westphalian Era*. Columbia, SC: University of South Carolina Press.
- Slaughter, A.M. (1997). “The real new world order.” *Foreign Affairs* 76, 183–197.

Responding to Environmental Conflicts: Implications for Theory and Practice

(NATO Science Series 2, Volume 78).

Eileen Petzold-Bradley, Alexander Carius, & Arpad Vincze (Eds.)

Dordrecht: Kluwer Academic Publishers, 2001. 308 pp.

Reviewed by Simon Dalby

Responding to *Environmental Conflicts* is the latest entry in Kluwer's recent series reporting on the proceedings of NATO workshops on environment, conflict, and security. This volume draws its chapters from some of the papers of the Advanced Research Workshop on "Responding to Environmental Conflicts: Implications for Theory and Practice" held in Budapest in January 1999. The book is somewhat shorter than some of its predecessors (see Gleditsch, 1997; Lonergan, 1999; and Ascher & Mirovitskaya, 2000), in part because the volume has a more specific regional focus than the previous seminars.

The first chapter ("Theoretical Linkages and Policy Approaches to the Environment and Security Debate"), written by the editors (with an additional contribution by Andreas March), provides an overview of theoretical matters and policy approaches; it also summarizes the contributions to the volume. The chapter immediately contextualizes the workshop by asserting that "[c]omparative research has shown that environmental stress (environmental degradation and resource scarcity) could, under certain political, economic, and social conditions, contribute to or accelerate the outbreak of serious conflict mainly in the developing countries, the near East, and Central Asia" (pp. 1-2).

Within this context, the Budapest workshop examined case studies and discussed which policy options might be appropriate for promoting both early warnings of impending conflict as well as interventions to mitigate conflict-inducing situations. The book is organized into four sections: (a) an overview of environment and security challenges; (b) an assessment of environmental security; (c) case studies; and, finally, (d) the role of international and environmental institutions regarding potential conflict.

Environment, Security, and Environmental Security

Kurt Lietzmann's chapter ("Environment and Security on the International Agenda") briefly

summarizes the debate on environment and security, suggesting that one important preliminary conclusion is that "the security risk potential of an environmental hazard does not lead to a security specific answer" (p. 24). By drawing on the insights of risk society thinking, this conclusion does suggest that security concerns add to the arguments for effective environmental policy—specifically, that environmental concerns have to play a much larger role in economic planning and policy (if not in security planning) on both national and international levels. In "Negotiations to Avert Transboundary Environmental Security Conflicts," Bertram Spector uses international examples to look at the possibilities of preemptive conflict-resolution in the case of transboundary water and resource disputes. Spector's analysis points to the need to change stakes and adapt new norms in the process: while it is difficult to identify problems in advance, there can be considerable political rewards for negotiating successful international agreements.

Nils Petter Gleditsch's chapter ("Resource and Environmental Conflict") suggests that thinking about resources and the causes of war is much older than much of the environmental security literature in the last fifteen years suggests. Gleditsch also revisits the methodological debate over the appropriate modes for analysis linkages between environment and conflict. He suggests that resources need to be understood in the larger context of international conflict propensities. In "Theoretical Aspects of Environmental Security," Hugh Dyer suggests that discussions about environmental security and related conceptual concerns must also analyze their own underlying values. Along with Gleditsch, Dyer also emphasizes that many discussions of environmental security are concerned with the consequences of activities that cause social difficulties but not warfare. He argues that the referent object of security in these debates is frequently matters of ecology, globality, and governance rather than of identity, territoriality, and sovereignty. Assuming that states will provide "environmental security," says Dyer, is not necessarily a good analytical starting point; neither is the assumption that environmental interests are obvious amidst competing values in a world of economic pressures and sovereign states. Yannis Kinnas ("Cultural Differentiation as a Source of Environmental Conflict") then extends such thinking by explicitly focusing on cultural differentiation as a source of conflict; he looks at both international rivalries and contrasts aboriginal views with modern utilitarian approaches to nature.

Gerhardus Schultink (“Comparative Environmental Policy and Risk Assessment”) suggests that the disruptions inherent in economic development drive various global resource shortages. In particular, land shortages in developing countries are likely to have repercussions that require careful development work to anticipate difficulties. Using American experiences with floods and earthquakes, Nicholas Pinter, Nancy Philippi, and Russel Thomas (“Side-stepping Environmental Conflicts”) then focus on natural hazards assessment, mitigation, and planning as a way

the rethinking of security in the post-Cold War world are entangled in complex ways with environmental concerns on the international policy agenda, entailing a rethinking of regional identities such as the Baltic.

Irena Rudneva and Eileen Petzold-Bradley (“Environment and Security Challenges in the Black Sea Region”) go on to discuss the pressing necessity of dealing with the growing human impact on that water body, which cannot absorb current levels of pollution. Given such pollution impacts and the prospect of oil traffic from the Caspian region, Rudneva

While green wars between states are unlikely, all sorts of environmentally induced insecurities are not.

—Simon Dalby

of “side-stepping” environmental conflict. Pinter, Philippi, and Thomas point to the potential of engineering solutions to some hazards (in particular, to earthquake casualty prevention). But they also note the considerable danger when human activities open a “Pandora’s Box” whereby damage from a disaster is both exacerbated and exported to other areas by human actions such as hydraulic engineering, inappropriate land use, and the siting of industrial wastes and facilities in hazard-prone places.

Looking to the global scale, Joseph Alcamo and Marcel Endejan (“The Security Diagram”) link (a) environmental stress, (b) human susceptibility to such stress, and (c) the damaging consequences in terms of “crisis” in a conceptual framework they term “the security diagram.” For Alcamo and Endejan, the security diagram can provide a method of providing advance warning of the likelihood of conflict. But given how briefly they describe the framework, it is not obvious why this scheme offers more predictive power than others in the literature.

Case Studies

The case-study section of the volume presents five studies. In “Environment and Security in Hungary,” Arpad Vincze and Laszlo Halasz investigate the links between environment and security in Hungary. In Hungary’s transition society, Vincze and Halasz assert, environmental security themes have yet to appear very explicitly on the policy agenda, although there is growing awareness of the importance of the military following environmental guidelines. In “Redefining Security around the Baltic,” Stacy VanDeveer and Geoffrey Dabelko reveal that NATO expansion and

and Petzold-Bradley argue that the Black Sea is in urgent need of further cooperative efforts to reduce current and potential environmental damage. They also point out that, given the instabilities and political difficulties of the transition societies in the former Soviet bloc, such institutional cooperation is not likely to be easy.

In “Mechanisms of Environmental Security in Russia,” Vladimir Kotov and Elena Nikitina remind readers that it was the leaders of the Soviet Union who emphasized the importance of international environmental security in the 1980s in the aftermath of the Chernobyl disaster. But Russia’s economic and political situation since the collapse of the Soviet regime has made the implementation of new programs and guidelines for environmental protection difficult. Kotov and Nikitina write that, for Russia’s “official” economy, short-term exigencies frequently determine the allocation of funds and priorities. The country’s unofficial economy has no regulation and thus causes environmental damage. And while Russia is signatory to approximately 80 international environmental agreements, in many cases (such as the Long Range Transboundary Air Pollution Convention) the Russian government has not made serious efforts to comply with their stipulations. Kotov and Nikitina point out that economic recovery will probably also place Russia in violation of the agreements about greenhouse gas emissions.

Finally, Mikos Sukosd (“Democratization, Nationalism and Eco-Politics”) focuses on the international-relations dimension of the Gabickovo-Nagymaros dam system on the Danube. Sukosd notes that NATO member Hungary’s relations with non-



NATO member Slovakia are overlaid with the complexities of this international situation. Hungary's case emphasizes domestic politics, the manipulation of nationalism in ways that may not be environmentally friendly, and the importance of transparent monitoring and information availability in ensuring compliance with environmental agreements. Sukosd concludes that international institutions—specifically in this case, the International Court of Justice—matter in solving environmental disputes.

Institutions and Conflict Prevention

And this conclusion leads logically to the final section of the book, which deals with international environmental institutions and the prevention of conflict. In “Preventing Environmentally Induced Conflicts,” Sebastian Oberthhr argues that, while international environmental policy is necessary, the establishment of a Global Environmental Organization (GEO) with much greater powers than the existing United Nations Environment Programme (UNEP) will not in itself solve problems that states have not thus far had the political will to tackle. Even with a GEO, writes Oberthhr, the difficulty of getting binding resolutions, effective enforcement, and workable coordination arrangements remains immense.

Margaret Brusasco-Mackenzie next discusses these matters in the European Union (EU) context in her chapter “Environment and Security.” Among other initiatives, the European Parliament has passed a resolution linking environment, security, and foreign affairs. Considerable deliberations on these themes have occurred in other European institutions, although it is too soon to tell whether these will provide the basis for either a sustainable European society or a model for adoption elsewhere. In “The UNECE Environment Conventions,” Branko Bosnjakovic complements this analysis with a chapter detailing the United Nations Economic Commission for Europe and its role in the settlement of international environmental disputes. Bosnjakovic suggests that the framework of the many agreements on these themes is gradually enmeshing both the EU states and the transition states in a complex regime of environmental management. Finally, Sabine Hoefnagel and Aiko Bode deal with UNEP's role in dispute prevention in their chapter “Achievements and Limitations of International Environmental Regimes and Institutions in Positive Dispute Prevention.” As the authors note, UNEP's duties mainly consist of “monitoring, assessing,

reporting, developing action plans, initiating new legal instruments and giving assistance to build environmental competence in developing countries” (p. 304). This observation reinforces the impression that many cooperative environmental initiatives are already underway.

Conclusions

The overarching conclusion of *Responding to Environmental Conflicts* is that context matters immensely in discussing environmental security. Vandever and Dabelko's argument that environmental security needs to take regional matters seriously is implicitly supported by many of the other chapters, making the discussion far richer than abstract formulations of global generalities. Insofar as this book emphasizes the importance of thinking hard about the specific context of environmental security issues—one size rarely fits all in these matters—it is a valuable addition to the literature.

Responding to Environmental Conflicts does not deal seriously with questions of environmental conflict in the poorest of the developing countries. Nor does it present lessons from North America (with the exception of those to be drawn on hazards planning in the chapter by Pinter, Philippi, and Thomas). As such, the book's focus is much more European than the title suggests. It does clearly contrast the cases of Western Europe with those of the transition states in the former Soviet bloc. And it implicitly underscores the importance of thinking about more than just states as appropriate actors in the discussion and implementation of environmental security. (This is especially salient in Russia, where black markets and crime are important in the gasoline trade and the transportation of petroleum.) Environmental security policy must include both international action and the incorporation of unofficial economic activities that are too often dismissed as merely criminal.

Another strong aspect of the book is that many of its chapters present both conceptual pluralism and constructive practical suggestions. Most of the authors in *Responding to Environmental Conflicts* resist the temptation to reinvent the conceptual wheel. Instead—and especially so in the case of Hugh Dyer's intervention—the articles highlight the discursive context of these debates. While the prominence of environment in many state's political values remains highly doubtful for the near future, most of the discussions here understand environmental security as indivisible; the economic and ecological connections



that crisscross Europe after the Cold War make national strategies of environmental security impossible. Connections across frontiers are unavoidable, and policy must operate on this premise.

The overall impression from the case studies supports a wider contention in the environmental security literature: cooperation, not conflict, is usually the norm in resolving international environmental disputes. The authors of *Responding to Environmental Conflicts* agree that, while “green wars” between states are unlikely, all sorts of environmentally induced insecurities are not. Many of the chapters also recognize the limits of international institution-building as a solution to environmental insecurity, given the reluctance of societies and states to reform their unsustainable, carbon-fuelled business-as-usual practices. Hugh Dyer is on the right track here: while technical fixes and institution building are part of the solution, the question of fundamental political values will not simply disappear.

Simon Dalby is a professor of geography and political economy at Carleton University in Ottawa and author of Environmental Security (University of Minnesota Press, 2002).

REFERENCES

- Ascher, William & Mirovitskaya, Natalia. (Eds.). (2000). *The Caspian Sea: A quest for environmental security*. Dordrecht: Kluwer.
- Gleditsch, Nils Petter. (Ed.). (1997). *Conflict and the environment*. Dordrecht: Kluwer.
- Lonergan, Steve C. (Ed.). (1999). *Environmental change, adaptation, and security*. Dordrecht: Kluwer.

Environment and Security: Crisis Prevention through Co-operation

Berlin: German Federal Office, 2000. 147 pp.

Reviewed by Alexander López

Environment and Security explores the links between those two fields and how cooperation between them plays a core role for crisis prevention. The connections are explored in an empirical form through three relevant subject areas: common water resources, global climate change, and soil degradation. The publication is based on an international workshop held in June 2000 in Berlin and hosted by the German Federal Office; the German Federal Ministry for the Environment, Nature Conservation, and Nuclear Safety; and the German Federal Ministry for Economic Co-operation and Development in co-operation with Ecologic, a nongovernmental organization studying international and European environmental policy.

At the conceptual level, *Environment and Security* argues that the environment is never the sole cause of conflict and, indeed, that the root causes of conflicts can to a large extent be traced to a set of structural and contextual factors. The environment can play a role in precipitating conflict, but in connection with other forces.

The book also reflects a general agreement at the workshop that environmental conflicts are more likely at the sub-national than the international level. Even though environmental change in one nation can pose a threat to the quality of life in another nation, this threat does not necessarily result in war or other conflict. Nevertheless, such environmental changes pose problems for negotiation, generating in many cases conflicts of interests and thus becoming a concern for international political security.

As for intrastate conflicts related to the environment, Gunter Bächler reports in his chapter “Environmental Degradation and Acute Conflicts as Problems of Developing Countries” that most of these conflicts are taking place in regions that are arid, semi-arid, or mountainous. One exception is in the Brazilian Amazon, where open environmental conflict has involved rubber tappers versus large landowners or small gold miners versus indigenous groups.

Subject Areas

Water resources. The Aral Sea basin and the Nile River basin were used during the workshop as



examples of water resources in which environment and conflict could intersect. The Aral Sea basin seems to lack confidence-building measures and political will among its surrounding states. Workshop participants suggested “win-win” projects (such as basin-wide institutions that are transparent, well-financed, and have full commitments by all stakeholders) as the main tool for building such confidence. The Aral Sea basin also has several institutions dealing with water-resources management, which has led to confusion, competition, and the fragmentation of tasks. The Nile Basin Initiative (NBI) was seen by workshop participants as the main mechanism in building confidence measures for the Nile River basin.

Climate change. The examples of small island states in the Pacific and the Bay of Bengal are used in *Environment and Security* to explain the role of climate change in generating insecurity. As Carlo Jaeger points out in his chapter “Environmental Security and Climate Change in Pacific Island Countries,” “if current tendencies continue, twenty-two Pacific Island countries will lose a considerable part of their shoreline to the rising ocean” (p. 77). In addition, Jaeger adds that these countries will experience (a) scarcer and more salty drinking water, and (b) tropical cyclones of increased intensity and frequency. (In the Bay of Bengal, there is already growing evidence that the cyclones and storms are becoming much more severe.) Countries that are also disproportionately affected by climate change are generally already under social stress. The potential is therefore high in these societies for political instability and social unrest because of environmental stress.

Land degradation. Workshop participants identified forced migration as the main consequence of the connection between land degradation and security. Large-scale land degradation often acts as a pushing factor, forcing people to migrate to other regions where they then normally face conflicts with people already settled in those regions (called “group-identity” clashes). Some claim that, in many cases, group-identity conflicts arise from the incompatibility generated by different social structures and practices within the confines of the same physical space.

Wrap-up session. *Environment and Security* highlights several conclusions of the workshop, three of which deserve particular attention. Participants first recommended that the debate on environment and security should move from a theoretical level to a practical one where concrete policy action can occur.

Second, participants identified poverty alleviation as the most urgent task within the context of preventing environmental conflicts. In applying this task to the relationship between North and South, two central concepts must be put at work: global structural politics and effective crisis prevention.

Third, global environmental governance is key to bringing environmental and security considerations together. Participants, however, argued that if developed countries do not fulfill their national obligations and commitments to good governance, global environmental governance will be illusory.

The workshop confirmed the importance gained by environment and security issues both in policy and science circles. Moreover, it demonstrated how the public now recognizes that the concept of security has expanded—an expansion that is reflected in the wide literature that now deals with these issues as well as in the emergence of concepts such as economic security, ecological security, and human security. The traditional paradigm of national security is also being expanded to: (a) include analyses at several levels (subnational as well as national and international); (b) stress the participation of new actors (such as nongovernmental organizations) with the potential for great influence on the national and international environmental agenda; (c) recognize new types of threats that are non-military; and (d) promote the idea that the classical notion of political boundaries could be replaced by the idea of ecological unity.

But the workshop did not discuss in detail the differences in perceptions of the issue of environment and security between developed and developing countries. From the developing side, the linkage of these two concepts has been regarded with some skepticism for three reasons. First, there is the institutional problem of who provides for security in developing countries. In developed countries this has not been a problem: for instance, NATO has incorporated the environmental dimension in the strategic concept of the organization. However, in the South, military institutions have often been perceived as forces for insecurity instead of security.

Second, some scholars have also been skeptical about linking the environment to the security sphere because they think such a linkage contributes to a militarization of the environment instead of a “greening” of the military.

Finally, some Southern critics have also charged that the “environment and security” framework diverts attention from the North’s responsibility for and

contribution to today’s environmental problems. In fact, the language behind the concept of environmental security can be read to place most of the “blame” for environmental problems on the South. These critics fear that the environmental security framework could be used in order to justify interventions in developing countries.

The South and North need to have a more constructive dialogue on these issues. Such a dialogue should pay attention to the conditions necessary for peace as well as the best institutions for dealing with environment and (in)security issues. In addition, the dialogue should discuss the role of poverty and the increasing social gaps generated by the current pattern of global development. Social needs are very often the most important triggers of social conflicts, and we need to understand them if we are to understand the process of environmental change and its contributing role in generating insecurity.

Alexander López is an associate professor at the Universidad Nacional de Costa Rica and a Core Group Member of the Environment, Development, and Sustainable Peace (EDSP) Initiative. He also directs a research project supported by the MacArthur Foundation on environmental conflict and cooperation in Central American international river basins.



Growing Global Migration and Its Implications for the United States

By the National Intelligence Council
Washington, DC: National Foreign
Intelligence Board. 42 pp.

Reviewed by Kimberly Hamilton

Once only of special interest to a few dedicated social scientists and demographers, international migration is today a subject of universal concern. According to the March 2001 National Intelligence Council (NIC) report *Growing Global Migration and Its Implications for the United States*, migration now ranks among the key drivers of future global security. Even if history had stopped on September 10, 2001, the issues raised in this brief overview would be worthy of serious consideration. But in the wake of September

11 and as a follow-on study to the NIC’s *Global Trends 2015*, this National Intelligence Estimate borders on prophecy—although for unexpected reasons.

Singling out the specific implications for the United States of such a tremendous global phenomenon such as migration is difficult. Migration is growing globally, but its impact is expressed differently around the world. *Growing Global Migration* neatly lays out these challenges: aging and shrinking labor forces in Japan and Europe that threaten global economic growth; the competing forces of brain-drain and remittances in developing countries; and the growing alien-smuggling trade taking hold nearly everywhere. (As with many policy discussions, however, the report does not cover the tremendous “South-South” movement of people.)

The report makes a compelling case that how other countries manage their own migration challenges will have an important impact on the United States. In particular, Cuba, China, Haiti, and Mexico warrant special attention with regards to migration for two reasons. First, the proximity of several of these countries along with vast wage differentials will continue to fuel emigration to the United States. Second, these countries’ complicated and often delicate long-standing political and economic relations with the United States may be compromised by a migration-producing crisis.

As *Growing Global Migration* illustrates, these external forces affect the United States in a variety of ways. Mass exoduses or simple threats of mass exodus from these countries place the United States in a vulnerable position. Efforts among some fellow OECD countries to limit immigrant entries may also redirect migration channels. In addition, the ability of Japan and some European countries to come to terms with their aging population and the resultant deficit of youthful workers may have long-term effects on the prospects for U.S. economic growth. These are all cause for contemplation if not concern.

The report notes that immigration is likely to continue into the United States, where foreign-born residents comprise roughly 11 percent of the population. This continued influx may be traced in part to the factors feeding other countries’ expulsive pressures—including population growth, conflict, and poverty. More importantly, however, the United States has knowingly set in motion a set of powerful internal forces that promise to foster U.S. immigration. These dynamics include: an immigration system based on family reunification, a vocal business sector that



depends on a global pool of talent for its success, and skillful lobbying by immigrant groups themselves. The United States faces the challenge of capitalizing on the benefits that immigrants offer while mitigating against: (a) the divisive energies that emerge from poorly integrated communities, (b) a public that misunderstands the migration phenomena, and (c) a government struggling to develop humane systems that would protect U.S. borders from illegal immigrants as well as account for those who arrive legally. *Growing Global Migration* does touch on the factors luring immigrants as well as the consequences of immigration, but it could have dealt with them in greater depth.

The report's prophetic quality begins with its analysis that the United States and other countries "will become less able to control migration flows across their borders" (p. 13). It further notes that "transnational terrorists...will seek to blend into and recruit among coethnic and other immigrant communities and exploit gaps in migration control efforts to ply their trades" (p. 32). Of all the volume's forecasts, this one has until now received the least attention. But if there is one simple lesson from the events of September 11 and their denouement, it is that migration forces—for good and for evil—are transnational.

And the magnitude of this transnational migration is both impressive and growing. More than 500 million entries and exits are estimated into and out of the United States every year (MPI, 2001). Every day, more than 250,000 people enter the United States from Canada, its largest trading partner (U.S. Department of Transportation, 2001). Roughly 800,000 immigrants arrive from Mexico, the second-largest U.S. trading partner (Gorman, 2001).

Oddly, this large-scale mass migration failed to put the United States at attention. Rather, the extensive Al Qaeda network accomplished exactly what the NIC report warned; through a small stream of committed participants, it took advantage of *simple* gaps in U.S. border-control efforts. But can the United States manage migration, a key component of its economic success, without vilifying migrants and generations of immigrant families? Will we be able to balance American unity with the very real need for stepped-up security measures?

The answers are not apparent even as pundits, blue ribbon commissions, and concerned citizens continue to weigh in. There are certainly "difficult choices ahead" for all countries (p. 42), and, as *Global Trends 2015* almost naïvely notes, "diplomacy will be more complicated" (NIC, 2000). For those who have long

resisted and continue to resist characterizing international migration as an issue of high security, there is no denying that it has played and will continue to play a critical role in shaping the world as we know it today.

Stopping international migration or burdening immigration systems is neither realistic nor desirable. Instead, we must understand migration and its divergent global impact as a tectonic plate that underpins socio-political geography. Seen in that light, the decision of the National Intelligence Council to embrace migration as a major driver shaping U.S. national interests over the next 15 years was prescient and not presumptuous.

Kimberly Hamilton is a senior policy analyst at the Migration Policy Institute in Washington, DC. She is also managing editor of the Migration Information Source (www.migrationinformation.org).

REFERENCES

- Gorman, Siobhan. (2001). "A nation without borders." *National Journal* 48, 3648-3656.
- Migration Policy Institute. (2001, September). *Immigration and national security*. [On-line]. Available: http://www.migrationpolicy.org/files/928_backgrounder.pdf
- U.S. Department of Transportation. (2001). *North American trade and travel trends*. Washington, DC: Bureau of Transportation Statistics. [On-line]. Available: <http://www.bts.gov/publications/nattt/entire.pdf>
- U.S. National Intelligence Council. (2000). *Global trends 2015: A dialogue about the future with nongovernmental experts*. Washington, DC: National Foreign Intelligence Board.

Migration, Globalization and Human Security

David T. Graham and Nana K. Poku (Eds.)
London: Routledge, 2000. 222 pp.

Reviewed by **Steve Lonergan**

“Poverty is a major cause and effect of global environmental problems. It is therefore futile to attempt to deal with environmental problems without a broader perspective that encompasses the factors underlying world poverty and international equality.” (WCED, 1987)

This statement from the World Commission on Environment and Development is no less true today than when it was made 15 years ago. And its identification of poverty as a root cause (for global environmental problems) could easily be extended to all issues relating to human security—including population movement. It is not a new message to say that any discussion of population movement as well as of environmental degradation must be embedded in the context of such issues as population growth, inequitable land distribution, structural inequality, civil war, and extreme poverty. The message, however, still needs retelling.

The past fifty years have seen considerable research on migration—its causes, consequences, and “appropriate” response options. Although migration is a complex phenomenon, many of the theories of migrant behavior are quite simple: they argue that migration results from a combination of “push” and “pull” factors that can be economic, social, or political. More recent, “structural” theories maintain that the explanation for population movement lies in those deeper, underlying forces that structure the unequal distribution of opportunities between regions.

Regardless of which theory one ascribes to, two things are clear. First, the magnitude of migratory movements is enormous. The International Organization of Migration estimates that, in the year 2000, the world had over 100 million migrants, including at least 20 million refugees and asylum-seekers (UN, 2001). Statistical data on migrants, refugees, and asylum-seekers is admittedly very problematic. But there is little doubt that migration is one of the central issues facing virtually all countries in the world.

Second, changing economic, social, political, and institutional structures affect migration as they affect everything else; and we need a better understanding

of the consequences of their changes. Two of these “new” structures—(a) globalization of capital (and, increasingly, labor); and (b) the changing nature of security—manifest themselves as additional stresses on large numbers of disenfranchised people. The existence of the first process is obvious; the second, less so. Increasingly, it is clear that nation-states are no longer able to provide security for their people. Whether we term these issues “comprehensive,” “common,” or “human” security, we clearly face numerous “threats” that underdevelopment and poverty exacerbate (especially in the South).

In recent years, increased efforts have focused on reaching a better understanding of the links between and among human activities and these various components of security. *Migration, Globalisation and Human Security*, edited by David Graham and Nana Poku, attempts to explicate particular aspects of this issue—most notably, the relationship among migration, globalization, and human security. Accordingly, the volume offers a welcome addition to the literature.

Migration, Globalisation and Human Security begins with three theoretical chapters. In these, Poku, Neil Renwick, and John Glenn discuss the redefinition of the content and purpose of security studies from a decidedly realist perspective. They make a strong case for placing the dispossessed (my term, not theirs) at the center of security studies. As one who is deeply involved with the study of global environmental change and human security, I entirely agree. Again, the message is not new, but it bears repeating.

The following two chapters, by Richard Davies and Peter Marden, focus on the broad issues of diasporas (Davies) and territoriality (Marden)—two closely-linked issues. As Marden notes, there is now a strong tension between: (a) the pressures for immigration; and (b) the ability of states to deal with immigration’s resulting pressures (to the satisfaction of their citizenry). Not surprisingly, immigration presents one of the biggest political issues in much of the Western world.

The next six chapters offer a more empirical perspective. In “Migration and security from a North-South perspective,” Elisabeth Abiri presents a comparative study of Sweden and Malawi. The comparison seems bizarre at first, but it is productive. Abiri focuses on refugee movements—notably Mozambican refugees in Malawi and Bosnian refugees in Sweden—and draws interesting parallels between the two concerning cross-border movements and refugee issues. In “A durable international migration



and security nexus: the problem of the Islamic periphery in transatlantic ties,” Mark Miller then addresses what he terms the Islamic “periphery” and transatlantic migration. Using the examples of Algeria and Kurdish-populated areas, he demonstrates how migration and security have become closely linked. In his view, international migration links core and periphery in a way that affects the security of core regions (such as Europe or, quite possibly, the United States). While Miller is careful not to label international migration as a destabilizing force in all cases, he draws attention to past examples and the need for trade liberalization policies to reduce the likelihood of conflict. His chapter works within the bounds of traditional security discourse, but the examples and explanations are still very relevant.

The next four chapters of *Migration, Globalization and Human Security* are a bit disjointed in terms of fitting the theme of the book; individually, however, they offer interesting reading. In “Meta-societies, remittance economies and Internet addresses,” Richard Bedford discusses the linkages between Pacific Island residents and those who have migrated from the region, through remittances and “transnational corporations of kin”—a euphemism for family linkages that facilitate education, employment, and welfare support for indigenous cultures. Next, Michael Parnwell (in a previously-published chapter entitled “Tourism, globalisation and critical security in Burma and Thailand”) draws on his considerable experience in Southeast Asia to explore linkages between tourism and human security. He concludes that the impact of tourism is dependent on institutional structures—in particular, on who has the regulatory power. Parnwell notes that marginalized and disenfranchised peoples tend to suffer the most from tourism development, since they are vulnerable to exploitation from those who control that development. Advocacy groups and NGOs help to counter this force, but the negative impacts of tourism persist.

Igor Ushkalov (“Emigration and immigration: the case of Russia”) and Irina Malakha (“The brain drain in Russia”) then write on population movement and the “brain drain” after transition in Russia. Both authors conclude that, despite the growth in international scientific cooperation in Russia, the emigration of skilled labour from the country poses problems for human security and future development. While all of these chapters address certain facets of the globalization/human security/migration nexus, none actually synthesizes a complete vision. Graham’s final

chapter of the book provides a useful overview of migration and human security in a globalizing world. It should have served as the book’s lead chapter rather than its conclusion.

Despite addressing some very important issues and relationships, *Migration, Globalisation and Human Security* has some weaknesses. As with most edited volumes, the quality of the writing varies across chapters, the sequence of chapters lacks logic, and the topics (although covering a broad array of issues) are somewhat disparate. The theoretical chapters do make a strong case for linking migration with poverty and viewing these issues in the broader context of human security. While these chapters are useful, however, an ample amount of theoretical and conceptual thinking on this subject already exists.

But research in the field has as yet failed to provide a series of case studies to ground the theory and provide useful insights for policy development. At least some of the empirical chapters respond to this need, and they are undoubtedly the strength of this volume. It is a small step, to be sure, but the cases on Malawi, Sweden, and the Islamic periphery reveal the importance of this type of research and analysis.

Who should read this book? The empirical chapters add knowledge and provide valuable insights into these issues for migration specialists and those already working in the human-security framework. Theoreticians will not find anything new in the volume, but should take a quick look anyway. Researchers, policymakers, and nongovernmental officials who still fail to understand the need to focus on human security and to place the poor and the dispossessed at the center of our security mindsets—these people should definitely read all of *Migration, Globalisation and Human Security*. Along with about 50 other books that I could recommend. 

Steve Lonergan is a professor in the Department of Geography, University of Victoria, Canada. He is also past Director of the Global Environmental Change and Human Security project for the International Human Dimensions Program on Global Environmental Change.

REFERENCES

UN. (2001). *Demographic yearbook*. New York: UN Statistics Division.

World Commission on Environment and Development (WECD). (1987). *Our common future*. Oxford: Oxford University Press.



Footprints and Milestones: Population and Environmental Change

New York: United Nations Population Fund (UNFPA), 2001. 76 pp.

Reviewed by **Roger-Mark De Souza**

In UNFPA’s *Footprints and Milestones: Population and Environmental Change*, the authors provide a balanced treatment of the threats and opportunities posed by the interaction of population dynamics and environmental change. While the publication outlines the factors that influence population-environment interaction, the authors also argue that this interaction has specific policy implications—systematic and cost-effective solutions that could resolve some of the key problems countries face. *Footprints and Milestones* is a comprehensive, easily understandable, and attractive publication that will appeal to a wide audience.

Footprints and Milestones begins by examining the role of different demographic variables—population size, distribution, and movement—in environmental change. The analysis goes well beyond traditional Malthusian descriptions of the interplay between population and environment. As the authors note, “[g]eneralizations about the negative effects of population growth on the environment are often misleading. Population scientists long ago abandoned such an approach, yet policy in some cases still proceeds as if it were a reality” (p. 2). This point is gaining momentum in social- and natural-science academic circles, and mainstreaming it through publications such as *Footprints and Milestones* will help policymakers and their advisors better comprehend how scientific analysis of population-environment dynamics will help meet the objectives of sustainable development.

Crucial to this mission is the question of reciprocity—how humans affect and are affected by the environment. For many years, researchers focused on the impact of humans on the environment while failing to address the impact of environmental change on human welfare. In the past fifty years or so, however, we have shifted from a focus on limited natural resources and renewable resources to more nuanced concerns about the effects of human-dominated ecosystems on the environment and on humans.

The publication makes this point clear in its examination of environmental health problems—a discussion that offers two benefits. First, when policymakers consider environmental health issues (by examining communicable diseases, chemical exposure, the global disease burden, and water and sanitation issues, for example), they are able to better determine the conditions that affect global health and life expectancy. Second, examining environmental health allows policymakers and planners to appreciate the direct consequences of environmental conditions for reproductive health (its effects on men and women as well as on service delivery and quality). One example cited in *Footprints and Milestones* is the case of endocrine disrupters. These synthetic chemicals are believed to cause human reproductive disorders and infertility once absorbed by human beings after being released into the air, water, soil, and our food.

In addition to reciprocity, *Footprints and Milestones* addresses the thorny question of causality. The authors recognize the role of various factors that impact the population-environment linkage—including technological developments, institutional and policy contexts, and cultural factors. In recognizing the role of culture, for example, they note that “[i]ndigenous knowledge and practices reflect adaptation to environmental realities that scientists and technocrats may not fully appreciate” (p. 9).

Similarly, the publication also deals with important issues such as gender that are often missed in these discussions but which have significant considerations. The authors write that “[t]he direct and critical relationship between women and natural resources [is due to] ... gender, and the socially created roles and responsibilities...” (p. 37).¹ One such example of this relationship is found in the case of rural women. Environmental damage has increased the distance that these women must travel for fuel or water. These heavy loads over longer distances contribute to low birth-weights and proportions of body fat among women. Below certain levels, low body-weight



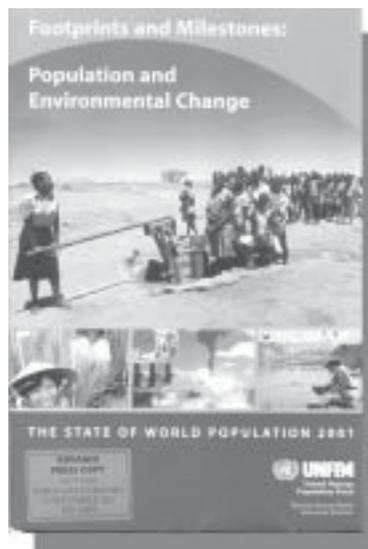
contributes to the cessation of menses and reduced fertility. Examining the roles and responsibilities of men and women in natural-resource management offers valuable insight into equitable solutions to environmental problems—solutions that also ensure economic viability. Such approaches allow us to address the economic, environmental, and equity challenges of sustainable development.

Footprints and Milestones illustrates these challenges best through detailing a telling array of dichotomies: global consumption inequities; the research-to-policy gap; inadequate resources for needs such as family planning; shortfalls in technology-transfer as well as developing-world capacity and resourcefulness; and mounting population pressures where needs are greatest.

To a certain degree, these dichotomies symbolize a basic philosophical division in the population-environment field between pessimists and optimists.²

The pessimists, a school of thought represented by scholars such as Malthus, Paul Ehrlich, and Donella Meadows, focus on potential deterioration and collapse due to global trends that include population growth, global warming, declining ocean health, biodiversity reductions, and land degradation. On the other hand, optimists such as Julian Simon and Herman Kahn focus on the creative capacity of people, stressing that improvements can reduce pollution or improve economic efficiency. Ultimately, the authors pose a key question that lies at the heart of these issues: while human ingenuity has brought us this far, how can we apply it to the future?

One answer is through the “milestones”—accomplishments in the field—that the UNFPA authors present. Besides examining a range of demographic variables, reciprocity, and causality, the authors also make the discussion concrete by including a chapter on programmatic and policy options. Here, they assert that there is an international consensus that “[d]evelopment requires improvements in the lives of individuals, usually by their own hand, the status of women powerfully determines the state of development, and women require good reproductive health care for their status to improve” (p. 49).



This chapter includes (a) regional initiatives that link population and the environment, (b) an examination of needed resources and technical assistance, (c) environmental payback from population-related investments, and (d) recommendations for action. In particular, this section stresses the opportunity to integrate the International

Conference on Population and Development (ICPD) agenda of better reproductive health and gender equality into sustainable development.³ As the authors note, “providing full access to reproductive health services, which are relatively inexpensive, is far less costly in the long run than the environmental consequences of the faster population growth that will result if reproductive health needs are not met” (p. 8).

Through examining these milestones, the authors give readers a sense of how population and environment linkages became issues of policy relevance. They convey the

important truths that: (a) population-environment linkages encompass not just conflicts but other relationships; (b) there is an unprecedented human impact on the environment; and (c) the transboundary and indeed global nature of the issues makes the linkages relevant for all countries. The authors’ extensive measurements of trends and indicators illustrate the scale and complexity of the linkages. The appendix on how these linkages have been examined in UN conferences is also useful in this regard, as it reflects the global attention these issues have received.

Audiences interested in population-environment interactions traditionally have technical questions about the linkage. For example, which specific dimensions of the population dynamic have an impact on particular resources? When does it make most sense—from a policy and program perspective—to focus on the population side as the best intervention to alleviate the problem at hand? What must be done in the short-term to effect long-term change? The authors weave some answers to these questions throughout the publication and then address the questions directly in the final chapter in the section on environmental paybacks from population-related investments (p. 53). For example, while the publication notes that policies that tend to lower fertility are also

New Publications

likely to substantially reduce climate-change costs, this conclusion does not mean that slowing population growth is the most effective or most equitable means of mitigating climate change. Slower population growth, however, would make the climate problem easier to solve, and capturing long-term benefits requires investments in population policies in the immediate future.

Another set of questions the publication addresses relates to problems of definition, scope, and comparability as well as to policy application. How is population defined? How will policymakers understand that population does not just mean human well-being (the social piece of sustainable development), but should include an analysis of population growth, distribution, and composition? How do we compare data or issues that are domestic, regional, or international in nature or that cut across ecoregions? How do we deal with the uncertainty of demographic projections, data collection, and comparability when dealing with issues of scope, scale, and data availability? How can natural and social scientists work more closely together? How can research on these issues get into the hands of policymakers? How do we define and measure results—especially at the policy level? UNFPA has written a publication that serves as a starting point for further reflection on these questions.

In conclusion, *Footprints and Milestones* provides an excellent review of the key themes of population-environment linkages. While not answering all the technical questions that policy audiences will have, it explains why the linkages are important and why

population interventions are a good way to address many development challenges that countries face.



Roger-Mark De Souza is the technical director of the Population, Health, and Environment Program at the Population Reference Bureau (PRB). He directs PRB's overall activities on population, health, and environment linkages and designs and implements policy research, policy communication, capacity building, technical support, and outreach activities.

NOTES

¹ See also Sass (2002).

² For a further discussion of this debate, see Livernash & Rodenbury (1998).

³ See Ashford (2001).

REFERENCES

Ashford, Lori S. (2001). "New population policies: Advancing women's health and rights." *Population Bulletin* 56(1).

Livernash, Robert & Rodenbury, Eric. (1998). "Population change, resources, and the environment." *Population Bulletin* 53(1).

Sass, Justine. (2002). *Women, men, and environmental changes: The gender dimensions of environmental policies and programs*. Washington, DC: Population Reference Bureau.

ECSP FORUM

The Environmental Change and Security Project's E-Mail Forum for Environment, Population, and Security Issues

ECSP Forum serves as a means for practitioners, scholars, and policymakers to dialogue about the latest environment, population, and security issues. ECSP Forum discusses current research, policy questions, and resources.

To subscribe to ECSP-FORUM, send an email to listproc@listproc.net and:

- 1) Leave the subject heading blank;
- 2) In the text box type "sub ECSP-FORUM your name":
(For example, "sub ECSP-FORUM Jane Doe")

For more information, please visit our Web site at <http://ecsp.si.edu/listserv>



AAAS Atlas of Population & Environment

By Paul Harrison and Fred Pearce
Berkeley: University of California Press,
2000. 204 pp.

Reviewed by **Jennifer Wisniewski Kaczor**

A challenge for anyone presenting population and environment research to a broad audience is to make material rich enough for the researcher, yet understandable to policymakers, students, and the general public. The *AAAS Atlas of Population and Environment* not only provides a comprehensive overview of population and environment issues, it also offers illuminating graphics and maps that will appeal to policy analysts, activists, and professors.

The *Atlas* resulted from a project that sought (a) to use geographic information systems (GIS) to create an atlas of *global* population and environment trends, and (b) to bring this knowledge to a larger audience. Lars Bromley at AAAS used GIS to create a series of complementary maps that hold as much descriptive power as the text itself. The book features nearly all global-population and natural-resource GIS datasets available at the time of publication, making it an invaluable research resource.

The book is divided into three sections: (1) an overview that summarizes theoretical approaches, examples of population-environment linkages, and policy responses; (2) an atlas section that provides snapshots of various relationships between population and the environment; and (3) a case-study section that looks at local population-environment trends. Harrison and Pearce apply a *systems approach* to their study of population and environment linkages. This systems approach differs from previous population-environment models by incorporating as many factors as possible. In addition, the approach builds feedback loops into its model in an acknowledgment that human and environmental dynamics impact each other.

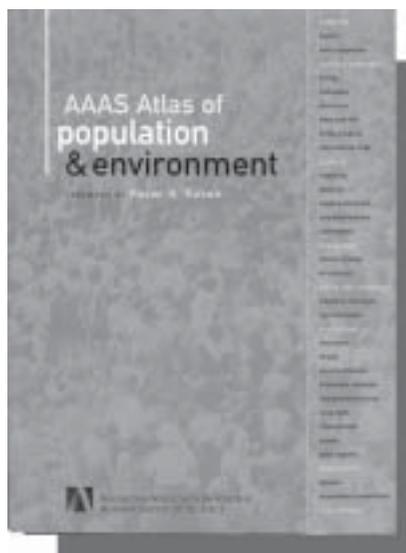
The overview offers a literature review on this approach that newcomers to the subject will find useful;

it also briefly explains alternative theoretical approaches. This framework is followed by a review of trends in global population, consumption, and natural-resource degradation, which provides a good introduction to population-environment linkages (especially for those unfamiliar with demography). By including consumption in their discussion from the beginning, Harrison and Pearce remind readers that not just developing-country policies but also consumer choices in developed countries impact natural-resource trends globally. The overview concludes by briefly discussing policy responses to these dynamics in the following areas: population, consumption, technology, population-environment, and institutions.

The atlas section uses maps, charts, and text to concisely detail global population-environment linkages for natural resources, land use, the atmosphere, waste and chemicals, ecosystems, and biodiversity. Within these categories, the authors cover many of the usual relationships—population and freshwater, forest products, arable land, and climate change. They also treat original topics such as the polar regions, mineral extraction, agricultural and industrial waste products, tourism, and international trade. The *Atlas* thus demonstrates the true breadth of relationships between humans and our environment.

The book then moves from the global to the local by presenting case studies from the World Wildlife Fund and The Nature Conservancy. These organizations used GIS to analyze the impact of human population on the environment in the Northern Andes ecoregion, Canaima National Park, Venezuela, the Eastern Himalayas, Madagascar, and the Sonoran Desert. The case studies provide students and newcomers to the field excellent examples of how to use GIS to look at these relationships. The discussions here have several drawbacks: they are too short, descriptive in nature, and lack policy options based on the findings. Despite these shortcomings, however, the cases allow readers to step back from the global level and see how population-environment interactions work locally in both developing and developed countries.

Finally, one of the most striking and useful features of the *Atlas* is its Web site. With support from the



Summit Foundation, the AAAS site provides a full-text, downloadable PDF version of the book as well as an HTML version with links to all of the data sources. The site is invaluable to researchers, analysts, and students looking for spatial data to support research on how human population impacts the environment. Much of this data is free and downloadable, or free upon request. In the near future, AAAS plans to expand the site to include a Web-based map server to create and manipulate maps over the Internet, making data accessible to those without GIS software.

Jennifer Wisniewski Kaczor is a project associate with the Environmental Change and Security Project.



The Environmental Implications of Population Dynamics

By Lori Hunter
Santa Monica, CA: RAND, 2000. 98 pp.

Reviewed by Jennifer Wisniewski Kaczor

Policy analysts studying interdisciplinary topics (such as population-environment issues) must synthesize research from various sources and fields into a policy-friendly and -relevant format. RAND's Population Matters project has undertaken this challenging task for policymakers on population issues. *The Environmental Implications of Population Dynamics* is Population Matters' first look at macro-level population and environment trends—and the implications these trends pose for policy at the local, national, and global levels.

The report is straightforward and well-organized. It first describes the conceptual framework for analyzing how human demographics change the environment, and then explains the individual environmental impacts of (a) population size and growth, (b) population distribution, and (c) population composition. Each of these three chapters is accompanied by useful charts and graphs illuminating the text's data. Later, Hunter looks at mediating factors (or intervening variables) for the population-environment connection—factors such as science and

technology, institutions and policy, and culture. Using case studies, Hunter provides readers with examples of how these variables work at different levels (global, national, and local) to affect the interaction between people and their environment.

Several case studies in *The Environmental Implications of Population Dynamics* demonstrate how policy can be a mediating factor that causes environment to affect demographics. For instance, the Aral Sea Basin is a dramatic example of the adverse environmental effects of national-level water-management and irrigation policies. The Aral Sea has shrunk 40 percent since 1960—primarily, research has shown, because of irrigation policies implemented by the Soviet Union. The policies have altered the Aral Sea coastline, changed the local precipitation cycle, and drastically reduced the local fish population—with 20 of 24 native species disappearing altogether. For the people living on the Aral Sea coast—mostly long-time fishers and their dependents—these changes in environment have meant increasing poverty rates, increasing infant-mortality rates, and curtailment of livelihoods.

Hunter then provides two longer case studies summarizing research on the relationships between (a) demographic change and climate change, and (b) demographic change and land-use. She notes, for instance, that human-induced global climate change may very well have negative impacts as temperatures and sea-levels rise, creating the potential for land-loss in already very crowded coastal areas. Hunter also cites research predicting that global climate change could cause a five-percent loss in world cereal output, and that human health could be adversely affected as climate-induced geographic changes shift vector-borne diseases (such as malaria) into areas where people have had little exposure.

In the concluding chapter, Hunter makes four recommendations. First, environmental policies should stress both demographic concerns and mediating factors. Second, since ecosystems do not neatly fall within national boundaries, international cooperation on environmental issues is absolutely necessary to achieve sustainable solutions to development and conservation problems.

Third, the role of international markets in environmental degradation must be recognized. For example, cash crops farmed for export to international markets (such as Madagascar) have played an important factor in historical rates of deforestation. Finally, relevant policies should be implemented at local, national, and international levels. Because local and



national factors such as culture and consumption act as intervening variables, national- or local-level policies may be equally or even more important than policies implemented at the international level. In addition to these recommendations, Hunter provides a list of research needs for the population-environment field.

The Environmental Implications of Population Dynamics is an exemplary sample of work targeted to a policy audience. Its recommendations are clear, concise, and easy to find within the text. Hunter's use of case studies and examples coupled with research and data provides analysts and policymakers all the tools they need for informed decisions. In addition, Hunter includes a useful list of references for those wanting to read more about population and environment linkages. The report is targeted specifically toward those doing policy work, but it would also be a useful tool for students wanting an introduction to the topic from a policy perspective. **W**

Jennifer Wisniewski Kaczor is a project associate with the Environmental Change and Security Project.



The Health of Nations: Infectious Disease, Environmental Change, and Their Effects on National Security and Development

By Andrew T. Price-Smith
Cambridge: The MIT Press, 2002. 220 pp.

Reviewed by Donald L. Noah

The last decade has seen a burgeoning number of references on emerging and reemerging infectious diseases, widespread environmental degradation, and the ongoing struggle between man and microbe. Most recently, authoritative observations have associated the issues of health and national security (see Diamond, 1999; Garrett, 1995; Garrett, 2001; and National Intelligence Council, 2000). However, no one has offered an empirical method of measuring those associations—until now. Not only does Andrew Price-Smith assert in *The Health of Nations* that unchecked diseases interfere with global

democratization and add to economic and political destabilization, he seeks to identify and measure what others merely state as fact: the causal role that disease plays in determining state capacity.

After his introduction, Price-Smith begins *The Health of Nations* by walking us through the definition of his variables and the structure of his methodology. He views emerging and reemerging infectious diseases (ERIDs) as an independent variable, with survival as their only biological goal. Given the difficulty of quantifying ERIDs magnitude at any point in time, Price-Smith uses infant mortality and life expectancy as primary surrogates for measuring them. He measures state power in terms of empirical indicators (e.g., GNP, spending, secondary-school enrollment, and external investments) and attempts to determine that power's relationship with infectious disease incidence and prevalence.

Next, Price-Smith demonstrates a statistically-significant negative association between ERIDs and state development. More specifically, he identifies this relationship as an asymmetric feedback loop (in that increases in infectious disease) have a significantly negative impact on state capacity while increases in state capacity do not, in the long-term, decrease the occurrence of infectious disease. With examples from each region of the world, Price-Smith convincingly illustrates that ERIDs have recently resulted in inordinate paranoia, xenophobia, and impaired decision-making at the state level. For example, a 1994 outbreak of plague in India resulted in a mass exodus of 300,000 people from the city of Surat. The questionable warrant of this reaction was matched in the reactions of the surrounding countries of Pakistan, Bangladesh, Nepal, and China, which immediately closed their borders with India to trade, travel, and (in some cases) even mail. Other significant diseases in these case studies include plague, new variant Creutzfeld-Jakob disease, bovine spongiform encephalopathy, Ebola hemorrhagic fever, tuberculosis, and HIV/AIDS. The balanced nature of this effort is highlighted by Price-Smith's habit of including the opinions of others in his notes section at the end of the book.

Price-Smith then undertakes a thoroughly enjoyable review of the modernization and dependency theories of state development, followed by an introduction to the biological parameter of international development the author asserts has been long overlooked. Price-Smith then cogently analyzes population health and its effects on the

New Publications

microeconomic, macroeconomic, and sectoral aspects of state development.

Next, *The Health of Nations* takes up where the National Intelligence Council left off in early 2000 with its groundbreaking treatise on emerging infectious diseases and U.S. national security (NIC, 2000). Central to this section is the argument that traditional notions of security, primarily expressed in military terms, fail to address disease threats to human health, which are often more deleterious to state capacity—especially in the long term. Price-Smith links military threats to health with the concept of *differential immunity*, whereby militaries that typically enjoy lower endemic disease incidence—such as that of the United States—may fall prey to the diseases carried by other militaries as they increasingly participate in international peacekeeping efforts.

Moreover, Price-Smith argues, disease may act as the unrecognized catalyst that contributes to state failure by exacerbating existing environmental and societal stressors—especially in the developing states where greater external interventions likely will be required. This section of the book reminds us that threats to national security are not zero-sum, unlike our traditional “capacity” and “willingness to respond” measures. While threats to a nation’s security may come from a seemingly endless and independent number of sources (e.g., energy shortages, food and/or water scarcities, military encroachment, political isolation, etc.), no nation has the capacity to respond to many successive threats without the possibility of exhaustion.

Finally, Price-Smith discusses the causal relationships between environmental change (e.g., climate, land use, ozone, microbial resistance, biodiversity, and migration and trade) and adverse health trends. He concludes with the somewhat obvious prediction that continued environmental degradation will accelerate the emergence of pathogens into the human ecology. The recent emergence of Ebola hemorrhagic fever is an example where the incremental advancement of people into the forested environment of central Africa, already teeming with infected animal reservoirs, has resulted in completion of the classic epidemiologic triad.

There are just a few shortcomings to the book.

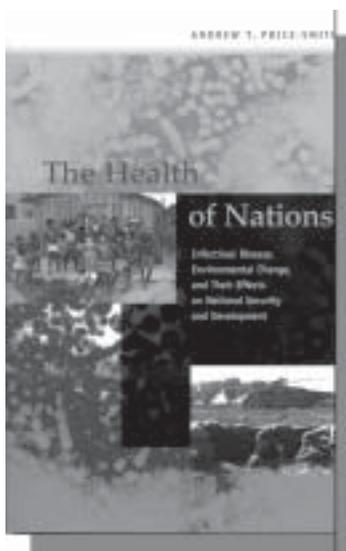
Despite Price-Smith’s overall innovative treatise, portions of *The Wealth of Nations* read as yet another review of the contributors of disease (re)emergence. Moreover, in his discussions of increased disease prevalence/incidence, Price-Smith fails to offer a potential differentiation between the true emergence of new diseases versus an artificial increase due to an increased ability to *recognize* existing diseases.

The author also incorrectly includes Junin and Machupo viruses as subtypes of the Ebola virus. In addition, biologists may also object to his usage of the term “viral traffic” to include other microbes such as bacteria, fungi, and protozoa. Finally, the linchpin of his conclusions regarding the causal relationship between population health and state capacity rests with the validity of his surrogate variables. (These variables are: (a) infant mortality and life expectancy for population health; and (b) fiscal resources, human capital, reach and responsiveness, resilience, legitimacy, autonomy, coherence, and instrumental rationality for state capacity.) While Price-Smith’s passionately presented evidence certainly adds a modicum of

plausibility to the relationship, the degree to which those two variables adequately reflect state capacity remains unproved.

Despite these few and potential failings, I highly recommend this book to political, social, and biological scientists wishing to expand their understanding of diseases and society. Among the many strong points of the book are its systematic pattern of stating a hypothesis, using data and analysis to support the hypothesis, summarizing known critics (if any) of his methodology, and systematically refuting them with clear examples. My copy, dog-eared and thoroughly highlighted, is resting on my bookcase between Zinsser’s *Rats, Lice, and History* (1932) and Alibek’s *Biohazard* (1999). You should reserve a spot for your copy as well. **W**

Lt. Colonel Donald L. Noah currently serves as a biological warfare defense advisor to the Office of the U.S. Secretary of Defense. His past assignments include the U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID), the Centers for Disease Control and Prevention, the U.S. Air





Force School of Aerospace Medicine, and the intelligence community.

REFERENCES

Alibek, Ken. (1999). *Biohazard*. New York: Random House.

Diamond, Jared. (1999). *Guns, germs, and steel: The fates of human societies*. New York: W.W. Norton and Company.

Garrett, Laurie. (1995). *The coming plague: Newly emerging diseases in a world out of balance*. New York: Penguin Books.

Garrett, Laurie. (2001). *Betrayal of trust: The collapse of global public health*. New York: Hyperion Books.

National Intelligence Council (NIC). (2000). *The global infectious disease threat and its implications for the United States*. Washington, DC: U.S. Government Printing Office.

Zinsser, Hans. (1934). *Rats, Lice and History*. Boston: Little, Brown and Company.

heat waves, floods, and droughts will provide exposure pathways for these adverse health effects. Warmer air temperatures could also influence local and regional air pollutants and aeroallergens. Less direct health impacts may result from climate-related alteration of ecosystems or water and food supplies, which in turn could affect nutrition and infectious disease incidence. Sea-level rise (due to thermoexpansion of salt water) could also potentially lead to coastal population displacement and economic disruption.

Balbus and Wilson are objective in their assessment of these potential health hazards, stating that “the complexity of the pathways by which climate affects health represents a major obstacle to predicting how, when, where, and to what extent global climate change may influence human well-being” (page iii). Both *Human Health and Global Climate Change* and the U.S. National Assessment report also acknowledge that climate effects will occur in the context of concomitant environmental and socioeconomic stressors (such as poverty or inadequate public-health infrastructure). The vulnerability of the U.S. population to these health hazards is determined not only by the magnitude of an adverse exposure (in this case, harsh climate) but also by our national, state, and local capacity to adapt.

The United States is also connected to the rest of the world, and international impacts from the global exposure of climate change (from food imports, immigration, or international travel) will affect it. According to the United Nations Intergovernmental Panel on Climate Change (IPCC) (McMichael et al., 2001), areas or populations most vulnerable to climate change health impacts include:

- Locations within or bordering regions with high endemicity of climate-sensitive diseases (e.g., malaria);
- Areas with an observed association between epidemic disease related to climate extremes (e.g., El Niño linked epidemics);
- Areas at risk from cross-sectoral climate impacts relevant to health (e.g., stress on food and water supplies, risk of coastal flooding);
- Areas at risk from concurrent environmental or socioeconomic stresses and with little capacity to adapt (e.g., local stresses from land-use practices or impoverished or undeveloped health infrastructure).

Balbus and Wilson present counterbalancing and interconnecting realities through informative and



Human Health & Global Climate Change: A Review of Potential Impacts in the United States

By John M. Balbus and Mark L. Wilson
Washington, DC: Pew Center on Global Climate Change, 2000. 43 pp

Reviewed by **Jonathan A. Patz**

Human Health & Global Climate Change: A Review of Potential Impacts in the United States provides a comprehensive and realistic review of the health implications stemming from climate variability and change affecting the United States. The report also dovetails well with the recent health-sector report of the U.S. National Assessment on the Consequences of Climate Variability and Change (Bernard et al., 2001; Patz et al., 2001). Together, these reports provide an excellent overview for policymakers addressing climate change.

Climate change is expected to adversely affect health in the United States in a number of ways. (See Box 1.) Increased frequency or intensity of extreme

Box 1: Examples of Climate Change’s Potentially Adverse Health Effects in the United States

- *Mortality due to heat waves* primarily is a result of cardiovascular, cerebrovascular, and respiratory disease (Kilbourne, 1997). The 1995 heat wave in Chicago caused 514 heat-related deaths (12 per 100,000 population) (Whitman et al., 1997).
- There is a strong positive relationship with temperature above 90° F and *formation of ozone* (photochemical smog). Ozone is a potent lung irritant and recently has been shown to contribute to the development of asthma in children (McConnell et al., 2002).
- *Heavy rainfall and runoff* also influences the transport of other microbial agents from agricultural fields or human septic systems. Rainfall can alter the transport and dissemination of these microbial pathogens (such as cryptosporidiosis and giardia) and temperature may affect their survival and/or growth (Curriero et al., 2001; Rose et al., 2001).
- Regarding *vector-borne diseases*, Reisen et al. (1993) showed that a 3-5°C increase in mean monthly ambient temperature in different parts of California effectively doubled the length of the potential transmission season of Saint Louis Encephalitis (SLE), thereby placing at risk the migratory non-immune elderly that arrive from northern latitudes in October to spend the winter in the southwestern deserts.

refreshing tables and boxes on such subjects as “What Makes a Human Disease Climate Sensitive?” and “International Health Impacts.” An extremely useful summary table in the book should serve as an excellent quick reference that orients one to disease outcomes, vulnerable populations, other non-climatic factors, and preventive or adaptive measures.

In a chapter on “Strengths and Limitations of the Current State of Knowledge,” the authors address general data needs for the field, such as the lack of baseline disease data and inadequate resolution of generalized circulation models (GCMs) of climate. Such improved data would enable climate/health assessments that provide a geographic model of disease occurrence that would aid public-health interventions. The authors fail to mention, however, that while researchers have documented the distinct seasonality of many diseases, inappropriate statistical methods or climate downscaling are quite often applied to this seasonality. Climate and disease interactions are often nonlinear (NRC, 2001); by applying proper statistical tools, our understanding of these linkages will be better understood.

In light of both the possible irreversibility of global warming and the broad array of climate-change health impacts reviewed in this report, we need to better understand how climatological change links with ecological change to determine disease. Such an understanding will help in constructing predictive

models to guide effective disease prevention. Policymakers and researchers must also urgently address the poverty and local environmental hazards to which health crises are largely attributable. Ignoring long-term trends in climate and natural resource consumption may compound existing environmental health problems. **W**

Jonathan A. Patz is an assistant professor at Johns Hopkins University’s Bloomberg School of Public Health. He also is director of the Bloomberg School’s Program on Health Effects of Global Environmental Change.

REFERENCES

Bernard, S.M.; McGeehin, M.A.; & Patz, J.A. (Eds). (2001). “Human health consequences of climate variability and change for the United States: Report of the national health assessment group for the U.S. Global Change Research Program.” *Environmental Health Perspective* 109(2), 175-233.

Curriero, F; Patz, J.A.; Rose, J.B.; & Lele, S. (2001). “The association between extreme precipitation and waterborne disease outbreaks in the United States, 1948-94.” *American Journal of Public Health* 91(8), 1194-1199.

Kilbourne, E. (1997). “Heatwaves.” In E. Noji (Ed.), *The public health consequences of disasters* (pages 51-61). New York: Oxford University Press.



McConnell, R.; Berhane, K.; Gilliland, F.; London, S.J.; Islan, T.; Gauderman, W.J.; Avol, E.; Margolis, H.G.; & Peters, J.M. (2002). "Asthma in exercising children exposed to ozone: A cohort study." *The Lancet* 359, 386-391.

McMichael, A.; Githeko, A.; Akhtar, R.; Carcavallo, R.; Gubler, D.; Haines, A.; Kovats, R.S.; Martens, P.; Patz, J.A.; & Sasaki, A. (2001). "Human health." In J. McCarthy, O. Canziani, N. Leary, D. Dokken, and K. White (Eds.), *Climate change 2001: Impacts, adaptation, and vulnerability*. New York: Cambridge University Press.

National Research Council (NRC). (2001). *Under the weather: Climate, ecosystems, and infectious disease*. Washington, DC: National Academy of Sciences.

Patz, J.A.; McGeehin, M.A.; Bernard, S.M.; Ebi, K.L.; Epstein, P.R.; Grambsch, A.; Gubler, D.J.; Reiter, P.; Romieu, I.; Rose, J.B.; Samet, J.M.; & Trtanj, J. (2001). "Potential consequences of climate variability and change for human health in the United States." In National Assessment Synthesis Team (Ed.), *Climate change impacts on the United States—Foundation report*. Cambridge, UK: Cambridge University Press.

Reisen, W.K.; Meyer, R.P.; Presser, S.B.; & Hardy, J.L. (1993). "Effect of temperature on the transmission of western equine encephalomyelitis and St. Louis encephalitis viruses by *Culex tarsalis* (Diptera: Culicidae)." *Journal of Medical Entomology* 30, 151-160.

Rose, J.B.; Epstein, P.R.; Lipp, E.K.; Sherman, B.H.; Bernard, S.M.; & Patz, J.A. (2001). "Climate variability and change in the United States: Potential impacts on water and foodborne diseases caused by microbiologic agents." *Environmental Health Perspectives* 109(2), 211-221.

Whitman, S.; Good, G.; Donoghue, E.; Benbow, N.; Shou, W.; & Mou, S. (1997). "Mortality in Chicago attributed to the July 1995 heat wave." *American Journal of Public Health* 87, 1515-1518.



Germs: Biological Weapons and America's Secret War

By Judith Miller, Stephen Engelberg, and William Broad
New York: Simon & Schuster, 2001. 382 pp.

Reviewed by Robert Wyman

Germs is an essential read for those interested in looking at the biological warfare threat, which

for the past decade has become a rapidly growing U.S. national-security concern. While the book includes a history of biological warfare (BW), it focuses on how the United States has attempted to address the shortcomings in its preparation for a biological weapons attack.

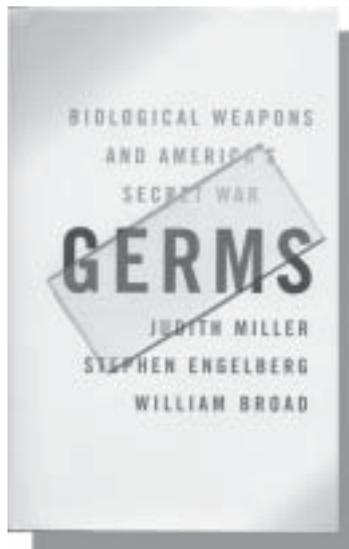
History

The authors of *Germs* begin by exploring the first germ attack by a non-state actor (the Rajneesesh attack of 1994) and the efforts by federal authorities to downplay the event, fearing publicity could result in similar copycat crimes. An Oregon cult, the Rajneeshees attempted to influence a 1994 county election by spraying salmonella on local salad bars. Their objective was to make people too sick to go to the polls so that Rajneeshee candidates would win the elections and gain the cult a measure of legal protection. The Rajneeshee attack, which remained a mystery for a year, taught authorities the difficulty of distinguishing between an intentional biological attack and a natural outbreak. (Not until after a member of the cult held a press conference to confess and then a subsequent investigation did the full scope of the biological program of the cult become clear.) The Rajneesesh case also demonstrated some of the difficulties that terrorists face in effectively using biological agents as a weapon. Even with a large amount of money, the cult still had trouble mastering the nuances of biological weapons design.

Germs then examines the 1990-91 Persian Gulf War (and the U.S. military's anthrax vaccination program during that conflict) to highlight some of America's problems in protecting military personnel and overseas assets against a biological weapons attack. During the war, U.S. military commanders were worried Saddam Hussein might use his biological arsenal against coalition troops. The Bush administration issued an ambiguous threat as to what an American response might be to an Iraqi biological attack. However, *Germs* reports that it was widely believed that President George Bush, Sr. had privately made it clear that a biological attack would result in a retaliatory nuclear strike. This ambiguity is now often thought by military analysts to have deterred Saddam from making such an attack. The Gulf War example serves to show the United States' lack of preparedness for a biological attack and its inability to protect troops without relying on a nuclear deterrent.

The second action that the Bush administration took to protect U.S. troops in the Gulf War was to use

an anthrax vaccine. Troops were inoculated before being deployed, but the program met with some challenges because (a) there was not enough vaccine for all U.S. troops, and (b) the vaccine could not be offered to coalition partners. After the war, the U.S. military mandated the vaccination of all active-duty troops. But problems began to occur with the anthrax vaccine produced by the contractor BioPort. BioPort failed to pass Food and Drug Administration (FDA) inspections and was running into constant trouble in producing the vaccine. More importantly, there were questions about the reliability of the vaccine itself. What types of anthrax would it protect against? What were the long-term health affects of the vaccine? These are just a few of the problems that the authors of *Germs* point out when discussing the difficulties that the military and government have in trying to protect and plan for a potential biological weapons attack.



Today's Situation

In discussing the current situation, *Germs* makes three main points. First, the authors argue that the threat of a biological attack against the United States is both real and exaggerated. Second, worldwide research on offensive biological weapons work is greatly ahead of research on defensive measures. Finally, the authors assert that the United States needs greater coordination among various government agencies to effectively counter an attack.

Germs addresses the dangerously-growing gap between offensive and defensive research on biological warfare by looking at both the American and Soviet biological weapons programs. Both programs had invested significant resources into offensive biological weapons research—yet very little went into defensive work. This disparity became evident during the Gulf War, when the United States was unable to deploy a reliable detection system to protect its troops in Saudi Arabia. According to the book, the U.S. biodefense program is currently trying to close these gaps.

The authors also show how offensive biological research is greatly outpacing defensive research by highlighting (a) the Soviet biowarfare program, (b) the U.S. inability to deploy any type of reliable detection system, (c) constraints placed on U.S. defensive research

by the Biological Weapons Convention (BWC), and (d) the United States inability to get biological samples from the former Soviet program in order to test the effectiveness of U.S. vaccines.

Before its collapse, the Soviet Union was in the process of creating “super bugs,” or specially engineered biological agents. At the same time, the United States had grossly inadequate capabilities for creating or deploying a reliable biological-attack detection system. In addition, the United States was constrained in its research by the BWC. The BWC allowed the United States to conduct defensive research only, but the line between defensive and offensive work was difficult to determine. (For instance, there were debates among civilian advisory committees created by the CIA over whether CIA projects that explored the potential dissemination effectiveness of enemy biological weapons were a violation of the

BWC.) And, as noted above, the United States has also been unable to get biological samples from the former Soviet Union program to determine if their vaccines are effective against Soviet-produced bioagents. This lack of access is a critical problem: without the samples, the United States cannot be assured of the effectiveness of its vaccines.

With the current unprecedented economic, military, and diplomatic power of the United States, many analysts believe that asymmetric means of challenging that power will be the more likely means of future warfare. Hostile states and non-state actors are increasingly looking at this type of warfare to take advantage of America’s weaknesses. States other than the former Soviet Union have biological weapons programs, and the threat these weapons pose is quite real. But the authors of *Germs* argue that, while the threat to the United States from a biological weapons attack exists, “senior [U.S.] officials overstated the danger of biological attack, harming their cause with hyperbole. Similarly, political leaders undermined their credibility by asserting that a biological attack was inevitable in the next few years” (p. 315).

For instance, former Secretary of Defense William Cohen went on ABC’s news show “This Week” in 1997 with a five-pound bag of sugar, claiming that five pounds of anthrax could kill half the population of



Washington, DC. In most cases, the release of five pounds of anthrax would indeed kill many people—but certainly not the amount that Cohen claimed. Clinton and George W. Bush administration officials have also stated that biological attacks on the United States are a certainty. The authors argue that such overstatements actually hurt efforts to raise public consciousness on the issue.

Finally, the authors of *Germs* argue that there is significant overlap in the work of U.S. government agencies in their preparation for a biological weapons attack. While considerable funds have been thrown at the problem, there have been few attempts to coordinate the efforts of government agencies into a coherent national strategy for the United States. (Only in the wake of September 11 has the government created a separate organization—the Homeland Security Office—to tackle this issue; and its success is far from assured). This lack of cohesion and organization could lead to confusion regarding roles and responsibilities during an attack, with agencies fighting over whom has jurisdiction and control. For example, the U.S. government has made several attempts to create “special committees” of scientists to advise the work of agencies dealing with biological-weapons threats and to reduce overlap. However, these committees have had very little real authority in initiating change and have only been marginally effective.

Germs also outlines what the future likely holds regarding U.S. preparations for a biological weapons attack. The authors argue that the United States will most likely focus its defensive research in two areas: (a) vaccine research, and (b) funding of “special” research projects. Vaccine research would test the effectiveness of current vaccines while creating vaccines for other potential biological weapons agents. The Defense Advanced Research Projects Agency (DARPA), with its mandate to advance technological solutions, is currently funding research to create reliable detectors and break down the genetic code of agents in order to develop vaccines.

In conclusion, *Germs* does an exceptional job of taking the reader on a journey through the national security issues and challenges the United States faces in dealing with biological weapons. **W**

Robert Wyman is a research assistant at the Chemical and Biological Arms Control Institute (CBACI).

The Environmental Consequences of War: Legal, Economic, and Scientific Perspectives

Jay E. Austin & Carl E. Bruch (Eds.)
New York: Cambridge University Press, 2000.
691 pp.

Reviewed by Elizabeth L. Chalecki

This volume draws from research connected to the “First International Conference on Addressing Environmental Consequences of War: Legal, Economic, and Scientific Perspectives,” held in Washington, DC in June 1998. An extremely timely volume in the wake of the UN Environment Programme’s decision to open a permanent Post-Conflict Assessment Unit, *The Environmental Consequences of War* uses the 1991 Gulf War and the 1999 Kosovo conflict as templates to examine the effects of war on the environment.

The editors, Jay Austin and Carl Bruch from the Environmental Law Institute, have not produced a foolproof method for measuring environmental damage from war. On the contrary, Austin and Bruch note that, while our legal system prefers to adjudicate all issues to closure as soon as possible after they occur, our current economic and scientific methods to measure damage are quite limited, and full and accurate damage estimates may take years to uncover.

Austin and Bruch also point out that they are not addressing what they consider to be “environmental security” (i.e., how natural-resource shortages and environmental degradation can result in armed conflict). Rather, they are considering only the environmental effects of war, not its environmental causes. The editors also recognize that some might view an examination of war’s environmental impacts as insensitive to the human toll of war. But they are quick to point out that these impacts have collateral effects on humans.

To get an overview of the nearly 700 pages of *Environmental Consequences*, readers should start with the introductions to each of the book’s sections. On the whole, the authors have not made specific policy recommendations. Rather, they approach the problem of the environmental effects of war from many different angles. Some of these approaches include: a detailed consideration of the public health effects of defoliants, an assessment of environmental damages under the Law of the Sea, and a detailing of the U.S. Navy’s

attempts to develop operational guidelines that balance military necessity with environmental protection.

Legal Status of the Environment During Wartime

The environment has always suffered during war, but two factors now make environmental damage caused by armed conflict of particular concern to military commanders. First, in the wake of peacetime environmental degradation such as climate change, the public has become increasingly aware of environmental issues and will likely find extreme environmental damage during war unacceptable (even if collaterally incurred). Second, developments in

“rules of war” treaties—such as the 1925 Geneva Protocol, the four 1949 Geneva Conventions, and the 1977 Environmental Modification (ENMOD) Convention—as well as arms-control agreements such as the 1959 Antarctic Treaty. He argues that, while the terms and provisions contained in these treaties and norms of international law are not complete, they do provide more protection for the environment during wartime than a superficial reading would indicate. Collectively, these treaties and agreements encompass four principles: (1) proportionality of action; (2) discrimination in selection of targets; (3) use of minimum force necessary; and (4) prohibition of

War can damage the ecosystems of entire regions, creating synergistic effects between the environment, public health, and other parts of society.

—Elizabeth L. Chalecki

military technology—such as depleted uranium weapons—can make armed conflict more environmentally devastating than ever before.

The overview chapter by Christopher Stone (“The Environment in Wartime: An Overview”) raises several types of questions that frame our thinking about the subsequent material. First, *ethical*: How should the environment be treated in wartime? Should we protect the environment for our sake or for its sake? Second, *practical*: What is a realistic amount of conflict-produced environmental damage that could also be acceptable to the general public? Are there training or command procedures that allow field personnel to assess possible environmental damages? Finally, *legal*: Would peacetime environmental laws be suspended in wartime? How are damages to be measured and how are they made collectible? How can we create moral conditions favorable to encourage compliance with environmental warfare laws? Consideration of these questions implies that environmental protection should be considered a fundamental priority—a condition that Stone admits may sometimes be eclipsed in wartime by military necessity.

Part II of *Environmental Consequences* begins by examining the legal standards applicable during wartime and how these might or might not include environmental protection. In “The Law of War and Environmental Damage,” Adam Roberts examines international legal provisions to determine if they adequately restrict the environmental damage done by military operations. Specifically, Roberts looks at

unnecessary force.

Each of these principles seems to rule out massive environmental destruction. And Roberts argues that, when taken together, these principles can be construed to protect the environment during wartime, even if they do not mention the environment specifically. If the conflict is a civil war, however, these international rules of conduct still apply only if states adopt them voluntarily. Given this patchwork of laws, principles, and treaty provisions, Roberts concludes that it is not worth negotiating a new comprehensive framework for environmental protection during war because such a negotiation might open up contentious issues and be unenforceable.

But Richard Falk (“The Inadequacy of the Existing Legal Approach to Environmental Protection in Wartime”) disagrees with Roberts, arguing that existing laws are not enough to protect the environment during war because operational logic on the battlefield elevates (a) military necessity, and (b) the judgment of the battle commander over environmental protection and legal constraints. To help surmount this operational divide, Arthur Westing (“In Furtherance of Environmental Guidelines for Armed Forces During Peace and War”) specifically recommends further development of self-imposed environmental guidelines for troops during wartime, many of which may duplicate international treaties.

The second half of Part II looks at what lessons can be learned from other legal regimes that are currently applicable during peacetime. Silja Vöneky



writes in “Peacetime Environmental Law as a Basis of State Responsibility for Environmental Damage Caused by War” that peacetime environmental treaties (such as the Antarctic Convention and the UN Convention on the Law of the Sea) could remain applicable during wartime if they protect the interests of the international community as a whole. David Caron (“The Place of the Environment in International Tribunals”) discusses the use of adjudicative institutions to investigate environmental damages during war. Caron notes that it is very unlikely sufficient funds would be available from a defeated nation to make post-war environmental reparations. To this end, Jeffrey Miller (“Civil Liability for War-Caused Environmental Damage: Models from United States Law”) suggests a stand-alone liability fund to pay for environmental damages caused by war regardless of culpability.

Valuing National Resources and Public Health

Part III of *Environmental Consequences* begins by addressing the ecological and natural-resource impacts of war, focusing particularly on the terrestrial and marine environmental damage to the Persian Gulf during the 1990-91 Gulf War. For Asit K. Biswas (“Scientific Assessment of the Long-Term Environmental Consequences of War”), the near-total lack of long-term monitoring of warfare sites means that we may never be able to approximate war’s true ecological cost. This section of the book also includes an interesting chapter by Jeffrey A. McNeely (“War and Biodiversity: An Assessment of Impacts”) concludes that societies can stave off conflict by preserving ecological richness and using resources sustainably and equitably.

The second half of Part III expands the discussion to consider the public-health impacts of military preparation for war, war itself, and the outbreaks of disease that often follow war. The book provides a rational, in-depth discussion of the threat of chemical and biological agents, divorcing these topics from popular media hysteria. But *Environmental Consequences* itself provides little comfort about these threats: aside from recognized dangers of weapons such as anthrax, the book discusses microbes that can be engineered to be antibiotic-resistant, potentially making a country’s first line of defense against biological attack useless.

Economics and Future Ideas

Part IV of the book looks at recent research into placing a monetary value on war’s damage to the

environment. Most environmental economists know the myriad problems inherent in environmental valuation during peacetime—chief among them, the difficulty of measuring the non-monetary worth of an ecosystem. Valuing economic damages to the environment as possible war reparations adds new elements of scope and interconnectedness to this task. War can damage the ecosystems of entire regions, making substitutes for various ecosystem services difficult to find and creating synergistic effects between the environment, public health, and other parts of society. For example, petroleum fires such as the ones in Kuwait at the end of the Gulf War result in air pollution, which in turn affects public and agricultural health. Furthermore, the weaknesses (such as wartime fears and cultural differences) in both survey-based and insurance-based valuation methods are only exacerbated during war.

Part V focuses on new ideas for future environmental protection during war. It includes an analysis and critique of the Draft Convention on the Prohibition of Hostile Military Activities in Protected Areas, which Richard Tarasofsky (in “Protecting Specially Important Areas During International Armed Conflict”) feels has considerable merit by balancing military and humanitarian concerns. This section also deals with the use and limitations of the newly established International Criminal Court.

Environmental Consequences is not a casual read by any means. Rather, it is full of detailed arguments and discussions about (a) how we could measure war’s damage to the environment, and (b) whether further regulation of war will have any useful effect. The authors have done a thorough and clear job of researching the many intersections of conflict and its collateral environmental damages. While no clear consensus emerges in the book for how this damage might be prevented or mitigated, it is useful to know that awareness of the environmental effects of war have made their way into operational thinking—from military rules of engagement to UN treaties. Furthermore, the UN has begun to investigate the environmental damage resulting from conflicts in Kosovo, the Occupied Palestinian Territories, and now Afghanistan. This volume would be an excellent reference for their deliberations. **W**

Elizabeth L. Chalecki is a research associate at the Pacific Institute for Studies in Development, Environment, and Security.

The Trampled Grass: Mitigating the Impacts of Armed Conflict on the Environment

By James Shambaugh, Judy Oglethorpe, and Rebecca Ham (with contributions from Sylvia Tognetti)

Washington, DC: Biodiversity Support Program, 2001. 135 pp.

Reviewed by **Edmond J. Keller**

The *Trampled Grass* is designed as a guide primarily intended for conservation and natural-resource management practitioners and policymakers as well as the donor community that supports them. Secondary audiences include the relief community, development organizations, local communities, and others interested in mitigating the impact of armed conflict. This publication is based on the results of the Biodiversity Support Program's Armed Conflict and the Environment Project. (The Biodiversity Support Program, now disbanded, was a consortium of the World Wildlife Fund, the Nature Conservancy, and World Resources Institute.)

The guide's title indirectly indicates the work's geographical focus on sub-Saharan Africa, referring to an old African proverb ("When elephants fight, it is the grass that suffers") that inspired the authors. In the context of present-day Africa, this theme suggests that when armed conflicts occur, it is the environment and the people who rely on that environment that suffer.

Between 1970 and 1995, there were 30 incidents of large-scale armed conflict in sub-Saharan Africa—and all but two of them were internal wars (Myers, 1996). In 2000 alone, 18 sub-Saharan African countries were either involved in or just concluding some form of armed conflict (Gurr et al., 2000). The authors acknowledge that, when armed conflicts erupt, the most pressing priority is to ease human insecurity and suffering. And although the fighting also has a devastating effect on the environment, environmental concerns tend to take a back seat. However, often little thought is given to the long-term effects of environmental degradation caused by civil strife. For example, a degraded environment poses a long-term threat to human security through the depletion of natural resources and destruction of wildlife habitats. The authors argue that, although armed conflicts may be impossible to avoid and create a myriad of complex challenges for conservation practitioners, certain strategies can mitigate their impact on the environment.

The first chapter of *The Trampled Grass* ("Armed Conflict and the Environment") concisely summarizes the book's premise by using recent examples from post-conflict African states of devastating habitat destruction and loss of wildlife, over-exploitation of natural resources, and pollution. The authors note that, "[a]lthough conflicts may start for other reasons, there is a risk that resource depletion and environmental degradation can drag a region into a vicious circle: poverty, further political instability, more armed conflict, greater environmental degradation, and even greater poverty" (p. 11).

The chapter goes on to discuss problems facing conservation organizations trying to work in pre-, post-, and current conflict situations. This section highlights some best practices, with most examples drawn from Ethiopia, Rwanda, and the Democratic Republic of the Congo (DRC). Ethiopia, which has experienced prolonged periods of armed conflict, has made efforts to involve local communities living near in the Awash National Park in a biodiversity project that actually played a key role in the park's survival. Conservationists in Rwanda's Virunga Volcano Protected area learned about the value of remaining at their work even in times of severe socio-political conflict. And in the DRC, the study finds that the cooperative efforts of international and national conservation agencies can play a vital role in maintaining conservation projects even during the most severe crises.

The Trampled Grass then briefly introduces several key political, social, and economic issues that can affect conservation efforts during and following armed conflict. These issues include: governance concerns; illicit trade networks in conflict minerals and forest products; proliferation of arms; wartime and post-war rush for resources (as when governments, anxious to recover from war, make rash decisions about environmental exploitation without considering the long-term and/or unintended consequences); international conventions; legal and policy issues; and the spread of HIV/AIDS (which threatens local populations and foreign conservation practitioners).

The second chapter ("What can be done?") addresses practical approaches for the conservation community, governments, NGOs, donor agencies, local communities, and others to reduce the effects of armed conflict on the environment. Rather than providing a blueprint to be applied in cookie-cutter fashion in all places and at all times, the authors suggest picking and choosing among others' experiences to derive the



right formula for particular situations. Guidelines are provided for prevention and preparedness, coping and mitigation, and post-crisis strategies for protecting the environment. The guide also identifies key issues that environmental organizations must address when dealing with the effects of violent conflict. These issues include: assessment; response, monitoring and adaptation; maintaining a conservationist presence in a protected area for as long as possible, even after armed conflict has erupted; personnel management; communication; training for times of conflict as well as for peacetime; need for organizational and programmatic flexibility; and maintaining neutrality.

In considering each of these issues, the authors ask four questions: Who is this for? What is the issue? Why is it important? How to address it? For example, assessment pertains to NGO directors and personnel managers as well as government departments and donors with staff in the field. Assessment helps each of these groups to respond to changing situations during a conflict, to monitor situations, and to adapt accordingly. Such flexibility is important, since the most effective way to protect the environment even during periods of conflict is for conservationists to have a constant presence. *The Trampled Grass* also uses the same analytical approach in considering the whys and hows of collaboration as well as funding and finance issues. In addition, thirty-three boxes with conservation field experiences are dispersed throughout the presentation.

The guide concludes by: (a) broadly defining the conservationist community as all the international, national, and local interests in areas most at risk; and (b) asserting that that community can take a wide range of actions at different levels in armed-conflict situations. Such approaches might include: clearly outlining long-term conservation goals, better planning, understanding impacts, underlying causes, and appropriate mitigation approaches. The authors also call for increased flexibility in conservation programs and more information and analysis as well as improved communication of best practices, better planning, and capacity building at all levels.

While the authors direct their recommendations toward conservation practitioners and those individuals and agents who support their work, *The Trampled Grass* can also inform and educate a much wider audience. In addition to environmental activists, potential beneficiaries include: students examining issues of armed conflict and its social, political, and economic impacts; legislators in donor countries; and even

individuals interested in becoming conservation practitioners. **W**

Edmond J. Keller is a professor of political science at the University of California-Los Angeles and the director of the UCLA Globalization Research Center-Africa. His current research includes conflict, conflict management and democracy, and the transnationalization of ethnic conflict in Africa.

REFERENCES

Gurr, Ted Robert; Marshall, Monty G.; & Khosla, Deepa. (2000). *Peace and conflict: A global survey of armed conflicts, self-determination movements and democracy*. College Park, MD: Center for International Development and Conflict Management.

Myers, Norman. (1996). *Ultimate security: The environmental basis of political stability*. Washington, DC: Island Press.



Smokestack Diplomacy: Cooperation and Conflict in East-West Environmental Politics

By Robert G. Darst
Cambridge, MA: MIT Press, 2001. 300 pp.

Reviewed by Matthew R. Auer

By the mid-1980s, Western Europe's view of Eastern Europe was obscured not only by an Iron Curtain, but also (depending on the pollution source) by a smudge of metallic gray or sooty black. In Copsa-Mica, Romania, the faces of children playing outside and the bed sheets hanging on the laundry line were smeared with grime from the carbon black factory. In Budapest, Hungary, diesel exhaust from dyspeptic lorries soiled building facades on nearly every street. In Katowice, Poland, dust and sulfur smoke from the steel plant rained down on soils and row-crops.

From the socialist-planning minister's perspective, belching smokestacks and seething rivers were symbols of an economy firing on all cylinders. A little pollution was a small price to pay in the inexorable march to

the workers' paradise. Unfortunately, that road to paradise was paved with poisons, the workers were sick, and trees stood leafless in summer.

After 1989, Western foreign-aid officials, international lenders, and health and environmental experts helped scrub Eastern Europe's grimy curtain. It seemed that every wealthy country and multilateral bank was ramping up some program or fund to clean up the East. Between 1990 and 2000, donors poured in billions of dollars to that effort. One European Union program alone (the Poland and Hungary Action for the Restructuring of the Economy, or Phare) made nearly 12 billion euros in commitments, much of it for environmental projects (European Commission, 2001, p. 117).

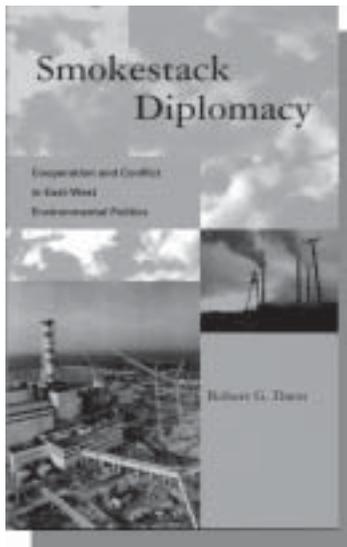
But some Eastern European countries and certain economic sectors benefited more than others from Western environmental aid. For example, while major sources of transboundary air pollution in Russia and the nuclear power stations in Ukraine and Lithuania received hundreds of millions of dollars of grants and loans, cleanup of many other pollution-prone industries and environmentally damaged sites languished for lack of external aid and investment.

In *Smokestack Diplomacy: Cooperation and Conflict in East-West Environmental Politics*, Robert G. Darst argues persuasively that Eastern European governments, the big winners on the receiving end of the environmental aid pipeline, were artful extortionists. According to Darst, these governments were effective at making "environmental threats" and using "environmental blackmail" (p. 11). His analysis is especially compelling for situations in which pollution-prone factories or antiquated nuclear power plants posed serious transboundary risks to the relatively wealthy countries west and north of the grimy curtain.

For example, in superbly researched case studies, Darst argues persuasively that former Soviet republics bribed the West to (a) clean up major point-sources of transboundary pollution in Russia and Estonia, and (b) pay for the prospective modernization and/or closure of the Ignalina and Chernobyl nuclear power plants. In the process, the West extended the productive life of environmentally dubious and

economically backward industries, thereby ensuring an uninterrupted income stream to the briber.

But another major case—the pollution clean-up in the Baltic Sea and Baltic Sea drainage basin—does not comfortably fit the "extortion model," and it forces Darst to deviate from his intriguing argument. To the extent that there is "instrumental manipulation of external environmental concerns" by the East in the Baltic Sea, that manipulation is comparatively benign. According to Darst, the goals of the East (and in particular, Russia, the Baltic States, and Poland) and the West (especially the Nordic countries and various international financial institutions who provided loans for environmental cleanup) did not work at cross-purposes in the Baltic case. Instead, the players' goals



could simply be added together in mutually satisfactory package deals: Both sides obtained reductions in organic wastes, a wide range of chemical pollutants, and phosphorus; the recipients obtained improvements in the supply and purification of drinking water; and the donors obtained reductions in nitrogen, the limiting nutrient in the open sea (pp. 87-88).

While the Baltic Sea case makes for somewhat strange company in *Smokestack Diplomacy* with the East-West transboundary-air-pollution and nuclear-power-safety cases, Darst nevertheless presents it expertly. Indeed, in all three cases, the author deftly weaves together primary source material, interviews, and articles from local media sources to recreate the context for East-West environmental cooperation in the 1990s. He also elucidates the strategies and tactics of both donors and recipients.

The great triumph of *Smokestack Diplomacy* is not the originality of the cases themselves. Others have traveled these paths (see, for example, Mäler, 1989; Tahvonen et al., 1993), and earlier efforts mostly model what Darst confirms. But Darst's nuanced application of Ronald Coase's famous formulation of environmental extortion is a significant step forward in analyzing these cases. Darst steeps Coase's formulation—that bribing the perpetrator to cease polluting may be as efficient or *more* efficient than



having the polluter compensate the victim (Coase, 1960)—in the complex interstate and *intrastate* politics of East-West cooperation. In the case of nuclear power safety, for example, Darst notes that

...the distribution of the economic benefits of a transnational bribe is at least as important as the reduction in transboundary pollution or risk that such a payment is ostensibly intended to bring about. Donor economic interests have a threefold effect upon transnational subsidization programs: They shape who does the work and what sort of work gets done; they shape the distribution of contributions among the donors; and they may lead a state to engage in transnational subsidization even in the absence of any transboundary environmental damage from the source in question (p. 41).

Smokestack Diplomacy offers ample environmental evidence for an old proposition in international relations: the state with the weak hand uses unconventional means to get its way. In the Eastern European-Western European environmental context, that way is for the weaker Eastern state to cajole, threaten, and ultimately blackmail the stronger, richer Western party into cleaning-up the former's environmental mess and helping modernize its economy. Darst tells this story so well, especially in exposing the hidden agendas of the East, that one wonders whether future environmental blackmailers will be forced to devise new tricks. **W**

Matthew R. Auer is an assistant professor of international environmental affairs at Indiana University's School of Public and Environmental Affairs.

REFERENCES

- Coase, Ronald. (1960). "The problem of social cost." *The Journal of Law and Economics* 3, 1-44.
- European Commission. (2001). *The Phare programme: Annual report 2000*. Brussels: European Commission.
- Mäler, K. (1989). "The acid rain game." In H. Folmer & E. van Ierland (Eds.), *Valuation methods and policy making in environmental economics* (pages 231-252). Amsterdam: Elsevier.

Tahvonen, O.; Kaitala, V.; & Pohjola, M. (1993). "A Finnish-Soviet acid rain game." *Journal of Environmental Economics and Management* 24(1), 87-100.



Learning to Manage Global Environmental Risks (2 vols.)

By The Social Learning Group
Cambridge, MA: MIT Press, 2001. 593 pp.

Reviewed by Ken Conca

This vast, dense, and richly engaging study examines long-term policy trajectories on acid rain, stratospheric ozone depletion, and climate change in several countries. In doing so, it breaks important new ground in the effort to understand national responses to global challenges. By tracing the science, politics, and policy surrounding these issues across time and geography, the authors of this collection provide a uniquely detailed comparison of how governments, scientific communities, and nongovernmental organizations in different national settings have responded to the challenge of managing environmental risks.

The authors set themselves four central conceptual tasks: (1) to understand the interrelationship of science, politics, and policy that impacts how countries respond to perceived environmental problems; (2) to explain why some problems demand a managed response while others do not; (3) to understand when and how "institutions, interests, and ideas" shape those management responses; and (4) to identify how ideas spread across both borders and environmental issues. The two volumes document the evolution of responses to acid rain, ozone depletion, and climate change in Britain, Canada, Germany, Hungary, Japan, Mexico, the Netherlands, the (former) Soviet Union, the United States, and the European Community as a whole. The picture that emerges is instructive if not always pretty.

The first volume of *Learning to Manage* presents a framework organized around the "management functions" of risk assessment: monitoring, options assessment, goal formulation, implementation, and evaluation. These management functions are then traced through the book's country-level historical case



New Publications

studies. Some of these stories are well known, such as Germany's catalytic Greens. *Learning to Manage* also recounts the United States' environmental interest-group scrum (which developed without a widely-shared conception that the United States had a national interest in global environmental affairs) as well as Russia's evolution from the vagaries of Soviet-era environmental diplomacy to post-Soviet institutional collapse and disengagement on green issues.

see as central to effective environmental policy. How well have governments assessed risk, monitored environmental trends, evaluated options, formulated goals, implemented response measures, and evaluated performance of their policies? One could spin *Learning to Manage's* principal findings on these questions either positively or negatively, and whether readers find these glasses half-empty or half-full may depend on their dispositions.

While we may manage global environmental risk more effectively today, this improvement seems to represent a side effect of policy—not a central purpose.
—Ken Conca

But some of the more interesting findings, possibilities, and cautionary tales emerge from the less well-known cases. For example, the British case documents a recurring tendency to muffle voices from outside the scientific and political-bureaucratic establishment, be those voices from NGOs or less well-connected scientific perspectives. One result has been that learning “has to take place in ways that do not acknowledge contributions from outside the existing institutional circles” (vol. 1, p. 108). In Hungary, a “small-country complex” (vol. 1, p. 184) and pressures to catch up with the international environmental bandwagon created continuity in the approach to these problems across the post-socialist divide. Japan's recognition that it was a relative latecomer to global environmental science and politics stimulated the Japanese government to engage in a wide range of educational, scientific, and even NGO-catalyzing activities (including taking a leadership role at the 1992 Earth Summit, engaging with China on acid rain concerns, and hosting the Kyoto climate meeting). Regardless of the reader's familiarity with these national stories, their presentation in conjunction with long time-horizons, deep historical roots, and a common framework of questions (emphasizing risks and responses) offers a useful and novel approach. The cases strike a nice balance: they provide a common, cross-national template for comparison while also allowing space for the authors to tell particular national stories.

Volume Two then probes for cross-cutting truths that might be culled from the different countries and issue areas under consideration. In so doing, it returns to the core “management functions” that the authors

On the one hand, elements of learning—which the authors define as cognitive changes deriving from experience and seeking policy objectives—do appear across a majority of the case studies. These elements include greater problem awareness; more comprehensive monitoring; several examples of relatively effective risk assessment; improved implementation efforts (driven in no small measure by international cooperation); and broadened participation. Taking the long view, these gains are undeniable.

But the cases also show how policymakers consistently fail to weigh all alternatives or set goals in a process apparently captured repeatedly by one particular set of means. The issue of emissions reductions exemplifies this problem, in that emissions targets have a way of crowding out all other perspectives on the problem. Along with declining resources, environmental monitoring faces “increasing politicization” (vol. 2, p. 42), as in the famous dispute between the World Resources Institute and some of its critics from the global South over how to construct an index of national climate emissions. However, the volumes as a whole tend toward a cautious optimism, focusing on recommendations for performance improvements rather than sounding a clarion call for dramatic reorientations of direction.

One limitation—or perhaps more accurately, missed opportunity—of *Learning to Manage* is its lack of attention to the global South. The choice of three problems that play out in the same medium (the atmosphere) and unfold along a broadly similar period of three or four decades is certainly defensible. So is the important goal of determining whether “learning”





spreads from experience in any one of these three issue areas to the others (for the most part, the answer appears to be that it doesn't). Nevertheless, the great challenges facing 21st century global environmental governance also include protection of critical ecosystems, stabilization of our tampering with global nutrient cycles, and the looming water security dilemma. These issues are no less important than climate or ozone, and grappling with them—managing their risks effectively, as the authors of this study would likely frame the challenge—will demand not only improved functionality across the different stages of the policy process but also more pluralistic ways of knowing and forms of dialogue.

For the sole developing-world case presented here (Mexico), these atmospheric concerns hardly constituted either the central environmental challenge or a major political issue during the period of the study. We are left to wonder, therefore, what a truly global social trajectory of learning to manage environmental risks might look like. (To their credit, the authors recognize this problem and identify the absence of the South from their analytic terrain as their greatest regret.)

Beyond its substantive findings, *Learning to Manage Global Environmental Risks* is also noteworthy as a unique endeavor of scholarly collaboration. An international team of thirty-seven scholars documented and interpreted these different national experiences under the editorial guidance of William Clark, Jill Jäger, Josee van Eijndhoven, and Nancy Dickson. The choice to attribute authorship of the volumes to “The Social Learning Group” seems apt, since the main arguments flow across several chapters and produce a cohesive volume. Team-writing helped achieve this effect: teams prepared several of the country-level cases, while country- and task-level specialists collaborated on the second volume's functional chapters. The chapters adhere admirably to a template of common conceptual and practical questions. No doubt this created a Herculean editing task. But the unprecedented complexity of global environmental change demands new models of scholarly collaboration as well as new forms of knowledge integration, a direction in which these volumes take a strong and confident step.

Most importantly, although the volumes provide some evidence of effective risk management, the findings do not lead to the conclusion that the quest for such effectiveness has driven policy in these issue areas. In other words, while we may manage risk more effectively today, this improvement seems to represent

a side effect of policy—not a central purpose. The authors aptly describe their work as “a historical reconnaissance of the formative years of the global environmental era.” Their carefully researched findings suggest that, although we sometimes move in the right direction, we are still looking for the compass. 

Ken Conca is an associate professor of government and politics at the University of Maryland, where he directs the Harrison Program on the Future Global Agenda. His research and teaching focus on global environmental politics, political economy, environmental policy, North-South issues, and peace and conflict studies.



Managing Global Issues: Lessons Learned

P.J. Simmons and Chantal de Jonge Oudraat
(Eds.)

Washington, DC: Carnegie Endowment for
International Peace, 2001. 772 pp.

Reviewed by **Stacy D. VanDeveer**

Managing *Global Issues: Lessons Learned* is one of those rare books that delivers what its broad title promises. It draws interesting, important, and empirically grounded lessons from the history of international cooperation in a diverse range of global issues. And while the literature of international politics—like the field's practitioners—all too rarely draws lessons across the porous boundaries of its various issues areas or subfields (such as security, international political economy, human rights, and environment), *Managing Global Issues* seeks to do just this.

Managing Global Issues's sixteen issue-area chapters discuss international cooperation around such issues as: (a) *corruption and organized-crime*; (b) *international political economy* (communications, development assistance, global finance, international trade); (c) *the environment* (nature conservation, pollution, and managing the use of global commons); (d) *human health and rights* (global health threats, human rights, labor rights, and refugee protection and assistance); and (e) *security* (civil/intrastate conflict, conventional weapons,

and weapons of mass destruction). All of these case chapters are written by respected area analysts. Simmons and Oudraat contribute informative and well-organized introductory and two concluding chapters.

To maximize the book's utility, the editors asked each author in *Managing Global Issues* to

describe for non-experts the nature of the principal governance issues in their respective fields; review the record of success and failure in the problem solving; identify which actors, techniques and types of regimes were most effective in each phase; and explain the factors that determined the overall outcomes (p. 11).

Specifically, each of the chapters addresses lessons from five categories: actors, agenda-setting, negotiation, implementation and compliance, and reactions to noncompliance. Within each of the five categories, authors were also asked to answer a small set of questions. This framework streamlines the case discussions, allowing readers to better understand cooperation around issues with which they may be unfamiliar. And while *Managing Global Issues* does draw lessons about regime creation (particularly concerning negotiation processes and outcomes as well as how influential actors sway agenda-setting), its framework also pushes authors and readers beyond these discussions, which have often preoccupied analysts.

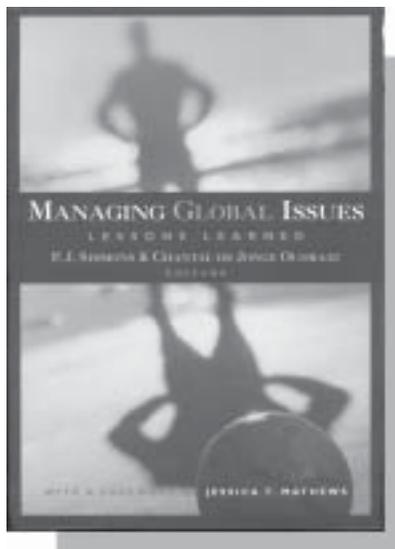
Of note is the book's substantial contribution to the increasingly rich literature on implementation and compliance—or, as the editors entitle it, "From Accord to Action." For Simmons and Oudraat, *implementation* "takes in the broad range of activities that state and nonstate actors undertake to promote actions and behavioral changes in accordance with agreements," while *compliance* "broadly describes the condition of state and nonstate parties' actual adherence to binding or nonbinding rules or to aspirational goals" (pp. 12-13). While it remains difficult to generalize about implementation, Simmons and Oudraat highlight a number of factors that appear to increase implementation levels. These factors include: (a)

exemplary leadership and performance/implementation reviews conducted with relatively independent expertise and data in a transparent manner; (b) retaining respect for sensitive information; and (c) using uniform and clear evaluations standards. Institutionalizing such review takes time, of course, but a number of cases in *Managing Global Issues* demonstrate that such institutionalization is possible.

Simmons and Oudraat also focus on the need to manage the various incapacities of participants (including states, international organizations, and civil-society actors) in international cooperation. To facilitate and encourage implementation and compliance, such capacity-building programs may be required at levels from international to local. These programs also generally require the expenditure of some resources; few agreements within global cooperation are "self-enforcing."

One of the most important contributions of *Managing Global Issues* lies in its discussions of various responses (including lack of acknowledgement and official response) to *noncompliance*. Simmons and Oudraat assert a distinction between "willful" noncompliance and noncompliance due to incapacity/inability. Capacity-building programs can often address the latter. Teasing out willful noncompliance from other types is useful analytically, though it must be said that making such distinctions in practice remains exceedingly difficult.

Of course, most international cooperation arrangements contain no defined punitive measures for noncompliance. Only a few have defined and well-used complaint, adjudication, or arbitration procedures; and these procedures are highly varied across issues and regimes. The most common response to noncompliance is publicizing ("shaming") it. While this strategy is sometimes used by state-actors, it is most common among NGOs. *Managing Global Issues* contains numerous examples of the successful use of such tactics to encourage actors to take additional measures toward implementation and compliance. Lastly, the volume also draws out important examples of "implementation by imitation," facilitated by transgovernmental and civil society contacts and/or by private sector self-regulation.





Managing Global Issues serves as an informative “state of the art” assessment of strategies, institutions, and processes that can help to facilitate successful international cooperation around issues of global concern. In particular, it confirms oft-cited (but sometimes unexamined) claims concerning NGOs and civil society. These sectors often drive the international agenda—yet, as the book makes clear, they usually do so in coalition with some important state actors (though not always the most “powerful” states). For example, such state-civil society partnerships greatly influenced policy outcomes and international programs around a range of issues including nuclear non-proliferation and the campaigns to ban landmines, fight state corruption, and reduce the debt burden of the world’s poorest states. The book also stresses that analysis and practice of global international cooperation can get beyond merely trying to solve challenges to collective action. Effective global governance requires more than successful negotiations that produce international agreements. It requires that we learn from successes and failures in implementation, compliance, and reactions to noncompliance within and across issue areas—and that we apply these lessons in our attempts to solve global problems.

Each chapter of *Managing Global Issues* notes some successes and failures in its issue area. But those authors that see successful cooperation tend to draw lessons mainly from that success, while those who generally see examples of failed cooperation draw lessons from those failures. To get beyond lesson-drawing, the authors and editors must embark on more systematic comparative analysis. When and why, for example, did strategies or institutions used successfully in one area fail in another? While *Managing Global Issues* helps to lay the empirical foundation for these comparative questions, it cannot answer them. The book also generally ignores the persistent critics of international cooperation (many of them in Washington, DC, where the research project that preceded the book was coordinated). The editors and authors might have addressed the skeptics more directly and connected their concerns with the complex and rich record of success they accord attempts at global governance.

These limitations aside, *Managing Global Lessons* is recommended for anyone who wants to gain greater understanding of world politics and for anyone who may want to improve collective efforts to solve global problems. The book also recently passed one crucial test: both my students and their professor found it excellent for classroom use. 

Stacy D. VanDeveer is an assistant professor of political science at the University of New Hampshire. He teaches and conducts research in the areas of international environmental politics and policy, U.S. foreign policy, European politics and institutions, and the linkages between environmental and security issues.



Understanding Vulnerability: South Asian Perspectives

John Twigg & Mihir R. Bhatt (Eds.)
London: Intermediate Technology
Publications, 1998. 84 pp.

Reviewed by Mike Brklacich

Extreme natural events such as cyclones, floods, and earthquakes occur worldwide, but their threat to human lives and human livelihood are far greater in the developing world than elsewhere. *Understanding Vulnerability* seeks to dispel the myth that “natural disasters” are infrequent aberrations imposed on communities. The book instead argues that human vulnerability to these extreme events is invariably linked to unequal development and impoverishment. The document is composed of an introduction and four papers selected from a Duryog Nivran workshop in Sri Lanka in 1997 plus an introduction. (The Duryog Nivran Network promotes new perspectives on disasters and vulnerability as a foundation for more effective disaster-reduction efforts.)

John Twigg’s introduction to *Understanding Vulnerability* argues that, to provide a more effective foundation for mitigating disasters, researchers should focus on case studies rather than further attempts to conceptualize and model human vulnerability. In Twigg’s words: “Vulnerability is too complicated to be captured by models and frameworks...There are no common measures or indicators of vulnerability” (p. 6). Next, in the chapter “Women Victims’ View of Urban and Rural Vulnerability,” Ela Bhatt relies on focus groups to unpack impoverishment-disaster relationships in Gujarat State, India. Bhatt discovers that non-farm employment was scarce in rural areas of Gujarat State, and that disasters there not only resulted in loss of shelter but also wage losses which, in turn, only deepened vulnerability to further stressors. And while employment opportunities were

more plentiful in Gujarat's urban areas, vulnerability there was more closely tied to: (a) poor accessibility to shelter on an ongoing basis; (b) larger distances amongst family members (which contributed to meager family support for disaster victims); and (c) threats from urban officials. Overall, Bhatt's chapter illustrates that both urban and rural women are chronically vulnerable to external stressors; it also highlights the wide range of factors that limit coping capacity within the two groups.

Senaka Arachchi's following case study ("Drought and Household Coping Strategies among Peasants Communities in the Dry Zone of Sri Lanka") documents the wide range of coping strategies employed at the local level in Sri Lanka to reduce drought impacts. Arachchi concludes by calling for policies (such as diversification of household incomes) that would reduce vulnerability to drought to replace the current focus on drought-relief measures. The third case study, Ngamindra Dahal's "Coping with Climatic Disasters in Isolated Hill Communities of Nepal," investigates threats to Nepali villages stemming from floods and landslides. As with Bhatt's case study, Dahal's work reveals that not all communities within a region are equally vulnerable to environmental threats. Coping and recovery capacity are conditioned by social and economic impoverishment. Disasters result when there is a convergence of inadequate coping capacity and severe environmental conditions. Mihir Bhatt then concludes the book with an essay calling for relief and development programs to move beyond imposing externally developed blueprints and to develop more effective methods for engaging disaster victims.

Understanding Vulnerability adds to the growing body of literature that recognizes that (a) disasters are inextricably linked to the failure of development, and (b) focusing on environmental threats provides little insight into reducing human vulnerability and preventing future disasters. However, the book's claim that vulnerability can only be understood at the micro-scale seems exaggerated: the case studies themselves demonstrate the need to consider how unequal development and impoverishment ultimately result in differential vulnerability. Surely there are some general lessons that could be extracted from these rich and welcome case studies. Instead of dismissing the importance of embedding comprehensive case studies within a broader framework, the book could have been more instructive had it addressed issues relating to the transferability of place-based research. 

Mike Brklacich is associate professor in the Department of Geography & Environmental Studies at Carleton University. He is also director of the Global Environmental Change & Human Security Project (GECHS).



The Wellbeing of Nations: A Country-by-Country Index of Quality of Life and the Environment

By Robert Prescott-Allen
Washington, DC: Island Press, 2001. 342 pp.

Reviewed by **Thomas M. Parris**

If the concept of sustainable development is to prove useful in both policy and scientific contexts, it is essential to define the concept in measurable terms. Without such a mechanism, we cannot know if we are making genuine progress toward or away from sustainability.

In itself, this call for a sustainability yardstick is not a new idea. Much effort has been devoted to the topic of sustainability indicators from local to global scales (IISD, 2000). Global-scale examples include the work of the United Nations Commission on Sustainable Development, the Consultative Group on Sustainability Indicators, the World Economic Forum, and the World Wide Fund for Nature International (UNSD, 2001; CGSDI, 2001; WEF, 2002; and WWF, 1998). But despite this large body of work, the U.S. National Research Council's Board on Sustainable Development recently found that "there is no consensus on the appropriateness of the current set of indicators or the scientific basis for choosing them. Their effectiveness is limited by the lack of agreement on what to develop, what to sustain, and for how long" (NRC, 1999, p. 243).

Robert Prescott-Allen bravely enters this difficult territory with the publication of *The Wellbeing of Nations*. At its core, this book presents two indices: the Human Wellbeing Index and the Ecosystem Wellbeing Index. It then discusses ways in which these two indices can be combined to measure what Prescott-Allen calls "distances to sustainability."

The indices are global in scope and use countries as the basic unit of analysis. Each is constructed from



sub-indices for five “dimensions.” The Human Wellbeing Index is based on health and population, wealth, knowledge and culture, community, and equity. The Ecosystem Wellbeing Index is built from indices for land, water, air, species and genes, and resource use. The bulk of the book is consumed with colorful maps and discussions of each of the many variables that comprise each sub-index.

In some ways, this book sets an important benchmark against which future work on sustainability indicators will be measured. First, Prescott-Allen clearly places human needs on equal footing with the state of nature. Most prior efforts are heavily skewed toward one or the other, and much of the internecine warfare within the community revolves around this point. Prescott-Allen circumvents this debate by clearly separating the two concepts and color coding his “Barometer of Sustainability” using the worst of the two scores. Second, he clearly presents each component of the indices by providing a succinct definition of the variable, how it relates to a sustainability goal, and the distribution of the scoring over countries (including a statement of how many countries have missing data). While this may seem a matter of simple bookkeeping, it is notably absent in many prior efforts.

Finally, the author introduces some novel methods for combining individual variables into aggregate indicators. Most prior efforts rely on linear combinations of component variables, usually with equal weighting. Prescott-Allen introduces simple non-linear methods. For example, his score for inland water quality is the “average score of drainage basins in each country, each basin score being the lowest of six indicators, oxygen balance, nutrients, acidification, suspended solids, microbial pollution, and arsenic and heavy metals.” These methods avoid the all too common problem of a country looking good because horrible scores on one component (e.g., heavy metals) are averaged out by good scores on another (e.g., suspended solids).

Despite these accomplishments, *The Wellbeing of Nations* still suffers from several deficiencies. First, it falls much too quickly into the use of countries as the basic unit of analysis. There is no discussion of

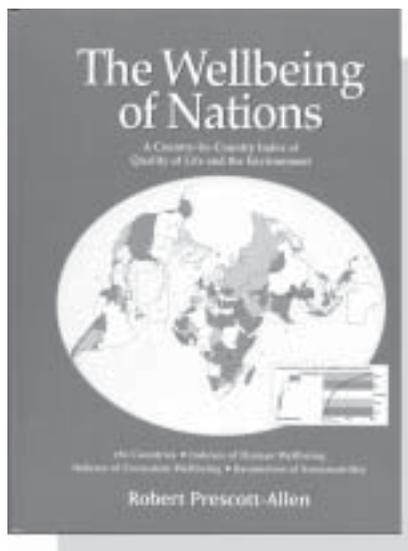
alternative units of analysis (e.g., ecological zones, freshwater basins, or cultural zones) and how they may be more or less relevant to the notion of sustainability. By settling so quickly on the use of countries as the basic unit of analysis, Prescott-Allen is asking us to accept that the actions of national governments are the dominant determinants of future sustainability.

Second, the choice of the ten “dimensions” and their many components is both idiosyncratic and based upon the availability of data. For example, Prescott-Allen chooses equity as one of the five dimensions of the Human Wellbeing Index. Yet it is not clear why this has anything to do with sustainability. Negotiated international consensus documents, such as the United Nations Millennium Declaration (UNGA, 2000), focus on poverty and hunger reduction, not the ratio of the richest 20 percent’s income share to the poorest 20 percent’s or the percentage of seats in the national parliament held by women. Similarly, it is a leap of faith to assert that Internet use—a component of the knowledge and culture dimension—has anything to do with sustainability. By focusing on the art of the possible and limiting the construction of his indices to

existing data sources, Prescott-Allen misses an important opportunity to describe data that are not currently available but are essential to his overall mission (and that could in principle be acquired).

Finally, some of the data is stretched beyond credibility. For example, the local air quality index for Brazil is constructed as an average of air quality data for five cities. It is difficult to see how this figure is truly representative of Brazil’s local air quality. A better measure might be the percentage of population living in regions where air pollution exceeds World Health Organization standards.

While *The Wellbeing of Nations* makes key contributions to the field of sustainability indicators, much work clearly remains to be done. Indeed, a distinguished group of scholars recently identified the question “How are long-term trends in environment and development, including consumption and population, reshaping nature-society interactions in ways relevant to sustainability?” as one of the seven core questions of sustainability sciences (Kates et al., 2001).



New Publications

Thomas M. Parris is a research scientist for ISCIENCES, LLC and executive director of its Boston office. His research focuses on sustainability indicators, environmental information policy, and the role of information systems in supporting productive environmental science and public-policy enterprises. Recent efforts include work on sustainability trends and transitions and assessment of food security in Africa and the risk of political violence in India.

NOTES

¹ See, for example, The Ecologist & Friends of the Earth (2001)

REFERENCES

Consultative Group on Sustainable Development Indicators (CGSDI). (2001). *The dashboard of sustainability (Version 2.0)*. Winnipeg, Canada: International Institute for Sustainable Development. [On-line]. Available: <http://iisd1.iisd.ca/cgsdi/dashboard.htm>

The Ecologist & Friends of the Earth. (2001). "Keeping score: Which countries are the most sustainable?" *The Ecologist* 31 (2). [On-line]. Available: http://www.theecologist.co.uk/archive_article.html?article=243

International Institute for Sustainable Development (IISD). (2000). *Compendium of sustainable development indicator initiatives and publications*. [On-line]. Available: <http://iisd.ca/measure/compindex.asp>

Kates, Robert W.; Clark, William C.; Correll, Robert; Hall, J. Michael; Jaeger, Carlo C.; Lowe, Ian; McCarthy, James J.; Schellnhuber, Hans Joachim Bolin, Bert; Dickson, Nancy M.; Faucheux, Sylvie; Gallopin, Gilberto C.; Gruebler, Arnulf; Huntley, Brian; Jäger, Jill; Jodha, Narpal S.; Kaspersen, Roger E.; Mabogunje, Akin; Matson, Pamela; Mooney, Harold; Moore, Berrien III; O'Riordan, Timothy; & Svedin, Uno. (2001). "Sustainability science." *Science* 292, 641–642.

National Research Council (NRC). (1999). *Our common journey: A transition toward sustainability*. Washington, DC: National Academy Press. [On-line]. Available: <http://books.nap.edu/books/0309067839/html/index.html>

United Nations Division for Sustainable Development (UNSD). (2001). *Indicators of sustainable development: Framework and methodologies* (Background Paper No. 3 for the Ninth Session of the Commission on Sustainable Development (New York, 16–27 April 2001)). DESA/DSD/2001/3. New York: UNSD. [On-line]. Available: http://www.un.org/esa/sustdev/csd9/csd9_indi_bp3.pdf

United Nations General Assembly (UNGA). (2000, September 18). *United Nations Millennium Declaration*. A/RES/55/2. [On-line]. Available: <http://www.un.org/documents/ga/res/55/a55r002.pdf>

World Economic Forum (WEF). (2002). *2002 environmental sustainability index* (Global Leaders for Environment Tomorrow Task Force). World Economic Forum, Annual Meeting 2002. [On-line]. Available: <http://www.ciesin.columbia.edu/indicators/ESI/>

World Wildlife Fund for Nature (WWF). (1998). *Living planet report 1998: Overconsumption is driving the rapid decline of the world's natural environments*. Gland, Switzerland: WWF International. [On-line]. Available: <http://www.panda.org/livingplanet/lpr/>



ECSP PUBLICATIONS



Since 1994, the Environmental Change and Security Project has served as the premier information clearinghouse on current issues of environment, population, global health, and security. In addition to ECSP's two annual journals—the *Environmental Change and Security Project Report* and the *China Environment Series*—the Project also offers occasional papers, Web content, CDs, and videotapes on a wide variety of environment and security topics. Virtually all our print publications are also available either in CD-ROM or on our Web site.

For copies of any of our print publications, please email us at ecspwwic@wwic.si.edu, call us at 202/691-4130, or mail your request to ECSP, Woodrow Wilson International Center for Scholars, One Woodrow Wilson Plaza, 1300 Pennsylvania Avenue NW, Washington, DC, 20004-3027.

Annual Journals

■ *Environmental Change and Security Project Report 1-8*

ECSP Report features peer-reviewed articles, commentaries, reviews of new publications, summaries of ECSP meetings, government and intergovernmental official statements on environment and security issues, a directory of related organizations, and a bibliography for the literature.

■ *China Environment Series 1-5*



Published by ECSP's China Environment Forum, *China Environment Series* examines environmental and energy challenges facing China as well as ideas and opportunities for government and NGO cooperation on these issues. *CES* features articles, commentaries, and meeting summaries that are tailored for policymakers, researchers, educators, and environmental NGOs. It also contains inventory of environmental protection and energy efficiency projects in China.

Occasional Papers

■ *Finding the Source: The Linkages Between Population and Water*



Three North-South author teams detail the interconnections between population dynamics, urbanization, social capacity, and water resources. The common message is unmistakable: global water problems are still soluble—but only with concerted international action that includes efforts to address population growth.

■ *The WTO and MEAs: Time for a Good Neighbor Policy*

Woodrow Wilson Center Senior Policy Scholar William Krist offers timely solutions for potential conflicts between international trade rules in the World Trade Organization and international environmental rules in multilateral environmental agreements.

(continued on page 188)



New Publications

(continued from page 187)

■ **AVISO 1-10**

AVISO is a public-policy briefing series of The Global Environmental Change and Human Security (GECHS) project, which is cosponsored by ECSP and is a core project of the International Human Dimensions Programme on Global Environmental Change. *AVISO* treats such critical issues as environmental degradation and population displacement, food security, water and human insecurity, and infectious diseases as a security issue.

■ ***Protecting Regional Seas: Developing Capacity and Fostering Environmental Cooperation in Europe***

Proceedings for the May 1999 ECSP cosponsored conference "Saving the Seas: Developing Capacity and Fostering Environmental Cooperation in Europe," which compared and analyzed the state of environmental management around the Baltic, Mediterranean, and Black Seas.

■ ***Crouching Tiger, Hidden Potential: U.S. Environmental and Energy Cooperation with China***



China's energy and environmental policies have an enormous and growing impact on the United States and the rest of the world—yet energy and environmental issues have not played a prominent role in U.S.-China relations. This new ECSP/China Environment Forum publication succinctly summarizes U.S.-China cooperation in the areas of energy and environmental protection. It highlights opportunities for U.S. policymakers, businesses, and NGOs to further such cooperation; it also analyzes barriers to such efforts.

■ ***Green NGO and Environmental Journalist Forum: Conference Proceedings***

Bilingual proceedings for an April 2001 Hong Kong forum cosponsored by ECSP's China Environment Forum that gave 65 environmentalists and journalists from Mainland China, Taiwan, and Hong Kong an opportunity to discuss improving both the capacity of the region's environmental NGOs and the quality of Greater China's environmental reporting.

■ ***Climate Action in the United States and China***

A bilingual pamphlet that sets the context and summarizes significant actions taken by the United States and China to address the threat of global climate change.

Newsletter

■ ***PECS News***



The biannual newsletter of ECSP, *PECS News* features ECSP research, Project news, meeting summaries, reviews of new publications, and reports from the field by University of Michigan Population Fellows working in population-environment projects.



On the Web

Nearly all ECSP publications are also available in PDF form from the ECSP Web site at <http://ecsp.si.edu>. The Web site also features summaries of all ECSP meetings with photos, speech transcripts, and links to additional resources. In addition, the following publications are available only on the ECSP Web site:

- ***Contagion and Stability: Implications for U.S. Foreign Policy*** (<http://ecsp.si.edu/simulation.htm>)

Many senior U.S. leaders are becoming increasingly concerned about the health, economic, and national-security implications of global infectious diseases. A three-day May 2001 simulation conference held at the U.S. Army War College explored what a rapidly spreading plague epidemic in India might mean for regional and international security.

- ***The Future of the U.S.-Mexican Border: Population, Development, and Water*** (<http://ecsp.si.edu/tijuana.htm>)

Current migration trends in the U.S.-Mexico border region (coupled with the natural rate of population increase as well as intensified trade) are putting intense pressures on the border's environment, water supply, and health and sanitation infrastructure. This May 2001 conference (cosponsored by ECSP and the University of Michigan Population Fellows Program) discussed the opportunities and constraints facing border citizens and decision-makers over the next 25 years with regard to transboundary water, health, and demographic issues.

CD

- ***Environmental Change and Security Interviews***

In collaboration with *Dialogue*, the Woodrow Wilson Center's internationally-syndicated radio program, ECSP has produced a series of radio interviews with scholars and policymakers focusing on environment and demographic issues. Interviewees such as former Senator Paul Simon speak on issues ranging from nature writer Rachel Carson to the crisis of fresh water and future scenarios highlighting environmental, demographic, and economic trends.

Video

- ***HIV/AIDS and Human Security in Southern Africa***

In this 2000 Wilson Center program, Makate Sheila Sisulu, South African Ambassador to the United States, Ron Dellums, former chair of the President's Advisory Council on HIV/AIDS, and Dr. Anthony Fauci of the National Institutes of Health discuss with Wilson Center Director Lee H. Hamilton the devastating HIV/AIDS epidemic in Southern Africa.

New from Johns Hopkins University Press and The Woodrow Wilson Center Press

ENVIRONMENTAL PEACEMAKING

Ken Conca and Geoffrey D. Dabelko, Editors

How can environmental cooperation be utilized as a strategy to bolster regional peace? A large body of scholarly research suggests that environmental degradation may catalyze various forms of intergroup violent conflict. But there is almost no systematic research on an important corollary: that environmental cooperation may also be a useful catalyst for broader processes of regional peacemaking. Yet there is a strong basis in theory to think that environmental problems can be exploited to make peace through several channels: enhancing trust, establishing habits of cooperation, lengthening the time horizons of decision-makers, forging cooperative trans-societal linkages, and creating shared regional norms and identities.

We have little knowledge of how to tailor environmental cooperation initiatives to speak specifically to the problem of violence. Even more importantly, we may be missing powerful peacemaking opportunities in the environmental domain that extend beyond the narrow realm of ecologically induced conflict. We know that international environmental cooperation can yield welfare gains. But can it also yield benefits in the form of reduced international tensions or a lesser likelihood of violent conflict? Such benefits could be a potentially powerful stimulus to environmental cooperation, at a time when such a stimulus is badly needed.

—Ken Conca, “The Case for Environmental Peacemaking”

Environmental Peacemaking examines the case for environmental peacemaking by comparing progress, prospects, and problems related to environmental peacemaking initiatives in six regions. Although the regions vary dramatically in terms of scale, interdependencies, history, and the essence of insecurities, each is marked by a highly fluid security order—creating potential space for environmental cooperation to have a catalytic effect on peacemaking.

Among the volume’s key findings: that substantial potential for environmental peacemaking exists in most regions; that there can be substantial tensions between (a) narrower efforts to improve the strategic climate among mistrustful governments, and (b) broader trans-societal efforts to build environmental peace; and that the effects of environmental peacemaking initiatives are highly sensitive to the institutional form of cooperative activities.

Table of Contents

- 1. The Case for Environmental Peacemaking
Ken Conca, University of Maryland
2. Environmental Cooperation and Regional Peace: Baltic Politics, Programs, and Prospects
Stacy D. VanDeveer, University of New Hampshire
3. Environmental Cooperation in South Asia
Ashok Swain, Uppsala University
4. The Promises and Pitfalls of Environmental Peacemaking in the Aral Sea Basin
Erika Weinthal, Tel Aviv University
5. Environmental Cooperation for Regional Peace and Security in Southern Africa
Larry A. Swatuk, University of the Western Cape
6. Beyond Reciprocity: Governance and Cooperation in the Caspian Sea
Douglas W. Blum, Providence College
7. Water Cooperation in the U.S.-Mexico Border Region
Pamela M. Doughman, University of Maryland
8. Conclusion: The Problems and Possibilities of Environmental Peacemaking
Ken Conca, University of Maryland and Geoffrey D. Dabelko, Woodrow Wilson Center

Environmental Peacemaking is a product of a series of meetings sponsored by the Environmental Change and Security Project of the Woodrow Wilson International Center for Scholars and the Harrison Program on the Future Global Agenda of the University of Maryland.

For more information, contact the co-editors Ken Conca at kconca@gvpt.umd.edu or Geoff Dabelko at dabelkog@wwic.si.edu.



OFFICIAL STATEMENTS

Below are excerpts from recent official statements in which environment, population, and human security issues are prominently cited in the context of national and security interests. The Environmental Change and Security Project welcomes information on other related public statements. Please see the inside cover of this issue for our contact information.

FROM MONTERREY TO JOHANNESBURG

STATEMENT BY JAMES D. WOLFENSOHN President, The World Bank Group

Excerpts of Mr. Wolfensohn's speech at the Woodrow Wilson International Center for Scholars
6 March 2002

Rarely has there been an issue [financing for development] so vital to long-term peace and security, and yet so marginalized in domestic politics in most of the rich world...

Never perhaps has the chance for concerted action been greater, or the prize more worth the winning. The horrifying events of September 11 have made this a time of reflection on how to make the world a better and safer place. The international community has already acted strongly, by confronting terrorism directly and increasing security. But those actions by themselves are not enough. We will not create that better and safer world with bombs or brigades alone. We will not win the peace until we have the foresight, the courage, and the political will to redefine the war...

We must recognize that while there is social injustice on a global scale, both between states and within them; while the fight against poverty is barely begun in too many parts of the world; while the link between progress in development and progress toward peace is not recognized—we may win a battle against terror, but we will not conclude a war that will yield enduring peace.

Poverty is our greatest long-term challenge. Grueling, mind-numbing poverty—which snatches hope and opportunity away from young hearts and dreams just when they should take flight and soar.

Poverty—which takes the promise of a whole life ahead and stunts it into a struggle for day-to-day survival.

Poverty—which together with its handmaiden, hopelessness, can lead to exclusion, anger, and even

conflict.

Poverty—which does not itself necessarily lead to violence, but which can provide a breeding ground for the ideas and actions of those who promote conflict and terror.

On September 11, the crisis of Afghanistan came to Wall Street, to the Pentagon, and to a field in Pennsylvania. And the imaginary wall that divided the rich world from the poor world came crashing down.

Belief in that wall, and in those separate and separated worlds, has for too long allowed us to view as normal a world where less than 20 percent of the population—the rich countries in which we are today—dominates the world's wealth and resources and takes 80 percent of its dollar income.

Belief in that wall has too long allowed us to view as normal a world where every minute a woman dies in childbirth.

Belief in that wall has allowed us for too long to view the violence, disenfranchisement, and inequality in the world as the problem of poor, weak countries and not our own.

There is no wall. There are not two worlds. There is only one...

There is no wall. We are linked by trade, investment, finance, by travel and communications, by disease, by crime, by migration, by environmental degradation, by drugs, by financial crises, and by terror...

It is time to tear down that wall, to recognize that in this unified world poverty is our collective enemy. Poverty is the war we must fight. We must fight it because it is morally and ethically repugnant. We must fight it because it is in the self-interest of the rich to join the struggle. We must fight it because its existence is like a cancer—weakening the whole of the body, not just the parts that are directly affected.

And we need not fight blindly. For we already have a vision of what the road to victory could look

like.

Last year, at the Summit held at the United Nations, more than 140 world leaders agreed to launch a campaign to attack poverty on a number of fronts. Together, we agreed to support the Millennium Development Goals. By 2015, we said, we will:

- Halve the proportion of people living on less than one dollar a day;
- Ensure that boys and girls alike complete primary schooling;
- Eliminate gender disparity at all levels of education;
- Reduce child mortality by two-thirds;
- Reduce maternal mortality by three-quarters;
- Roll-back HIV/AIDS, malaria, and other diseases;
- Halve the proportion of people without access to safe water; and
- Develop a global partnership for development.

And these challenges will only grow over the next 30 years, as the global population increases by two billion to eight billion people, with almost the entire increase going to developing countries...

If we want to build long-term peace, if we want stability for our economies, if we want growth opportunities in the years ahead, if we want to build that better and safer world, fighting poverty must be part of national and international security. I do not underestimate the challenge of securing an extra \$50 billion for development. But I know, as do many others, that this is the place to put our money. The conquest of poverty is indeed the quest for peace.

We must not let our mission be clouded by debates on which there is no debate. The debates are: Let's have effectiveness. Let's have productivity. Let's ensure that the money is well spent. Let's ensure that programs and projects are not corrupt. Let's ensure that women are given an important place in the development process. Let's ensure that issues are locally owned. Let's use all instruments at our disposal, grants, loans, and guarantees. These are not issues for debate. They are issues on which the principles are all agreed. These are not issues to hold up action. These are issues on which we can all close ranks and move forward...

STATEMENT BY GEORGE W. BUSH President of the United States of America

*Excerpts of remarks made by President Bush at the
International Conference on Financing for Development,
Monterrey, Mexico
22 March 2002*

Many here today have devoted their lives to the fight against global poverty, and you know the stakes. We fight against poverty because hope is an answer to terror. We fight against poverty because opportunity is a fundamental right to human dignity. We fight against poverty because faith requires it and conscience demands it. And we fight against poverty with a growing conviction that major progress is within our reach.

Yet this progress will require change. For decades, the success of development aid was measured only in the resources spent, not the results achieved. Yet pouring money into a failed status quo does little to help the poor, and can actually delay the progress of reform. We must accept a higher, more difficult, more promising call. Developed nations have a duty not only to share our wealth, but also to encourage sources that produce wealth: economic freedom, political liberty, the rule of law and human rights.

The lesson of our time is clear: When nations close their markets and opportunity is hoarded by a privileged few, no amount—no amount—of development aid is ever enough. When nations respect their people, open markets, invest in better health and education, every dollar of aid, every dollar of trade revenue and domestic capital is used more effectively.

We must tie greater aid to political and legal and economic reforms. And by insisting on reform, we do the work of compassion. The United States will lead by example. I have proposed a 50-percent increase in our core development assistance over the next three budget years. Eventually, this will mean a five billion dollar annual increase over current levels.

These new funds will go into a new Millennium Challenge Account, devoted to projects in nations that govern justly, invest in their people, and encourage economic freedom. We will promote development from the bottom up, helping citizens find the tools and training and technologies to seize the opportunities of the global economy.

I've asked Secretary of State Powell [and] Secretary of [the] Treasury O'Neill to reach out to the world community to develop clear and concrete objective



criteria for the Millennium Challenge Account. We'll apply these criteria fairly and rigorously.

And to jump-start this initiative, I'll work with the United States Congress to make resources available over the 12 months for qualifying countries. Many developing nations are already working hard on the road—and they're on the road of reform and bringing benefits to their people. The new Compact for Development will reward these nations and encourage others to follow their example.

The goal of our development aid will be for nations to grow and prosper beyond the need for any aid. When nations adopt reforms, each dollar of aid attracts two dollars of private investments. When aid is linked to good policy, four times as many people are lifted out of poverty compared to old aid practices.

Yet we have much more to do. Developing nations need greater access to markets of wealthy nations. And we must bring down the high trade barriers between developing nations themselves. The global trade negotiations launched in Doha confront these challenges.

The success of these negotiations will bring greater prosperity to rich and middle-income and poor nations alike. By one estimate, a new global trade pact could lift 300 million lives out of poverty. When trade advances, there's no question but the fact that poverty retreats.

The task of development is urgent and difficult, yet the way is clear. As we plan and act, we must remember the true source of economic progress is the creativity of human beings. Nations' most vital

All of us... must focus on real benefits to the poor, instead of debating arbitrary levels of inputs from the rich.

—George W. Bush

All of us here must focus on real benefits to the poor, instead of debating arbitrary levels of inputs from the rich. We should invest in better health and build on our efforts to fight AIDS, which threatens to undermine whole societies. We should give more of our aid in the form of grants, rather than loans that can never be repaid.

The work of development is much broader than development aid. The vast majority of financing for development comes not from aid, but from trade and domestic capital and foreign investment. Developing countries receive approximately \$50 billion every year in aid. That is compared to foreign investment of almost \$200 billion in annual earnings from exports of \$2.4 trillion. So, to be serious about fighting poverty, we must be serious about expanding trade.

Trade helped nations as diverse as South Korea and Chile and China to replace despair with opportunity for millions of their citizens. Trade brings new technology, new ideas, and new habits, and trade brings expectations of freedom. And greater access to the markets of wealthy countries has a direct and immediate impact on the economies of developing nations.

As one example, in a single year, the African Growth and Opportunity Act has increased African exports to the United States by more than 1,000 percent, generated nearly one billion dollars in investment, and created thousands of jobs.

natural resources are found in the minds and skills and enterprise of their citizens. The greatness of a society is achieved by unleashing the greatness of its people. The poor of the world need resources to meet their needs, and like all people, they deserve institutions that encourage their dreams.

All people deserve governments instituted by their own consent; legal systems that spread opportunity, instead of protecting the narrow interests of a few; and the economic systems that respect their ambition and reward efforts of the people. Liberty and law and opportunity are the conditions for development, and they are the common hopes of mankind.

The spirit of enterprise is not limited by geography or religion or history. Men and women were made for freedom, and prosperity comes as freedom triumphs. And that is why the United States of America is leading the fight for freedom from terror.

We thank our friends and neighbors throughout the world for helping in this great cause. History has called us to a titanic struggle, whose stakes could not be higher because we're fighting for freedom itself. We're pursuing great and worthy goals to make the world safer, and as we do, to make it better. We will challenge the poverty and hopelessness and lack of education and failed governments that too often allow conditions that terrorists can seize and try to turn to their advantage.

Our new approach for development places

responsibility on developing nations and on all nations. We must build the institutions of freedom, not subsidize the failures of the past. We must do more than just feel good about what we are doing; we must do good.

By taking the side of liberty and good government, we will liberate millions from poverty's prison. We'll help defeat despair and resentment. We'll draw whole nations into an expanding circle of opportunity and enterprise. We'll gain true partners in development and add a hopeful new chapter to the history of our times.



**STATEMENT BY GORDON BROWN
UK Chancellor of the Exchequer**

*Excerpts of Chancellor Brown's speech to the National Press Club, Washington, DC
17 December 2001*

I want to urge that together we form a new global alliance for prosperity that starts from the shared needs, common interests, and linked destinies of developed and developing worlds working together.

I want to describe how America's post-Second World War achievement in what we now call the Marshall Plan should be our inspiration in this post-Cold War world—not just for the reconstruction of Afghanistan but for the entire developing world...

Like our predecessors, we understand that national safety and global reconstruction are inextricably linked. Like them, we see the need for a new economic leadership—a comprehensive plan that goes beyond temporary relief to wholesale economic and social development. Like them, we see the need for a new global economic and social order grounded in both rights and responsibilities accepted by all. Like theirs, our proposals call on the poorest countries themselves to rise to the challenge.

But while there are parallels between our time and 50 years ago, no historical analogies can ever be exact. Far more so than in Marshall's time, our interdependence means that what happens to the poorest citizen in the poorest country can directly affect the richest citizen in the richest country. And while the Marshall Plan deserves an honored place in our history, its remedies cannot be blindly or rigidly

applied to efforts to solve the challenges of today and the future...

And 50 years on, we not only see more clearly our interdependence, but [also] the gap between what technology enables us to do—abolish poverty—and the reality of 110 million children without schooling, seven million avoidable child deaths each year, and one billion of our citizens in poverty.

It is for these reasons that the whole international community—the IMF, World Bank, the UN, and each of our countries—has solemnly committed to the most ambitious development goals for 2015: to halve world poverty, cut child mortality by two-thirds, and guarantee every child primary education.

Our plan is this: developing countries must pursue corruption-free policies for stability, for opening up trade, and for creating a favorable environment for investment. In return, we should be prepared to increase by 50 billion [dollars] a year in the years to 2015 vitally needed funds to achieve these...Millennium Development Goals.

The development funding I propose is not aid in the traditional sense to compensate for poverty, but new investment in the future to address the causes of poverty...

Indeed the proposal I am making today will work only if we see development assistance in this light: more effective in-country use of funds to help countries invest and compete; the multi-national pooling of budgets and the proper monitoring of their use to achieve the greatest cost effectiveness of new investment; untying aid [and] so maximizing its efficiency in diminishing poverty; and development funding conditional on pursuing agreed goals for social and economic development.

Indeed, our proposals are designed to create the best environment for private investment to take off and flourish by increasing funds for investment in health and education—not typically areas in[to] which private capital flows, but areas in which public investment is necessary to create an environment in which private investment can flourish.

Our vision of the way forward—akin to Marshall's challenge to rich and poor countries alike—is that, by each meeting their obligations for change, all countries can benefit.

For the poorest countries: new responsibilities—to pursue transparent corruption-free policies for stability and the attraction of private investment; and new opportunities—with access to increased trade and development supported by a transfer of resources from



rich to poor for investment in health and education.

For the richest countries: new responsibilities—to open our markets, to reform our international institutions, and to transfer resources; and yet new opportunities too—increased trade and a globalization that works in the public interest.

In future, no country genuinely committed to pro-stability, pro-trade, and pro-investment policies should be denied the chance of progress through the lack of basic investment in education, health, and the basic infrastructure for economic development.

And this is our answer to globalization and to the critics of globalization.

Some critics say the issue is whether we should have globalization or not. In fact, the issue is whether we manage globalization well or badly, fairly or unfairly.

Globalization can be for the people or against the people. Poorly managed, globalization can create a vicious circle of poverty, widening inequality, and increasing resentment. Managed wisely, it can lift millions out of deprivation and become the high road to a more just and inclusive global economy.

Our answer to anti-globalization campaigners...is that we shall not retreat from globalization.

Instead, we will advance social justice on a global scale—and we will do so with greater global cooperation, not less; and with stronger, not weaker, international institutions.

We will best help the poor not by opting out or by cutting cooperation across the world, but by strengthening that cooperation, modernizing our international rules, and radically reforming the institutions of economic cooperation to meet the new challenges...



STATEMENT BY PAUL H. O'NEILL
U.S. Secretary of the Treasury

Excerpts of Secretary O'Neill's remarks entitled "Caring Greatly and Succeeding Greatly: Producing Results in Africa," made to the Carnegie Endowment for Peace, Washington, DC

5 June 2002

We in the developed world must support African leaders who are creating the conditions for success—ruling justly, encouraging economic freedom,

and investing in their people. And we must ourselves take a leadership role in demanding results.

The impoverished people of Africa—and in poor nations everywhere—require a new kind of help, that goes beyond the well-intentioned but disappointing results of the past fifty years.

If our assistance is not making a difference, or if we cannot measure our results to know what difference we have made, then we have to change our approach. We owe that to the people of Africa.

In Africa, I saw signs of progress everywhere. Programs are working, aid is helping, and standards of living are improving.

But there is a long way to go. The progress I saw deserves praise, but it just isn't enough.

Let me highlight the areas in which we witnessed progress. In particular, I saw three kinds of investments in people that are vital to realizing Africa's potential: clean water, primary education, and fighting HIV/AIDS.

Clean water is, surely, one of the most essential elements of a dignified, civilized life. No aspect of infrastructure is more basic. Yet 45 percent of sub-Saharan Africans lack access to clean, safe water. That's about 300 million people—more than the total population of the United States. In Ethiopia, that figure is 78 percent, or 50 million people in that country alone.

One insight from my Africa tour is that local leaders, with some engineering and financial support, could develop clean water sources for their towns and villages fairly quickly. For example, in one Ugandan village I saw a concrete basin installed to protect a natural spring. The women of the village could collect the water directly from the basin instead of collecting it after it spilled across the muddy ground. The concrete basin cost a thousand dollars to install.

But the local chairman for the project told me that the greatest hindrance to installing the system had been local fears that a snake was protecting the spring, and that the snake would become enraged by any tampering and would take away the water. He had to spend considerable time persuading his fellow villagers to go ahead with the project. It took his leadership to get the project finished...

In these and other cases, only local leadership could tailor development projects to suit local cultures and customs. And it was sometimes shocking to see the disconnect between the aid bureaucracies with their 15-year plans and the availability of more immediate solutions.

You cannot airdrop solutions to local problems. You can only offer air support. Local leadership must implement the solutions on the ground and be accountable for success.

If we can figure out a way to support African leaders in bringing clean water to their nations—and I think we can do that much faster and cheaper than the endless studies say we can—we can liberate hundreds of millions of people, especially women and children, from preventable, debilitating illness and meaningless, wearisome labor. They would be free to pursue their dreams for a better life.

governance are present—just rule and economic freedom—prosperity can blossom...

As private enterprise expands in an economy, trade and investment grow to dwarf official aid. Countries that won political independence years ago finally win their economic independence as well. Government provides the conditions for growth, but it is not the source of prosperity. Private citizens create prosperity through enterprise...

Unfortunately, in too many cases, potential entrepreneurs and investors in Africa are deterred by arbitrary laws, corrupt bureaucracies, and government

You cannot air drop solutions to local problems. You can only offer air support. Local leadership must implement the solutions on the ground and be accountable for success.

—Paul H. O’Neill

The second important investment I saw was in raising primary education enrollment. I believe that in Africa, in the United States, and in every part of the world, children by the age of about ten years old should and can have the tools to be life-long self-learners. But that requires that we get them into schools at an early age, and keep them there, with adequate materials...

The third, perhaps most crucial area for investment in people is health care. Nowhere is this more urgent, and more heartbreaking, than in the struggle against AIDS. In South Africa I saw mothers with AIDS caring for babies with AIDS, even when proven, inexpensive drugs are available to stop transmission between mother and child. I saw the dedication of nurses and doctors treating people with AIDS, and their patients’ struggle to survive.

Certainly, prevention of further HIV contagion is the utmost priority, especially to keep the next generation of newborns free from disease. Uganda, in particular, thanks to President Museveni’s leadership on this issue, is one of the few to reduce the portion of the population afflicted with AIDS. But among the challenges facing those who fight AIDS in Africa is that in many countries, there is a social stigma attached to even testing for the disease. They need more leaders to tackle this issue head-on...

Providing the framework for basic health and education is fundamental for enabling people to realize their potential. When governments are investing in their people, providing clean water, education, and health care, and when the other aspects of good

favoritism. Africa is a continent of entrepreneurial enthusiasm—that’s what I saw. But these individuals have no chance for success without governments that fairly enforce laws and contracts, respect human rights and property, and fight corruption. Governments also must remove barriers to trade—both internal and external—and open their economies to investment. They must allow companies and entrepreneurs to compete without excessive interference, including interference from government-owned enterprises...

Many extol debt forgiveness as the path to African development. I would agree that debt forgiveness may help, but it alone is not the solution.

Debt forgiveness solves nothing if we allow new debt to create the next generation of heavily indebted poor countries a decade from now. President Bush has proposed that up to 50 percent of World Bank and other development bank funds for the poorest countries be provided as grants rather than as loans. This proposal acknowledges the long-term development challenges facing these countries, their vulnerability to economic shocks, and the reality that essential investments in social sectors, such as education and health care—investments in people—cannot directly generate the incremental revenue to service new debt.

Replacing loans with targeted grants will eliminate the need for governments to repay long-term investments in people. It will thereby eliminate the next generation of debt service problems. It is time to end the sad cycle of indebtedness for countries committed to success.



Second, it's a simple fact that is as true about an individual as it is about a nation—even without debt, it's impossible to prosper without income. Even if we forgave all debts, many of these countries still could not fund their own budgets, and they would not be much better off...

In the long-term, domestic entrepreneurship as well as trade and foreign investment are far more important for economic growth than official aid...

I went to those troubled lands, and I believe this: with the right combination of aid and accountability—from both rich nations and poor ones—we can accelerate the spread of education, clean water, and private enterprise throughout Africa. We can help the African people create vibrant, self-sustaining economies and a rising standard of living.

Development is complicated. I know that. I don't underestimate the challenge. I just don't think we should accept complexity as an excuse for delay.

As Marshall said, "With foresight, and a willingness on the part of our people to face up to the vast responsibility which history has placed upon our country, the difficulties I have outlined can and will be overcome."

Together, we can produce results for Africa. We will tear down the walls to prosperity. Not in the next generation, but right now. In this era of global opportunity, no continent, no country, and no person should be left behind. President Bush said it best—there are no second class citizens in the human race. We must make his vision into a worldwide reality.



STATEMENT BY JACQUES CHIRAC
President of France

Excerpts of President Chirac's address to the International Conference on Financing for Development, Monterrey, Mexico
22 March 2002

Only yesterday, the world order was frozen by the clash of blocs, which posed a threat to peace and liberty.

Now that this fault-line has been overcome, the world can at last set about accomplishing its common destiny.

Globalization has brought us a degree of economic dynamism without parallel in history, free trade with

its immense promises, and swift advances in knowledge and technology.

And yet more than two billion people live in dire poverty. People are still dying of cholera, tuberculosis, and malaria for want of treatment. HIV/AIDS is ravaging entire populations—a terrible human tragedy and an obstacle to development.

And yet the world is confronted with fanatical terrorism, the tentacular power of organized crime, and drug trafficking. It is not immune to financial turbulence. And nations, fearing their identity is about to be steamrolled by rampant globalization, are sometimes inclined to seek refuge in nostalgia for times past.

The inexorable advance of economic globalization calls for the globalization of solidarity. What is at stake in Monterrey is not only the financing of development. It is also about harnessing the world's nations in search of an answer to the gnawing question of our times: namely, how to end a situation that is morally unacceptable, politically dangerous, and economically absurd?

How are we to put an end to a situation in which the accumulation of wealth will not suffice to lift the very poor out of poverty?

I want to see a new wind blowing in Monterrey, a wind of generosity and hope. The conference document represents only a first step, in my view, a first realization of the scale of the problem. We should be more ambitious. Already Europe has decided to step up its development aid effort, aiming for the objective of 0.7 percent.

President Bush has announced America's plans to revitalize its aid. The developing countries have committed themselves to promoting economic growth through good governance and greater recourse to private initiative. A global partnership for development through solidarity is being established where everyone will be pulling their weight. Africa has shown the way with the adoption of the New Partnership for Africa's Development.

But we need to go further still.

To achieve the aims of the Millennium Summit, the World Bank estimates it will be necessary to double the amount currently spent on poverty eradication. It puts those needs at 100 billion dollars annually. That is undoubtedly a lot of money. But we need to place that in the context of the huge volume of international trade. It does not amount to very much when compared with the human, political, and economic benefits our world would reap from eradicating poverty.

We must pursue every avenue in search of this objective. And those avenues exist, starting with an increase in official development aid. But that alone is not enough. We need to build on that. Via an additional allocation of special drawing rights. Via greater generosity in the application of debt cancellation decisions for the very poor countries and more ambitious treatment for the severely indebted middle-income countries. And it is natural to consider drawing on the wealth created by globalization in order to finance efforts to humanize and control it. We therefore need to ponder more deeply the possibilities of international taxation.

But the issues raised by this new partnership are broader still.

We want to bequeath a clean planet to our children. Even now we are using up nature's resources faster than it can replenish them. It would be irresponsible not to put an end to this dangerous trend. Polluting emissions have triggered a process of climate warming that threatens the conditions of life itself for ourselves and for our children. The Kyoto Protocol is the only credible means to reduce them, and I call upon all countries to ratify it. The approach it embodies prefigures the new sharing of resources and responsibilities on which nations must now agree.

For we need to build on Monterrey through a partnership for sustainable development. The ecological revolution is comparable in scale to the industrial revolution. That is the challenge we must work together to overcome in Johannesburg, by inventing new modes of production and consumption. By creating a World Environment Organization.

Six months ago New York was disfigured by a hateful crime. America, with the support of the international community, struck back at the terrorists who threatened it. And the world came together in a coalition against terrorism, determined to act firmly, within the framework of the law.

What can be done against terrorism can surely be done against poverty, in the name of a more human, manageable globalization. Let us form a coalition to build together a universal civilization where there is a place for everyone, where everyone is respected, and where everyone has a chance.

Inspired by that ideal and by the commitments of the Millennium Summit, France proposes that we work together over the coming decade to bring to fruition five projects. Five projects that testify to our resolve to make globalization serve mankind:

- Allocating 0.7 percent of the wealth of the industrialized countries to development of the poor countries;
- Agreement on new funding for their development;
- Creation of an Economic and Social Security Council, within which all can work together for the sustainable management of global public goods;
- Fulfillment of the Kyoto objectives and the establishment of a World Environment Organization;
- Conclusion of a Convention on Cultural Diversity, expressing our confidence in the capacity of humans to reconcile the unity of the world with its diversity.

We owe it to future generations.



**STATEMENT BY THORAYA AHMED OBAID
Executive Director, United Nations
Population Fund**

Excerpts from Dr. Obaid's address to the International Conference on Financing for Development, Monterrey, Mexico 21 March 2002

We are gathered in Monterrey to try to resolve a paradox: the paradox of a world where wealth is being created faster than ever before, but inequalities are widening faster than ever before; where the 10 richest individuals are richer than the 10 poorest countries; where education and health care are universally valued, but where illiteracy and ill-health are still the norm for half the world.

We have emerged from a century of paradox: a century of systematic destruction and soaring achievement; a century of ethnic strife and emerging democracy; a century of assaults on basic humanity and universal agreement on human rights.

Are we ready now to tip the scale towards humanity: to use human resources and ingenuity to end poverty, to promote human rights, and to work towards a satisfying and sustainable life for everyone on the planet? Or will we allow the new century to continue the way it has begun?

There are reasons to think that we cannot continue in this way and expect our civilization to survive. There are four times as many people as there were in 1900. Among us, we wield terrible power. In the last hundred years we have altered the planet more than



in the whole of human history. We have drastically reduced the available margin for error. Action to end poverty is more than a matter of mere survival. It is a matter of morality. It is simply unacceptable that one-fifth of humanity commands more than four-fifths of the world's resources, while more than a billion people subsist on a dollar a day. Most of the world's men and women live with the consequences of poverty—malnutrition, chronic ill-health, exposure to communicable disease, and maternal death during childbirth. Largely because of poverty, and our failure to address it, 40 million people are now living with HIV/AIDS—and this is only the beginning. The sad end of this story is that these consequences are all preventable.

We can end poverty, at least extreme poverty. We all know what needs to be done, and to a large extent we know how to do it. We know that economic poverty has social roots and that poverty is intergenerational. The consensus reached at international UN conferences of the 1990s and at the UN Millennium Summit converged around the same practical and affordable goals in several areas, including health, education, population, and gender equity and equality. Achieving these goals would lay a solid foundation for ending poverty in many of the poorest countries over the next generation.

It is encouraging that we can point to success in at least one of these areas. Population has been a success story, where women and men have taken their decisions to plan their families and to contribute to slowing population growth. Today women in large numbers are making their own choices regarding birth spacing and family size.

Today women in Bangladesh have chosen to have half as many children as they did 20 years ago. In India, the average woman has three children today, compared to five children two decades ago. In Indonesia, average family size has decreased from more than four children in 1980 to between two and three children today. Here in Mexico in the late 1960s, when UNFPA began its work, total fertility peaked at nearly seven children per woman. A concerted national effort was started in 1974 with UNFPA cooperation. Now, women have on average fewer than three children. Mexico's population profile is beginning to look like that of an industrial country, with a higher proportion of people of working age compared to children and the elderly.

UNFPA has worked for three decades in close partnership with developing countries in all regions. Everything we have learned shows that when women

are empowered—through laws that ensure their rights, health care that ensures their well-being, and education that ensures their active participation—the benefits go far beyond the individual: they benefit the family, the community, and the nation.



**STATEMENT BY GRO HARLEM BRUNDTLAND
Director-General of the World Health Organization**

Excerpts from Dr. Brundtland's remarks at the International Conference on Financing for Development, Monterrey, Mexico 20 March 2002

How do we make sure that financing for development brings useful benefits to the people who need them most? How can we ensure that resources lead to real improvements in the lives of the poorest two billion?

My view on these issues is clear. Development is not possible unless people are healthy.

Investing in people is crucial. It will yield enormous benefits and allow millions of people to move out of poverty. Better health will bring real improvements to their lives.

In 1999, I asked leading economists and health experts from around the world to analyze the links between health and economic development.

Last December, in London, Clare Short and Bono joined me when Jeff Sachs presented the Report of the Commission on Macroeconomics and Health. [The Report] shows how disease is a drain on economies and how investment in health spurs economic growth. Improving people's health could be the single most important determinant of economic growth in Africa.

The Commission's proposal would mean the saving of eight million lives a year with a six-fold economic return on resources invested.

This week we ask ourselves: how do we increase—and improve—investments in development, making them even more effective? How can the private sector engage more strongly in promoting development and reducing poverty?

We know what needs to be done.

Three diseases—HIV/AIDS, tuberculosis, and

malaria—bring a heavy burden. Maternal and child conditions and good nutrition are also global health priorities. As we concluded in Stockholm last week, the survival and destiny of children is crucial to our future.

Any serious attempt to reduce the disease burden faced by the world's poorest people must concentrate on these conditions.

Any serious attempt to stimulate global economic and social development and promote human security must address this burden.

The proposed investments are cost-effective. Their impact can be measured—in terms of reducing disease burdens and improving health. Our emphasis is on results: on investing where it makes a difference.

We seek the engagement of a range of partners at local and national levels, with civil society, private entities, researchers, and the media joining public-sector actors. We encourage them to pursue common strategies: building on best practice while harnessing innovations for the future.

We have seen the formation of national and international alliances that increase access to vital vaccines and medicines—for HIV care, leprosy, rolling back malaria, stopping TB, tackling sleeping sickness, controlling diabetes, reducing tobacco use, and combating childhood infections.

At the global level, new systems for scaling up national efforts are emerging. Funding mechanisms like the Global Fund to Fight AIDS, TB and Malaria and the Global Alliance for Vaccines and Immunization support such action.

We encourage donors to work jointly with national level partners—through sector-wide approaches and poverty-reduction strategies. We are all learning from experience.

WHO will focus on making sure that funds are well spent.

We are strengthening our capacity to provide countries with the technical assistance they need for this extra effort. It will include delivery of vaccines, maternal and child health services, care for people living with HIV, and control measures for malaria and TB.

STATEMENT BY CHRIS PATTEN **European Union External Relations** **Commissioner**

Excerpts from Commissioner Patten's address at the Forum for the Future, Church House, Westminster, London
29 November 2001

So we have moved in the decade that saw the end of one bloody century and the inauspicious beginning of another, from “The End of History,” to borrow one book title, to “The Coming Anarchy,” to borrow another. In today's political world you are no longer regarded as a crank when you argue that “the environment”—demography, disease, deforestation, depletion of resources, and so on—is the most important national security and foreign policy challenge we face.

By any measure, the shift from greater awareness of an apocalyptic future to delivery of national and international action to head off the threats has been grossly insufficient. In the view of poorer countries, the Rio concept of “common but differentiated responsibility” has not been met by an adequate shouldering of the burden by the rich. Meanwhile, rich nations remain uneasy about taking measures, which they fear might in the short term chip away at the all-important economic growth that has marked most of the period since Rio. For both, preoccupation with immediate concerns has relegated longer-term problems steadily down the agenda of political priorities.

So yes, we have been there before. The world's leaders cannot be eager to be reminded that the promises of Rio have not been met. Especially as they have no one to blame but each other. Add to this the growing consensus that the gulf between rich and poor could make the global economy as unsustainable as its ecology, and you hardly have a recipe for unbridled enthusiasm. But “summit fatigue” must not become an excuse to justify lukewarm commitment to vitally important international processes, however difficult it is to see a productive way forward. We cannot bunk off school when most of us have already been playing truant for ten years. I am glad that Tony Blair was among the first to volunteer for service at Johannesburg. I would be delighted if that meeting became, as some have suggested it should, a “summit to end all summits.” But it can only be so if it sets off an era of international cooperation, which is genuinely different from anything we have seen since the years



immediately following the Second World War.

So I want to consider today what has and has not changed in the ten years since Rio. Are we within a fighting chance of creating new global disciplines? And can sustainable development be placed at the center of those disciplines, taking its rightful place as an indispensable element of global security as well as a pressing moral responsibility?

this is a self-deluding notion. You can hang on to the forms of sovereignty while losing the substance, a proposition that pretty much encapsulates the main political argument about Britain and Europe. In order to protect and promote their national interest, countries have increasingly to pool their sovereignty. No country is sufficient unto itself, even this “jewel set in a silver sea.”

**Summit fatigue must not become an excuse to justify lukewarm
commitment to vitally important processes.**

—Chris Patten

How Has the World Changed Since Rio?

I shall begin at the end. September 11. It certainly looked like the end for a few appalling moments. But did the atrocities cause a seismic shift in global attitudes, or are we witnessing a short-lived spate of togetherness? The web of international alliances and divisions is undergoing radical change. There has been a surge of coming together which has produced many unlikely bedfellows. Age-old rifts will not disappear overnight, but we are seeing a multitude of new efforts to heal them. The coalition against terrorism is as near to global as we are ever going to get, and has certainly consigned the last remnants of the Cold War definitively to the dustbin. Old distinctions between “home” and “abroad,” “developed” and “developing” have been spectacularly erased. As Jim Wolfensohn has said, the idea that a rich world and a poor world can co-exist without dramatic implications collapsed along with the twin towers on September 11.

Such a shift in perception should come as no surprise to those who have long been arguing that it is the very interconnection of countries and events which must be the point of departure for international policy and decision-making everywhere; that each nation’s stability, prosperity, and security are dependent on the global community’s collective approach to matters which are framed neither by national borders nor [by] conventional concepts of sovereignty. As I have argued before, sovereignty is a notoriously slippery concept. And today for us in Britain, a dangerous one, too. It has distorted the debate about Britain’s role in the world and our relationship with Europe, a relationship demonized by some as the pilfering year by year, piece by piece, of our national birthright like the vandalizing and demolition of an ancient monument.

But even for the greatest, most powerful countries,

The century ahead will be defined by the growing domain of interests that are common to all countries. If foreign policy in the past consisted chiefly in seeking to persuade others to align themselves with one’s national aims, it is now about aligning all national aims so that they are directed at the same global targets.

Idealists have taken the events of September 11 as grounds to assert that the power of community is now bound to take its place once and for all ahead of outdated concepts of national interest. If only we could be so sure. For while it is certainly right to make the link between waging war on terrorism and draining the swamp of disaffection, exclusion, envy, and anger which breeds support for lunatic agendas of revenge, simply making the link through rhetoric will not be enough.

I am afraid it would require a leap of faith to imagine that we can now expect nations to unite seamlessly and effortlessly in the quest to weed out the “root causes” of the September 11 attacks. Those root causes go far beyond the networks of transnational crime and money laundering, drug dealing, and arms smuggling, to the destabilizing division between haves and have-nots, the spread of diseases, the persistence of abject poverty and dysfunctional states, and to rising tensions over access to ever-scarcer natural resources.

They are the causes rooted in a world where 10 percent of the world receives 70 percent of its income, and the three richest men have assets equal to the output of the 48 poorest nations. A world where the average American uses 1600 liters of petrol each year, compared to 50 liters for an Asian, and still less for an African. And such stark contrasts exist locally as well as globally. Here in London, a journey of six stops on the tube from Westminster to Canning Town takes you to a place where life expectancy is six years lower.

Still, the optimist in me also feels that somewhere



in the aftermath of September 11 lurks an opportunity to galvanize what some might regard as an unholy alliance of world leaders into doing more to tackle this whole litany of evils, the “dark side” of globalization in all its forms. The fight against terrorism must consist of action which is multi-frontal as well as multilateral; it must engage the widest possible number of international actors and confront the fullest possible range of causes. The challenges of making globalization more sustainable and more inclusive will require a sea-change in attitudes to problems which are not about to knock down skyscrapers in Manhattan or London: problems which cannot be blamed on terrorists or rogue states, or any identifiable and attackable baddies. Problems, alas, caused by you and me—the man and woman in the street—and the millions of little choices we make every day. Hopping in the car to drive to the shops; buying those beautiful ivory ornaments while holidaying in Africa; popping an illegal pill before going to the night-club; quietly hoping that petrol blockades achieve their aim of keeping prices low: a revolutionary triumph for Mondeo Man.

NGOs and Protesters: Ripe for a Coming of Age?

My sense of fresh opportunity does not just depend on a great and good phoenix rising from the ashes of Manhattan and the Pentagon. There are other currents, which are carrying forward a promising reassessment of priorities in the White Houses, Number 10s, and Elysée Palaces. Let me take you back a little further to the street scenes of Seattle, Prague, Gothenburg, and Genoa. The apparent quiet since then, the completion of a real job of work at Doha without any headline-grabbing demonstrations, should not lead us to forget that there has been a growing movement of dissent which has dragged, however chaotically, a ragbag of global concerns into the public eye. Some say that this is the voice of an extreme left which no longer feels represented by mainstream politics: the triumph of a liberal political and economic world order leaving Marxists with nowhere to go but the street. But I do not think these voices should be dismissed so lightly.

The protests are a public manifestation of an unease with global development which strikes a familiar chord at the international institutions and meetings they have chosen to target. Crucially, I repeat, it is a familiar chord, not a new revelation. Many of the concerns of the protesters would have occupied the minds of political leaders in any event, indeed

have occupied them for years. The G8 pledged a billion-and-a-half new dollars to the developing world’s fight against AIDS and other diseases at Genoa. At Gothenburg, the EU leaders adopted an ambitious strategy for Europe’s own sustainability, and took President Bush to task for his unilateral withdrawal from the Kyoto Protocol. The biggest danger of the protest movement for me—aside from the insurrection of a violent minority of thugs—has been the propagation of a false impression of intractable opposition of purpose between those outside the meetings and those on the inside.

So I am encouraged that recent constructive efforts to unravel a coherent message from within the “civil” ranks of the protesters have revealed these common concerns. The sane majority of civil society is not, I am pleased to report, anti-globalization at all. They understand enough to know this would be tantamount to being anti-weather, or anti-time—that there is no “in or out” choice... Many groups who assemble under the umbrella of anti-globalization are becoming important partners in a real debate, a debate which must continue.

At the risk of offending some, I would submit that what most protesters want is more globalization, but globalization of a different sort. They want the institutions to catch up with the markets, to do a better job of spreading their benefits more widely, and to address needs that markets do not automatically serve: the needs of the disenfranchised poor; the needs of the environment. Without global structures and effective rules, the strong are bound to dominate the weak. Indeed the prime target of protesters’ wrath—the WTO—may show us the way ahead. This is our only rule-based system with a real dispute-settlement mechanism, and real penalties for non-compliance; ingredients which might usefully be extended or replicated to address other global matters such as the environment. We must not let attacks on the imperfections of the current machinery shade into attacks on their very existence...

The key message I draw from the protests, and one with which I identify without hesitation, is that we cannot continue to ignore the impacts of exclusion of certain elements of our societies—or certain societies in their entirety—from a meaningful stake in the world’s only viable economic system. We cannot continue to provide for ourselves that which we deny to others. Other countries. Future generations. It is simply not sustainable.



The Positive Role of Business

A rallying cry of many activists has been that globalization's biggest beneficiary is big business, the multinationals who will always place market share and profits before social equity or environmental protection. And these firms, it is said, wield significantly more power than the governments of many countries. Big firms which have weak régimes over a barrel when seeking the most favorable conditions in which to invest. But this is not the whole story. A more dispassionate approach may reveal another tale of promising change, which has unfolded for the most part in the ten years since Rio.

First of all, the two-thirds of all foreign direct investment that takes place between the countries of the OECD is clearly not driven by an indiscriminate search for the world's cheapest labor. Companies value the security of a reliable rule of law, an educated—not a subjugated—workforce. Repressive regimes are the hardest countries in which to do business, both literally and politically. The correlation between economic stability, a predictable and comfortable business environment, and an open, plural, democratic society is clear. The remarkable boom in European investment in Latin America was directly related to political as well as economic reform on that continent.

Secondly, corporate “good citizenship” ceases to be a fad for the philanthropic few as soon as it becomes an indispensable part of sound business sense. Questions of environmental and social responsibility have nowadays become a reflex for firms who wish to maintain their position in a world where their activities are scrutinized by all manner of campaign groups...

Thirdly, I am convinced that the interests of the big guns of the US energy establishment—those who see little gain and much pain in the Kyoto process—will have to compete more and more vigorously with the interests of an innovative research sector which sees a rosy future financially as well as ecologically in clean technology, emissions trading, and renewable energy. If Europe continues to lead the rest of the world in pushing ahead with Kyoto, as it must, the United States will one day come around, however grudgingly, and participate. The image of an awkward and unconvinced partner joining after the rest have tested the equipment is very familiar to a British Commissioner working in Brussels.

So companies themselves can be responsible for upward spirals as well as downward ones. Much criticized “self-regulation” can push standards higher. And some of the biggest players advocate more

stringent statutory rules as their preferred way forward, as this should force the true cowboys among their competitors out of the market...

A Positive Agenda for Johannesburg

Governments. Civil society. Business. All the stakeholders are capable, with a little help from events and circumstances and a lot of mutual pressure, of pulling in the same direction. Can the run-up to Johannesburg be used to stoke up a new coalition of determination to confront fundamental questions of global sustainability and equity? I believe it must. And for the reasons I have just set out, I for one am ready to believe that the conditions now may even be better than they were ten years ago for us finally to start meeting the challenge of the Brundtland Report.

Things move painfully slowly at the multilateral level. But since the Rio commitments were made, they have been supplemented by those of a series of further UN Summits to give us the Millennium Development Goals endorsed last year by the whole international community. These provide us with an extremely comprehensive (not to say daunting) agenda for action. The challenge, as we all know, is in the delivery.

The EU's strategy for sustainable development should, I believe, run along four principal tracks. We must strengthen global rules to address long-term needs, not only by continuing to bolster the financial and trading systems, but also better to safeguard common concerns such as the environment. We must make trade an effective tool for growth in poor countries as well as rich, and do more to give the most marginalized countries a better chance to participate in world markets. We must deploy more and better targeted development assistance, especially at a time when private capital flows to developing countries are falling sharply; official development assistance must double from current levels of about \$50 billion a year. And as we get the trains running on these first three tracks, the developing countries themselves have to continue their moves toward better national policies, to build a more favorable investment climate, and ensure reliable and efficient governance...

Conclusion: Better Multilateralism Does Not Mean Easier Multilateralism

The realignment of nations in our post-Cold War, post September 11 world may be dangling the trophies of better, more complete multilateralism closer to our grasp than ever before. But as Henry Kissinger has remarked, the absence of easily identifiable ideological

opponents can serve ironically to increase the difficulty of achieving global consensus. The more we sense the feasibility of genuinely global coalitions, the more we owe it to ourselves to seize that chance, to commit ourselves to solutions which require give as well as take, to put in the hard work required to turn possibilities into realities.

The kind of multilateralism required to re-ignite the sustainable development agenda at Johannesburg is not the same as that which is needed to shut off the chains of supply to Al Qaeda. Building a coalition against terror has not yet implied any obvious compromise of independence of national action on the part of the coalition's leaders. But there is extraordinary unity created by extraordinary horror. We shall have to extend this momentum if governments, and the people they represent, are to be convinced of the complete rationale of global interdependence, a rationale which requires power as well as resources to be willingly pooled. It cannot be a partial acceptance [that] places security issues in a separate box from others less pressing if just as morally expedient. It must be followed through to its logical conclusion. Self-interest for a nation and the interests of the broader community are no longer in conflict.

The events of the last few months should teach us that the investment we make in sustainable development is as much a part of our global security as the investment we make in our armed forces. And it should offer much better value for money. It has been said that sustainable development is about winning the peace, rather than winning a war. For that battle to get underway, actions will have to follow the words. And that is always the hard part.



**STATEMENT BY M.V. MOOSA
Minister of Environmental Affairs and
Tourism, South Africa**

Excerpts of Minister Moosa's speech at the announcement that South Africa would host the World Summit on Sustainable Development

11 October 2001

It has been noted in the planning sessions of the [World Summit on Sustainable Development] that poverty is the most critical threat to sustainable

development. The gap between the poor and the rich is widening by the day.

This [gap] poses a great threat to all nations as the instability, conflict, disease, and environmental degradation associated with poverty threaten the overall socio-economic fiber of our planet. This will be the focal area of the Summit.

For developing countries, issues of energy, biodiversity, HIV/AIDS, waste, fresh water, and desertification will be at the core of their agenda for the Summit. Government sees the value of formulating common positions around these issues. The challenge specifically for Johannesburg is to create an enabling environment for these discussions to take place in a manner that will bring about change to the world. For ordinary people globally, this Summit will be meaningless if it fails to come up with programs aimed at addressing these issues and thereby creat[ing] a difference in the way they live their daily lives.

Even...a bigger challenge to us will be to address these issues within a context created at Rio in 1992. It is clear that the developed world is still faced with a challenge to meet its financial commitments made at Rio. For example, the commitments to achieve the official development assistance target of 0.7% of GNP have not been met due to sustained lack of political commitment.

We need to create a balance between reviewing progress from Rio while charting the way forward in a manner beneficial to our people. It is our collective challenge to ensure that our interventions at all plenary sessions are geared towards achieving this goal. We will need to ensure that we constantly remind the developed world that creating an enabling economic environment is fundamental if we are to adequately address issues of sustainable development. This will have to be acknowledged by all in preparatory sessions prior to the Summit.

The Summit must be able to create principles for a constructive partnership between the developed and developing world that must recognize our common but differentiated responsibilities for working towards sustainable development. These principles must be transformed into tangible deliverables that will impact on the way we use our natural resources to address our current needs while also planning for a sustainable future for all.



STATEMENT BY THORAYA AHMED OBAID
Executive Director, United Nations
Population Fund

Excerpts from Dr. Obaid's remarks during a panel discussion at the First Prepcom for the World Summit on Sustainable Development
 29 January 2002

Let me get right to the point. Ten years after the adoption of Agenda 21, the primary challenge remains: to ensure that access to resources for human development is in balance with human numbers; to end extreme poverty; and to advance equality between men and women.

the benefits go far beyond the individual. Families, communities and nations are better off. Population growth slows, economic growth is stronger, and countries have more capacity, as well as more room to make choices [that] favor sustainability.

At the global conferences of the 1990s, governments, helped by a multitude of civil society organizations, drew up a recipe for sustainable development. They agreed that the empowerment of women is an essential ingredient. At every regional meeting in preparation for August's Summit, participants have stressed that sustainable development must benefit the poor.

Despite these agreements, many women in developing countries still lack access to resources,

The megacities of the world should be powerhouses of development. Instead, their essential services are at risk of collapsing under the weight of unsustainable population growth.
 —Thoraya Ahmed Obaid

As a matter of human rights as well as for the future of sustainable development, it is simply unacceptable that one person in six today lives in extreme poverty and that the gap between rich and poor continues to widen. Today, 20 percent of the world's people, mostly in high-income countries, account for 86 percent of the world's consumption of resources. Meanwhile, in Africa, where poverty has increased during the last decade, the average household consumes 20 percent less than it did 25 years ago.

In the world's developing countries, there are more than one billion people who lack access to safe drinking water and over two billion who lack adequate sanitation. In too many parts of the world, health care is a mirage, and education is for the few. And too many of the deprived are women. However long the queue among the poor, women are at the end of it.

Poverty and gender inequality are incompatible with sustainable development. We need to ensure that more economic resources flow into the hands of poor people, especially women. Women, for example, make up half of the world's agricultural work force: They need legal and social support for land ownership, tenure, and inheritance. They need guaranteed access to credit, and services for agricultural and resource management.

Everything we have learned over the past decade shows that when women are empowered—through economic opportunity, health care, and education—

services, and the opportunity to make real choices. They are trapped in poverty by illiteracy, poor health, and unwanted high fertility. All of these contribute to environmental degradation and tighten the grip of poverty. If we are serious about sustainable development, we must break this vicious cycle.

As a matter of human rights and as a basis for their other choices, women need ready access to the full range of reproductive health information and services, including voluntary family planning.

Access to reproductive health information and services in the next decade will determine whether the HIV/AIDS pandemic can be stopped. In the absence of a cure or a vaccine, only responsible sexual behavior among both women and men can prevent the spread of infection. The damage already done by AIDS threatens development in some of the poorest countries. All countries must act with a united resolve if the damage is to be contained and the tide of infection turned back.

There are an estimated 120 million couples who would use family planning services now, if they had access to them. Demand for these services is expected to increase by 40 percent in the next 15 years.

We have made good progress in some areas. Today, some 60 percent of married women in developing countries are using modern methods of family planning, compared to about 10 percent just 40 years ago. There is a broad international consensus on the

links between ending poverty, promoting reproductive health, securing gender equality, and protecting the environment. This is a tremendous achievement in a relatively short period of time. We must continue to consolidate our gains.

The last two generations of women have increasingly chosen to have smaller families. The next generation will follow their example—if they have access to education; if they can count on care in childbirth and beyond; if they can avoid unwanted pregnancy, if they have economic opportunities, and if they have the support of their families and communities in making their own choices.

Today population growth is a matter for the poorest countries, but it affects the world, and demands a global response. In the next 50 years, the combined population of the least developed countries is expected to triple, from 658 million to 1.8 billion. The implications of this rapid growth for development and the environment will be far-reaching. The poorest countries make direct demands on natural resources for survival. If they have no other choices, the damage to the environment will be profound, and permanent.

The combination of poverty, population pressures and environmental degradation in the rural areas drives migration to cities and across national borders. The megacities of the world should be powerhouses of development. Instead, their essential services are at risk of collapsing under the weight of unsustainable population growth.

In their people, developing countries possess the most powerful resource for development. Recent steep declines in fertility have produced a “demographic bonus” in the form of the largest-ever generation of young people. Without an equally large generation behind them to make demands on scarce resources, these young people are potentially a great driving force for development, if they have the opportunity...

STATEMENT BY PAULA J. DOBRIANSKY U.S. Under Secretary of State for Global Affairs

*Excerpts from Secretary Dobriansky's remarks to the European
Institute, Washington, DC*

25 April 2002

At Doha, the world's trade ministers reaffirmed their countries' commitment to an inclusive trading system, which promotes sustainable development. They agreed that an open and non-discriminatory multilateral trading system and protection of the environment “can and must be mutually supportive.” In Monterrey, the world agreed that “each country has primary responsibility for its own economic and social development,” and that “national development efforts need to be supported by an enabling international economic environment.” The international community also recognized in Monterrey that trade, investment, and domestic savings offer substantial resources for development that must be unlocked and used effectively along with ODA. Sound policies and strong, accountable national institutions are critical to success.

We carry to Johannesburg, then, the messages of Doha and Monterrey: the globalized economy is a powerful engine for development, and each country must take on the responsibility to harness it by practicing good governance, adhering to the rule of law, investing in its people, and encouraging political and economic freedom.

As the United States prepares for Johannesburg, we see that the [Summit] can be a critical opportunity to deliver concrete results that make these messages a reality for sustainable development. We already have Agenda 21, which provides the policy framework for action on a balanced approach to the three pillars of sustainable development—economic development, social development, and environmental stewardship. We also have the international development goals in the UN Millennium Declaration as well as voluntary mechanisms such as the International Coral Reef Initiative and the Arctic Council. All these provide the necessary blueprint.

We need to focus on how to move toward concrete action. Implementation is not just a question of money. Funds are a component of implementation, to be sure, but they are not the primary driving force, nor is the lack of official development assistance the primary impediment to implementing agreements.



We must recognize that, despite the increasingly globalized nature of our world and its economy, sustainable development must begin at home, and poverty alleviation, improved health, and environmental stewardship all require good domestic governance, democratic societies, free markets, and accountable public and private sectors.

In developing our approach to [Johannesburg], therefore, we settled on two broad fundamentals that have to be addressed if we want to achieve concrete results from the treaties and agreements already negotiated: strengthening good domestic governance and capturing the power of partnerships.

By good domestic governance, we are talking about how to, among other things:

- Encourage effective and democratic institutions, including an independent and fair judiciary;
- Promulgate sound monetary, fiscal, and trade policies that promote economic growth while encouraging social development and environmental protection;
- Ensure a participatory role for all members of civil society who are affected by decision-makers; and
- Develop sound policies, including through science and the scientific method.

Recognizing the essential role of partnerships to effect change is the other key element—partnerships among governments and, more importantly, between governments and civil society, particularly the private sector. For this reason, we are hoping that the dialogue leading up to Johannesburg opens channels of communication and fosters the kind of creative thinking among national and local governments, NGOs, women’s groups, scientists, business and industry, farmers, foresters, and fishermen who identify their common interests and create a plan to advance them together.

By addressing the fundamentals and by creating active partnerships to build upon them with concrete actions, the Summit can shape a new approach to some of the most challenging sustainable development issues facing developed and developing countries alike:

- Increasing access to clean, reliable, affordable energy and to fresh water;
- Restoring coastal zones and fisheries to healthy, abundant environments;
- Protecting forests and promoting sustainable forest management;

- Halting the dramatic trend of biodiversity loss;
- Attacking the scourge of global diseases such as malaria, TB, and HIV/AIDS;
- Significantly increasing agricultural productivity and improving the lives of rural poor; and
- Giving hope for the future to the world’s youth through education.

We do not come to the realization of what is required to effect positive change in sustainable development lightly. Nationally, we have decades of experience at the federal, state, and local level about the mix of policies, programs, and cooperation with civil society that is necessary to undertake dramatic change. Five decades of experience in international development assistance programs since World War II—its successes as well as failures—have informed our conclusions as well. We’ve learned throwing money at the problem doesn’t solve it. Writing a new agreement that talks about it doesn’t solve it. But addressing the underlying fundamentals and encouraging the players who have the most to gain from success to play an active role in strengthening those fundamentals does...



**STATEMENT BY JAMES CONNAUGHTON
Chairman, White House Council on
Environmental Quality**

Excerpts from an address by Mr. Connaughton on “Making Sustainable Development Work: Governance, Finance, and Public-Private Cooperation” at the Meridian International Center, Washington, DC

18 October 2001

I fear that the sustainable development dialogue in the coming year may simply be a policy-wonk’s exercise about every possible point of discussion and experience over the last few years. The dialogue should focus on the important tools of sustainable development: good governance and financing for development. Those are the mechanisms that are necessary for sustainable development to occur. Equally important, however, as we move forward in this next year of discussion and in the years to follow, we must pursue a vision of sustainable development that puts the benefit of those tools into context.

Now, what is the vision of sustainable



Official Statements

development? Let's start with what it is not. It is not the age-old debate over the "precautionary principle." Sustainable development is not the effort to define sustainable development. To use an old tried phrase: we know what sustainable development is when we see it. The exercise of sustainable development is not about academic projects seeking to define sustainable development.

to incorporate environmental, health, and safety concerns into the planning processes for those projects. But I think one of the visions we need to recognize as we move forward with the idea of sustainable development, especially as articulated in the last 10 years, is that it has been about projects, when in fact, sustainable development needs to be a way of life.

And so, for every great aid project, we should be

For every great aid project, we should be having 10 private-sector projects in which the environmental, health, safety, and social aspects of that activity are incorporated into planning.

—James Connaughton

Sustainable development is about what we have achieved here in the United States of America, especially in the last 30 years, built on a foundation of a statute that articulated for the first time, the core principles of sustainable development that we live with today.

Our task ahead is what I call the "Supermarket Task." We go into clean, healthy, protected food supermarkets. As we walk down the aisles we say, "Wow, I want some of that, I want that cereal product, and I want some of that." What we need to do, collectively, as we go forward with sustainable development is to paint the pictures—pictures that say, "I want that."

Now, we've also learned hard lessons here in the United States. The legacy of our prior lack of vision partly stems from a lack of knowledge on the part of government and industrialists. We've overcome that today. Our mission, as we reach out to the world on sustainable development, is not to let them revisit the very costly legacy that we had to deal with. We need to own up to the fact that it was a costly and devastating legacy. We would not be as advanced as we are but for the failures of our past. We should be willing to reach out and share our ability to help other countries avoid that.

In my travels around the world, I've often seen this basic point in practice: The real money is in private-sector investment. The real money is in these long-term commitments. In any political environment, you've got to follow the money. So, we have export credit practices that we're trying to promote to make sure that the environmental aspects of financing are considered. We are working aggressively on this issue—and interestingly, most of the rest of the world is not.

We also have very effective aid programs that try

having 10 private-sector projects in which the environmental aspects of that activity and in which the health, safety, and social aspects of that activity are incorporated into the planning, right up front, recognizing the benefits of long-term investments in environmental integrity and in the quality of life that we can provide to workers.

So, if I want to leave you with a core point, it is that: We need to create those pictures.

In America today, we are going beyond the struggle to meet basic health needs. We are talking about a quality of life that we want the rest of world to enjoy. It is that picture that we need to create for the world. We look forward to spreading sustainable development. I'm hopeful that a year from now, as we go forward with the discussion about good governance and finance, we have a lot of people saying, "I want that." That's what makes sustainable development truly sustainable. I encourage you all to join with me and to join with the administration as we pursue that path.





**STATEMENT BY DOUGLAS HOLTZ-EAKIN
Chief Economist, President's Council
of Economic Advisers**

Excerpts from an address by Dr. Holtz-Eakin on "Making Sustainable Development Work: Governance, Finance, and Public-Private Cooperation," at the Meridian International Center, Washington, DC
18 October 2001

The key test for sustainable development in an environmental context is the notion that we have somehow, in the process of moving forward economically, committed a harm to the welfare of future generations in a way that [does not allow us to] sustain the quality of life.

I would suggest that, when we move toward broader notions of economic development and the three pillars that include economics, environment, and social [concerns], the issue is: what do we do next? What we ought to do next is look at a problem and say is this an area in which we now face the possibility of inflicting a harm or the risk of a harm [that] would make it impossible for future generations to live the quality of life that we now live.

If that is the case, then that is an area in which we ought to focus our attentions and avoid that irretrievable harm. If we do that, we will sustain this quality of life, which is at the core of the sustainable development notion and we will have done our service to future generations and we will have exported to the world the correct paradigm for growth coexisting with broader goals.

So, I would urge people...in moving forward in the next year toward the Summit, when you face particular problems, indicators, policies and issues, to apply a very simple test. Do we now face the potential for inflicting a harm on future generations [that] would prohibit them from living our quality of life?

If it is the case that greater economic growth can substitute in some way for the loss of an environmental attribute or for a social goal, then by definition, we can use one to offset the other. At the core of the difference between sustainable development and economic development is the notion that you cannot substitute using economic development for something else [that] will be lost.

It's very hard, I think, to make a convincing case that there are a pervasive number of things for which there are no substitutes in the world. There may be some. Clean water and sustainable use of clean water

is a resource that we may be unable to continue to exploit and damage in the present and sustain our quality of life in the future. So, that's exactly how [sustainable development] should be used and I endorse that notion of sustainable development...



**STATEMENT BY ANDREW S. NATSIOS
Administrator, U.S. Agency for
International Development**

Excerpts from address by Administrator Natsios on "Making Sustainable Development Work: Governance, Finance, and Public-Private Cooperation," Meridian International Center, Washington, DC
18 October 2001

[The World Summit on Sustainable Development] can be a watershed because we are entering now, as a result of the events of September 11 a new historical period. The beginning of World War I ended the 19th century and [the] Bismarck era of Europe. The way in which World War I ended was a disaster which, according to many historians, caused World War II. As you go through history there are certain dates of significance; September 11 is such a date...

I ask myself everyday if we are making the right decisions in terms of what we're doing in our relief program in Afghanistan, because [those decisions] will have implications for the long-term reconstruction and development of Afghanistan. What we do know is that our decisions will affect the future profoundly. We're not always clear what that effect will be. This is my favorite rule of public policy, that of unintended consequences.

So, this is a very appropriate time to have a discussion about the term "sustainable development." I don't like the term "sustainable development." I've told people in USAID, you will not hear me use that term in my speeches because, other than those of us who do this work, the American people do not know what that term means.

If you go to an African village and ask an average peasant, "What is sustainable development?" they will look at you and say, "What are you talking about?" No matter how you translate it, they don't know what you are talking about because sustainable development is an obscure term that's designed to exclude the great

bulk of the population who does not understand what it means.

So, if you begin with terms that require books to define them, you've already lost. I prefer more operational terms such as good governance, economic growth, and public health. We know what these terms mean. If you say you're trying to immunize children so they don't die from measles, people know what that means. If you try and increase agricultural production, every peasant knows what that means everywhere in the world.

So, let's focus on what we do rather than on terminology. Maybe that can be a contribution next year at the World Summit on Sustainable Development—to stop using terms that are obscure and start using more operational terms. Of course, that will upset other countries. Americans are too operational, too practical, and we're not focused enough—my European friends say—on the theory and the grand principles. I say, yes, and I think that too many people are too much focused on grand principles and not on what works on the ground. No one can eat a concept. It's not edible.

There is a relationship between political stability and the maturity of the society and social services and public safety. Educated middle-class people are the ones who demanded these things in the United States. Why did that happen? Because there was a middle-class. How do you create a middle class? You have to create wealth. How do you do it in developing countries? Agricultural development is a large part of it, as well as private-sector development.

We need to look at economic development in the private sector as an essential element of what we would call sustainable development in this smaller group. The point, though, of all of this is we're not looking enough at private institutions.

I met recently with the presidents of five of the largest environmental NGOs in the country. We talked about my personal interest, which happens to be theirs too, to attempt to do environmental programming in the developing world, understanding its relationship to economic development.

If you do environmental programming and you ignore economic incentives, you'll fail wherever you are. Profit motive and economic incentives are signals that are sent by the economy and have a profound effect on the success or failure of any program, because economics is a very powerful force. We talked about the attempt to work into the market system in many countries. We talked about illegal logging. Almost 80

percent of the logging done in the developing world is illegal [under developing-world countries'] laws. The logging that is destroying the rain forest of the Congo is all illegal. In fact, other countries have troops in the Congo to make money. The same thing is happening in Indonesia. It's not legal logging. There's a way we can do something about that...we talked about a public-private partnership...



**STATEMENT BY ANDREW S. NATSIOS
Administrator, U.S. Agency for
International Development**

*Excerpts from Administrator Natsios' article "Addressing Poverty," which appeared in the U.S. State Department's electronic journal Economic Perspectives
September 2001*

The U.S. Agency for International Development (USAID) is the U.S. government's principal institution working to fight poverty through economic growth, [to] end hunger through increased agricultural production, and [to] prevent conflict in developing countries around the world. USAID extends assistance to people recovering from disaster, trying to escape poverty, and engaging in democratic reforms...

Unless the world addresses these issues of poverty and hunger, we can look forward to spreading humanitarian crises, increasing and more violent internal conflicts, and deteriorating conditions for the world's poorest peoples. At USAID, this discontent and desperation affects our work directly: nearly two-thirds of the countries with USAID field missions have been ravaged by civil conflict over the past five years, in some cases destroying years of economic and political progress, demolishing health and education systems, and driving away affluent and educated people.

Poverty and food security are great challenges. As Americans, we have both a self-interest and a moral imperative to confront them. USAID helps fulfill these obligations by working to increase incomes and food security through broad-based economic growth and economic liberalization programs, in combination with programs in health, education, and democratic governance. From decades of experience, we know that our coordinated development programs, carefully



implemented, can over the long term improve real incomes and increase food security in a sustainable manner...

In order to fight poverty more effectively, I intend to fundamentally change the way the agency does business by focusing on four “pillars”: Global Development Alliance; Economic Growth, Agriculture, and Trade; Global Health; and Democracy, Conflict, and Humanitarian Assistance. By aggregating current and new programs that are mutually reinforcing into these pillars, USAID will be able to use scarce budget and human resources more effectively and to describe its programs more clearly.

Global Development Alliance. In recent years, the paradigm of foreign assistance funding has changed drastically. The globalization of the world economy has meant that governments, while still essential, are not the only institutions through which public services are provided. The role of religious institutions, nongovernmental organizations, private foundations, universities, and the private market economy in providing services and accomplishing public objectives has dramatically increased.

U.S. organizations and companies want to and already do help less fortunate people worldwide, but many organizations are not prepared to provide assistance in developing countries effectively. On the other hand, USAID has not been prepared to take full advantage of the resources private organizations can bring us. The Global Development Alliance pillar will change this by actively seeking out partners willing to commit real resources—funding, information, and personnel—to support development programs. With these partners, we will build alliances that target specific development objectives and leverage private funds from foundations and corporations to accomplish those objectives.

Economic Growth, Agriculture, and Trade. This pillar highlights the interrelationship and interdependence of economic growth and agricultural development, international trade, environmental sustainability, and the development of a country’s human capital—with the ultimate goal of creating and cultivating viable market-oriented economies.

Global Health. This pillar includes maternal and child health, nutrition, women’s reproductive health, HIV/AIDS, and programs that address infectious diseases such as malaria and tuberculosis. These are global issues with global consequences: the health of a population directly affects its productivity, and unchecked diseases in other countries pose threats to

our own.

Democracy, Conflict, and Humanitarian Assistance. This pillar recognizes USAID’s world leadership in its ability to respond to natural and man-made disasters. This pillar also recognizes that responding to disasters is not enough: we must learn to prevent conflicts that lead to humanitarian crises before they happen and help people rebuild better after such crises. We will integrate USAID’s democracy programs with new approaches to crisis and conflict analysis and with the development of new methodologies to assist conflicting parties to resolve their issues peacefully.

Our new approaches and strategies will enable USAID to coordinate our programs and leverage substantial private resources to fight poverty and hunger in the world’s poorest countries. Our goal is to help poor people improve their lives and build societies that can become stable and secure trading partners. In so doing, USAID serves America’s foreign policy objectives and reflects the deep humanitarian instincts freer than ever before.



**STATEMENT BY KLAUS TOEPFER
Executive Director, United Nations
Environmental Programme**

Excerpts from Dr. Toepfer’s remarks on World Water Day, Nairobi, Kenya.
22 March 2002

The Millennium Declaration, adopted by heads of state, set the world the following goals:

- To halve by the year 2015 the proportion of the world’s people whose income is less than one dollar a day, and the proportion of people who suffer from hunger;
- And, by the same date, to halve the proportion of people who are unable to reach or to afford safe drinking water.

In the light of this commitment, the theme of World Water Day in 2002, “Water for Development,” is particularly appropriate.

Without adequate clean water, there can be no escape from poverty. Water is the basis for good health and food production.

This year, water pollution, poor sanitation, and water shortages will kill over 12 million people. Millions more are in bad health and trapped in poverty, much of their energy and time wasted in the quest for clean water.

Seventy-five percent of water is used for agriculture. Crop failure due to lack of water, or too much water, can mean starvation for many.

Mankind is always at the mercy of water for survival and development. Water's almost sacred status is recognized the world over. The Koran mentions that all life originated from water, and that man himself is created of water. Water's power to destroy is well known. In the Bible, floods and drought were punishments sent from God. In Judaism, water is important for ritual purification. The Incas believed that Lake Titicaca was the center of the original world; water was the essential factor in the stability and prosperity of the Mayan peoples. The "sacred waters" of the Hindus erase caste distinctions. We too should use water to restore equity.

Water is vital to economic development. We must recognize the true dimension of the challenge we face. The challenge of ensuring sustainable water demand and use and supply of water to all. Appropriate action is required to meet this challenge.

There is a need for investment in water services and water conservation. Water resources must be developed and managed efficiently. Where appropriate, high-tech solutions for water conservation and recycling, such as those developed by UNEP's Division of Technology, Industry, and Economics (IETC), should be implemented. Awareness at every level must be increased. If there is awareness, least-cost (often simple) solutions for sustainable water conservation (such as roof rainwater collection, recycling, and reuse) can also be put into practice.

Due attention should to be given to the problem of transboundary waters. The development of legal frameworks for the equitable sharing of water resources is key to peace and stability, without which there can be no development.

Water pricing needs to be revised to reflect the true cost of the resource, taking account of the economic, social, and environmental value of water. Such a policy will encourage more efficient use and discourage waste. Pricing policy should of course take account of the limited finances of the poor. At present, the poorest pay most for clean water, both in monetary terms and in terms of the burden to their health. The

problem is particularly acute in urban areas. Working with Habitat, through the project "Water for African Cities," UNEP is acting to tackle the urban water crisis in African cities. Water should be made available and affordable for all.



**STATEMENT BY JOHN MANLEY
Deputy Prime Minister, Canada**

*Excerpts of an address given by Mr. Manley as Canada's Minister of Foreign Affairs to the 2001 Diplomatic Forum, Victoria, British Columbia
November 23, 2001*

I would like to use our time today to speak about...Canada's two major foreign policy priorities over the coming year—in particular, our specific response to the threat of terrorism and the wider global agenda for stability and development that we will address under our G8 chairmanship in 2002.

The global campaign against terrorism has taken on the highest priority in Canada's domestic and foreign policy agendas. The work of combating terrorism and managing its aftershocks is far from over.

At the recent session of the United Nations General Assembly, it was gratifying to hear such resounding condemnation of terrorism from member states. But Canada's message there, shared by others, was that outrage alone will not defeat terrorism; sentiment must translate into commitment, and commitment into action. To achieve this, and to fulfill the promises that we have made to each other and to our citizens, we cannot go on as before, or be diverted from a common course by diplomatic gamesmanship or limited self-interest. Simply put, in the "realpolitik" of the post-September 11 world, there can be no more "business as usual" for our international community.

Security and development cannot be separated—each supports and must coexist with the other. Poverty, the denial of human rights, the spread of HIV/AIDS, unchecked environmental degradation, and the blights of drugs and crime all undermine stability, reduce human potential, and obstruct social and economic progress. When a field cannot be tilled because anti-personnel mines may lie under its soil (and I would note that, by today's statistics, one-third of all land mine victims now recorded in the world come from



Afghanistan), or when a village lacks an educated, able workforce because AIDS has killed a tenth of its population, there can be no sustainable development of societies or of economies—no stability, no progress, no hope.

We must renew our collective commitment to creating a strong, equitable global community that can neither be attacked nor exploited by terrorists or others seeking to do harm.



**STATEMENT BY DAVID ANDERSON
Minister of the Environment, Canada**

*Excerpts from Minister Anderson's address to The Canadian Institute of International Affairs in Ottawa, Canada
27 October 2001*

The three issues before this conference are the three issues at the top of the government's global environmental agenda. The environment and human security. The governance of international organizations. And climate change.

Let me talk briefly about the first two and then in some depth about climate change.

In the past eight years Lloyd Axworthy and the Prime Minister have placed human security at the heart of Canadian foreign policy. Environmental security

builds on this foundation by addressing the environmental threats to human security. Environmental security seeks to provide the world with a healthy, productive, and sustainable environment. We now all fully appreciate that there are great threats to humanity and human values and not just to nation-states. We must act to address our vulnerabilities.

Equally critical is appreciating that the challenges to environmental security are, indeed, global. Pollution flows across boundaries. Toxics float across oceans. Fossil fuels burned in one country cause climate change around the globe. Infectious diseases touch all humanity...

Incidentally, I believe the events of September 11 will greatly heighten the importance of Johannesburg. There seems to me to be a direct link between the anger and fanaticism of today's terrorist organizations and the despair and squalor of the physical conditions in which so much of the world lives.

Thus a commitment of the global community in Johannesburg to a plan of sustainable development appears to me to be a logical, necessary progression of the military campaign that today fills our newspapers and television screens. World leaders in Johannesburg will need the support of us all...

We need international good will, international machinery and international action to bring about global human security and global environmental security...

POPULATION AND HEALTH

**STATEMENT BY THORAYA A. OBAID
Executive Director, United Nations
Population Fund**

*Remarks made by Dr. Obaid on World Population Day
11 July 2001*

Billions of ordinary people share the same aspirations: a secure life, a place to live, economic opportunity for themselves, education and health care for their children. Modest goals—yet half the world go their whole lives without even coming close.

The great challenge of the 21st century is to enable everyone to live a life of dignity. It can be done—the world has never seen such wealth. It must be done, because overconsumption, waste, and poverty are combining to destroy the environment that supports

us all. Global warming is a fact, with rising sea levels and unpredictable climate change. Rapid population growth is a fact, with the poorest countries and the poorest areas asked to bear the biggest increases. Species destruction is a fact, with more and more people depending on a shrinking base of natural resources. Stress on food and water resources are facts, with the severest stresses in the most needy areas.

We have limited time to correct these imbalances that imperil our world. Whoever we are, wherever we live, each one of us has a responsibility.

The most important steps are the most basic. Human security and well-being start with education and health care for all. These are human rights, but they also empower women and men. They are the basic equipment to exercise responsibility in the modern world.

The goals of universal education and health care are agreed. They are within reach. Meeting them would cost a fraction of today's expenditure on less important things—arms, for example. Universal education and health care would also have multiple benefits, especially for women, who lag behind in both areas.

Reproductive rights are part of the right to health. Better reproductive health is important for men, but it is vital for women: one woman every minute dies of causes related to pregnancy, and four women every minute catch the infection that leads to AIDS. Better reproductive health means fewer unwanted pregnancies and fewer HIV infections. The AIDS pandemic will end when there are no more new infections.

Reproductive health is integrally linked to sustainable development. Women who can choose have smaller families; and that means slower population growth—a little more time to meet basic needs and make vital decisions...



**STATEMENT BY KOFI ANNAN
UN Secretary-General**

Statement by Secretary-General Annan for World Population Day
11 July 2001

The theme of this year's World Population Day, "Population, Development and the Environment," highlights the fragile relationship between our species and our planet.

The world's population has doubled since 1960 to 6.1 billion, with most of that growth occurring in developing countries. Since 1970, consumption has also doubled, with 86 percent of that consumption coming in the developed world. Humanity must solve a complex equation: we must stabilize our numbers but, equally important, we must stabilize our use of resources and ensure sustainable development for all.

Human beings consume six times as much water as we did 70 years ago, dangerously depleting local aquifers. Deforestation, pollution, and emissions of carbon dioxide have reached unprecedented levels, altering the global climate. Our ecological footprints on the earth are heavier than ever before.

The 1994 International Conference on Population and Development recognized the importance of an integrated approach to reducing poverty, slowing population growth, and protecting the environment. Among the requirements for achieving these related goals are universal access to education and to reproductive health care and family planning. Women make up more than half the world's agricultural workforce and typically manage household resources. Yet they are often denied the right to learn, to own or inherit land, and to control their own fertility. Enhancing women's opportunities enables them to make informed choices about family size—and to break the vicious cycle of poverty and environmental degradation.



**STATEMENT BY E. ANNE PETERSON
Assistant Administrator-designate,
Bureau for Global Health, U.S. Agency
for International Development**

Excerpts from Assistant Administrator Peterson's confirmation testimony before the U.S. Senate Committee on Foreign Relations, Washington, D.C.
9 October 2001

...Under the USAID reorganization, the Global Health Bureau will provide strategic support, leadership, research, evaluation, and technical assistance in the key areas of HIV/AIDS, family planning, child survival, maternal health, and infectious diseases. These endeavors represent tremendous opportunities for helping people around the world as they strive to establish and maintain healthy families, communities, free societies, and thriving democracies. Our assistance is not only an opportunity to aid other countries and build friendships but is also part of our response to the recent tragedy. Countries whose people are healthy can maximize their economic potential, participate meaningfully in events that control their lives and, therefore, are less likely to grow or export terrorism...

Public health works by tracking health trends across populations, then trying to identify, understand, prevent, or mitigate the disability and premature death caused by many diseases. In resource-poor regions, disease devastates and destabilizes individuals, families, communities, and nations. As recently and tragically



demonstrated, free, democratic societies including our own can be in jeopardy...

Throughout my career, there have been several important tenets that have guided my public-health practice. The first is: lasting change occurs best within a cultural context...The most successful health programs in our own country and throughout the world have recognized and planned for this, and the most effective health practitioners know that they must meet and serve others on the grounds of understanding and mutual respect.

Second, lasting improvement means transforming change in people's choices and behaviors. In the United States, major attention is turning to diet, smoking, and exercise as risk factors leading to chronic disease. Internationally, knowledge, opportunity, and the desire to change health choices can similarly transform health, whether the issue is clean water, vaccinating children, or changing risk behavior to avoid HIV/AIDS. Good data and science are the basis for wise decisions, yet neither science nor data alone will transform health...

The third tenet is: good stewardship maximizes impact. There is always more need, especially in the health arena, than we have resources for. There are always competing interests within health and outside of health. Even with America's wealth, there are always more good things to do than we have resources to do. Therefore, it is critical that the health resources we have be used where they will have greatest benefit. The American taxpayer deserves to know what his or her money is being invested in and what return he or she gets on that investment...



**STATEMENT BY BILL FRIST, M.D.
U.S. Senator (R-TN)**

Excerpts from Senator Frist's speech introducing to the U.S. Senate Committee on Foreign Relations S. 1032, "The International Infectious Diseases Control Act," a bill to expand assistance to countries seriously affected by HIV/AIDS, malaria, and tuberculosis.

13 June 2001

Sometimes we feel overwhelmed by the enormity of insolvable problems. We become inured to the tragedy, and look for problems we can more easily

solve. But we must not turn away from the worldwide devastation of HIV/AIDS. Just consider this: right now, 36 million people are infected with HIV/AIDS, a fatal infectious disease, mostly in developing countries. That number is more than the total combined populations of Virginia, Massachusetts, Tennessee, Maryland, Kentucky, Connecticut, New Mexico, Vermont, and Nebraska. As of today, AIDS has orphaned 13 million children, more than the entire population of Illinois.

Compounding this burden, over eight million people acquire tuberculosis each year, and 500 million more get malaria, both diseases that disproportionately affect the poorest countries. Frequently forgotten, malaria still kills a child every 40 seconds. Remember the horrific links between HIV/AIDS, TB, and malaria. If you have AIDS you are much more likely to contract TB, and TB has become the greatest killer of those with AIDS. Similarly, if a person with HIV/AIDS contracts malaria, that person is more likely to die. And infectious diseases such as these cause 25 percent of all the deaths in the world today. But as Americans, we have many reasons to be proud of our response to the challenges...

Every American and others throughout the world should join this fight against the diseases that have too long threatened our children, destroyed families, and undermined economic development of dozens of nations. This is not just government's fight. It is all of our responsibility to conquer HIV/AIDS, malaria, and TB and [to] consign them to the waste-bin of history.



**STATEMENT BY JESSE HELMS
U.S. Senator (R-NC)**

*Excerpts from an op-ed column by Senator Helms that originally appeared in the Washington Post
24 March 2002*

This year more than half a million babies in the developing world will contract from their mothers the virus that causes AIDS, despite the fact that drugs and therapies exist that could virtually eliminate mother-to-child transmission of the killer disease.

It is my intent to offer an amendment with Sen. Bill Frist (R-Tenn.) to the emergency supplemental appropriations bill to add \$500 million—contingent on dollar-for-dollar contributions from the private



sector—to the U.S. Agency for International Development’s programs to fight the HIV-AIDS pandemic. The goal of this new money will be to make treatment available for every HIV-positive pregnant woman. As President Bush would say, we will leave no child behind.

There is no reason why we cannot eliminate, or nearly eliminate, mother-to-child transmission of HIV-AIDS—just as polio was virtually eliminated 40 years ago. Drugs and therapies are already provided to many in Africa and other afflicted areas. Only more resources are needed to expand this most humanitarian of projects.

that I had not done more concerning the world’s AIDS pandemic. Some may say that, despite the urgent humanitarian nature of the AIDS pandemic, this initiative is not consistent with some of my earlier positions. Indeed, I have always been an advocate of a very limited government, particularly as it concerns overseas commitments. Thomas Jefferson once wrote eloquently of a belief to which I still subscribe today: that “our wisdom will grow with our power, and teach us, that the less we use our power the greater it will be.”

The United States has become, economically and militarily, the world’s greatest power. I hope that we

Already in many African nations, an entire generation has been lost to AIDS. Mother-to-child transmission of HIV could eliminate another.

—Jesse Helms

The stakes could not be higher. Already in many African nations, an entire generation has been lost to AIDS. Mother-to-child transmission of HIV could eliminate another. Although reliable numbers are hard to come by, experts believe that more than two million pregnant women in sub-Saharan Africa have HIV. Of these, nearly one-third will pass the virus on to their babies through labor, childbirth, or breast feeding, making mother-to-child transmission of AIDS the number one killer of children under 10 in the world.

There will be obstacles to achieving universal availability of drugs and therapies. Many African nations lack the infrastructure and trained personnel to deliver health care on this scale. Some governments may not be cooperative. My amendment will provide the administration with the flexibility to deliver the necessary assistance while addressing these obstacles. For instance, if the new Global Fund to Fight AIDS, Tuberculosis and Malaria is deemed the most efficient way to deliver assistance, then the president can transfer money there.

The United Nations has already set an ambitious goal of reducing the portion of infants infected with HIV by 20 percent by 2005 and by 50 percent by 2010. We can accelerate these efforts, saving hundreds of thousands of lives, with a larger investment of public and private funds now. Private contributions, either financial or in kind—such as the donations of the drug nevirapine by the German pharmaceutical company Boehringer Ingelheim—are an essential part of a successful anti-AIDS strategy.

In February, I said publicly that I was ashamed

have also become the world’s wisest power, and that our wisdom will show us how to use that power in the most judicious manner possible, as we have a responsibility to those on this earth to exercise great restraint.

But not all laws are of this earth. We also have a higher calling, and in the end our conscience is answerable to God. Perhaps, in my 81st year, I am too mindful of soon meeting Him, but I know that, like the Samaritan traveling from Jerusalem to Jericho, we cannot turn away when we see our fellow man in need.



**STATEMENT BY KOFI ANNAN
Secretary-General of the United Nations**

Excerpts from Secretary-General Annan’s keynote address at the Conrad N. Hilton Humanitarian Prize Luncheon in New York, NY
30 November 2001

You have understood that the biggest enemy of health in the developing world is poverty, and that the struggle for health is part and parcel of the struggle for development. You know that we shall not finally defeat the infectious diseases that plague the developing world until we have also won the battle for basic health care, sanitation, and safe drinking



water—an area where your Foundation has been particularly active.

Improved access to safe drinking water is also one of the goals of the United Nations Millennium Declaration—the landmark document for the 21st century adopted by the world’s leaders at the Millennium Summit last year as a blueprint for achieving freedom from want, freedom from fear, and protection of the environment...

The world after September 11 has made all of us think more deeply about the kind of world we want our children to live in. In the new and uncertain environment into which we have been propelled, we feel, more deeply than ever, the need to hold fast to a vision of peace and security, but also to one of human security. That means redoubling our efforts to turn back the AIDS epidemic.

New figures, released only two days ago, show that the AIDS epidemic has infected more than 40 million people today. Every day, more than 8,000 people die of it. Every hour, almost 600 people become infected. Every minute, a child dies of the virus.

This is not only an unparalleled tragedy in human terms. It is a major obstacle to development.

AIDS is unique in the social and demographic devastation it inflicts. It is uniquely disruptive to economies, because it kills people in the prime of their lives. It kills the better educated and the most productive members of society. The loss of each breadwinner’s income reduces the access of his or her dependants to health care, education, and nutrition—leaving them in turn more vulnerable to infection. This cycle need be repeated only a few times and AIDS destroys an entire community.

Equally threatening to communities is the toll that AIDS takes on women, and thereby on families. In the world as a whole, about half of all new infections are among women. In sub-Saharan Africa, 55 per cent of HIV-positive adults are women—and the proportion among young people is even higher. There are many reasons, ranging from poverty, abuse, and violence to lack of information and higher biological risk of infection in women.

As AIDS forces girls to drop out of school—whether they fall sick themselves, or are forced to take care of an infected relative—they fall deeper into poverty. Their own children in turn are less likely to attend school—and more likely to become infected.

In this and other ways, AIDS inflicts an intolerable burden on children. AIDS has already killed more than four million children. More than 13 million have

been orphaned. And the new statistics show that the number of infants infected annually has risen to more than 700,000.

Yes, ladies and gentlemen, AIDS is indeed a terrible obstacle to development. And for far too long, the world’s response was nowhere near commensurate with the challenge. But now, at last, for much of the international community, the magnitude of the crisis is finally beginning to sink in.

Never before, in the two decades that we have faced this growing catastrophe, has there been such a sense of common resolve and collective responsibility. People are grasping the seriousness of the crisis, but they are also realizing that we are not powerless against this disease. There is hope—and there is reason for hope...



STATEMENT BY PETER PIOT UNAIDS Executive Director

*Excerpts of Dr. Piot’s speech at the United Nations University,
Tokyo, Japan*
2 October 2001

There is a world of difference between the root causes of terrorism and the impact of AIDS on security. But at some deep level, we should be reminded that in many parts of the world, AIDS has caused a normal way of life to be called into question.

As a global issue, therefore, we must pay attention to AIDS as a threat to human security, and redouble our efforts against the epidemic and its impact.

Since the creation of UNAIDS six years ago, we have been positioning AIDS not only as a global epidemic of an infectious disease, but as a development issue as well as an issue of human security. The latter concept was formally recognized in the UN Security Council’s first debate on AIDS, in January 2000. This debate also marked a shift in the concept of “security”—from the absence of armed conflict to a wider definition of human security, encompassing the fundamental conditions that are needed for people to live safe, secure, healthy, and productive lives.

At the same time as the Security Council’s debate, the CIA produced a report on “The Global Infectious Disease Threat and Its Implications for the United States.” It argued that AIDS will pose a rising global

threat and will complicate U.S. and global security over the next 20 years. The report also claimed [that] “[t]he relationship between disease and political instability is indirect but real...infant mortality—a good indicator of the overall quality of life—correlates strongly with political instability.”

In January [2000], the idea that AIDS is a security issue was new. Now, the idea is widely accepted.

“war-footing,” we will continue to lose ground against the epidemic. Asia is the crucial new battleground—actions taken today in Asia will determine the global shape of the epidemic in a decade’s time.

UNDP—one of the eight cosponsoring organizations of UNAIDS—did groundbreaking work on the notion of human security in the first half of the 1990s. They proposed eight components of human

The impact of AIDS is a major issue for national security and many armed forces worldwide, for all peacekeeping and humanitarian operations, and for wider notions of economic security, food security, policing and social stability.

—Peter Piot

The impact of AIDS is a major issue for national security and many armed forces worldwide, for all peacekeeping and humanitarian operations, and for wider notions of economic security, food security, policing, and social stability.

Of course, the Japanese government has been leading the global movement to pay more attention to the notion of human security. They draw the distinction between freedom from fear—the traditional purview of security—and freedom from want, insisting that both aspects are equally a part of the wider notion of human security.

Today, I want to look in more detail at all the components of the AIDS and security equation, both as it has impact on national security as narrowly defined and in terms of the wider “human security” concept.

The global AIDS epidemic is one of the central security issues for the 21st century.

AIDS and global insecurity coexist in a vicious cycle. Civil and international conflict help spread HIV as populations are destabilized and armies move across new territories. And AIDS contributes to national and international insecurity, from the high levels of HIV infection experienced among military and peacekeeping personnel to the instability of societies whose future has been thrown into doubt.

Because it takes place over a time frame of years and decades, the world has failed to realize that AIDS is a massive attack on global human security. But this is not a security threat we are powerless to prevent. The epidemic is not inevitable: we know how to reduce the spread of HIV and alleviate the epidemic’s impact.

Unless the global response to AIDS steps onto a

security: economic, food, health, environmental, personal, community, and political. With the possible exception of environmental security, all these aspects of security are deeply affected by the HIV/AIDS epidemic.

Economic Security

The impact of AIDS on rates of economic growth in developing countries is marked. There is a direct relationship between the extent of HIV prevalence and the severity of negative growth in GDP.

But measures of per capita GDP in fact underestimate the human impact of AIDS, as AIDS kills people as well as economic activity. The cumulative impact of HIV on the total size of economies is thus even greater. By the beginning of the next decade, South Africa, which represents 40 percent of the region’s economic output, is facing a real gross domestic product 17 percent lower than it would have been without AIDS.

One of the long-term impacts of AIDS [is] on a nation’s human resources. In many of the worst affected countries, AIDS has substantially weakened national elites: the business people, managers, politicians, and community leaders who were poised to lead their nation’s future into the 21st century.

In settings where subsistence agriculture predominates, measured economic productivity only scratches the surface of the total impact of HIV on livelihoods. For example, AIDS hits the long-term capacity for agricultural production, as livestock is often sold to pay funeral expenses or orphaned children lack the skills to look after livestock in their care.

The immediate impact of AIDS is felt most acutely in households where one or more members are HIV-



infected. In South Africa, households will on average have 13 percent less to spend per person by 2010 than they would if there were no HIV epidemic. In Cote d'Ivoire, the household impact of HIV/AIDS has been shown not only to reverse the capacity to accumulate savings, but also to reduce household consumption. AIDS not only affects income, with lower earning capacity and productivity, it also generates greater medical, funeral, and legal costs and has long-term impact on the capacity of households to stay together. This is most manifest in the cumulative number of children orphaned by AIDS, which now totals nearly 14 million.

Food Security

Emergencies, including food emergencies, are a major point of vulnerability to AIDS. When populations are on the move and the basic security of life is threatened, HIV risks rise. Women in particular may often find themselves in circumstances where they are subject to sexual violence or forced to trade sex for food. The challenge therefore is to make sure that emergencies are the focus for interventions to reduce HIV risks.

The second related challenge is how to break the vicious cycle between food insecurity and HIV vulnerability. As well as dealing with the immediate impacts of AIDS, we must continue to pay attention to sustainability and overcoming long-term vulnerability. Are less labor-intensive crops available that are still good food sources? How do we keep children at school against the pressure for them to replace the labor of sick or dying parents?

Health Security

More than 20 million people have died worldwide since the beginning of the epidemic, three quarters of them in sub-Saharan Africa. Globally, HIV/AIDS is now well established in the list of the top five leading causes of death...In sub-Saharan Africa, AIDS is responsible for one out of five deaths, twice as many as for the second leading cause of death.

The demographic impact of AIDS is unique for two reasons. First, unlike most other causes of death, AIDS deaths will continue to rise in the coming years as a result of infections that have already occurred. Second, HIV infection is highest in young women and men in their most productive years, including in the best educated and skilled sectors of populations as well as women of child bearing age (together with attendant transmission to children). In the worst

affected countries, in twenty years time the standard population pyramid will have turned upside down, with more adults in their 60s and 70s than those in their 40s and 50s.

Current prevalence data do not convey the full picture facing individuals in high HIV prevalence populations. Because prevalence is a measure of current infection levels amongst living individuals, it does not capture infections amongst those who have already died or who have not yet become infected but will be in the future. On the basis of current incidence and mortality patterns, it is possible to estimate the lifetime risks of contracting HIV and dying from AIDS faced by young people embarking on the sexually active phase of their lives. In a country such as South Africa, or Zambia, where prevalence in the year 2000 has reached about 20 percent, a 15-year old teenager faces a lifetime risk of HIV infection and of death from AIDS of over 50 percent unless the current rate of new infections drops dramatically.

Personal Security

The impact of the AIDS epidemic on personal security is both direct and indirect.

Directly, people who are living with HIV or affected by HIV have often been the targets of physical violence, as well as suffering the psychological violence of stigma and discrimination.

As well as its direct effects, the AIDS epidemic has an indirect impact on personal security by its contribution to social instability. In particular, because HIV is transmitted mainly sexually, it is most prevalent among young adults. Therefore when AIDS starts causing illness, it is often people with young families who find themselves dealing with the additional burden of AIDS.

The impact of a generation of young people who have not had the support they need from their parents, and many of whom are themselves HIV-infected, is having serious effects on social cohesion. These are the same age groups that have historically been most vulnerable to involvement with crime.

The results are already being felt. The issue of crime, street violence, and instability as a result of the AIDS epidemic has already emerged as a serious concern in a number of countries, particularly in sub-Saharan Africa.

One group of young people most affected by the HIV/AIDS epidemic is the children left behind when their parents die. Already, 13 million children have been orphaned by AIDS, losing either their mother

or both parents before the age of 15. AIDS has had a dramatic affect on the global number of orphans and in particular in Africa, which accounts for 90 percent of the total number of AIDS orphans. In developing countries before AIDS, around two percent of children were orphaned; but now in many countries, 10 percent or more of children are orphans.

The war in Sierra Leone left 12,000 children without families. AIDS in Sierra Leone has already orphaned five times that number.

Community Security

AIDS affects the very fabric of society. Community structures break down. Coping capacity reduces. Policing capacity reduces. Communal conflict increases. Public administration, governance, and social services become unsustainable.

In many of the worst affected countries, civil services are having to recruit two or three people to fill one job, to cover inevitable absences for sickness, death, and funerals—and where there is not the money or the people available, essential public service tasks are left undone. Police services are heavily affected in Namibia: the police [there] earlier this year stated that AIDS has become a heavy burden, and in Kenya it accounts for 75 percent of all deaths in the force over the past two years.

Political Security

National security is directly threatened by social and economic instability, lack of predictability, and weakened governance as a result of AIDS.

There are five key ways in which AIDS has a negative impact on national political security.

First, AIDS exacerbates poverty. It forces affected households to use all their economic resources on dealing with illness and death. It causes direct health costs, and detracts from productivity on a massive scale.

Second, AIDS diverts scarce resources, especially in many of the world's least-resources countries, who can ill-afford any additional burdens.

Third, AIDS kills elites, including leadership elites. These are the people who are needed to secure the future—just when they are needed most to help nations cope with the impact of AIDS, they themselves are suffering directly from the epidemic, and capacity spirals downwards.

Fourth, in urban areas in particular where there is an expectation that health services will be accessible, a great demand is generated for HIV treatment. Middle- and working-class pressures on private and

public health services become considerable, and if these demands cannot be met, [they add] to political instability and tension—just witness the destabilizing political effects that claims of “miracle cures” for AIDS have had in countries as diverse as Nigeria and many other African countries, India, and Thailand.

Fifth, there is pressure on international trade regulation and intellectual property protection. One of the crucial issues facing the future of international trade rounds is whether there the twin demands of global public health and intellectual property regulation can be satisfactorily reconciled in a way that convincingly protects the sovereign right to make public-health protection paramount but at the same time ensures that there are incentives to develop innovative pharmaceuticals and make them accessible where they are needed most.

Adding to these broad effects on political instability, AIDS has a direct effect on military capacity as an issue of national security.

Military forces suffer higher than average levels of HIV infection. The US Armed Forces Medical Intelligence Center in 1999 estimated the level of HIV infections among armed forces in sub-Saharan Africa ranging from 10 percent in Eritrea, 10 to 20 percent in Nigeria, to 40 to 60 percent in Angola and the Democratic Republic of Congo.

Conflict exacerbates the spread of HIV, and in turn, in a vicious cycle, the weakened defenses of nations contribute to international instability.

It has even been suggested by some security analysts that the international capacity for peacekeeping is being weakened because some African countries that have traditionally supported peacekeeping forces have found that AIDS has put so much pressure on their capacity they may no longer be able to fulfil this role.

What To Do?

Let me nominate seven features that are essential to an effective global effort to turn tide on HIV.

First, there is a need to build multi-sectoral responses. Just as we have seen that the impact of the HIV epidemic crossed every part of economic and social affairs, so too the response must involve every part of society in a full-scale mobilization against AIDS.

Second, leadership: the leadership to make AIDS a national priority, for prime ministers and presidents to step in and say that AIDS is not just a health issue—it is an issue fundamental to development, to progress, and to human security, the leadership to tackle stigma



and the leadership to marshal the necessary financial resources for the fight against AIDS—the seven to 10 billion dollars annually that is needed for an effective response in developing countries.

Third, the need to find ways of strengthening social inclusion. HIV feeds on marginalization, and so responses that build social inclusion are necessary—from protections against discrimination to developing prevention and care initiatives that fully involve their target groups in program planning and delivery.

Fourth, building stronger coping mechanisms at [the] community level. It is at [the] community level that the battle against AIDS will ultimately be won—and communities need to feel they are both empowered and enabled to cope with and combat the epidemic. Among other things, that means ensuring that there are efficient mechanisms for decentralization, so that national responses can be truly effective through every part of a nation.

Fifth, we need to provide international assistance and solidarity. Through the lens of AIDS as a human security issue, we can see ever more clearly our global interconnectedness. AIDS is truly a global problem that calls out for global responses including resources—for example, the new Global AIDS and Health Fund that will be operational by the end of this year and already has one and a half billion dollars pledged to it.

Sixth, we need to address the long-term need to replace depleted human resources. This agenda is barely beginning, but is vital to the long-term response to AIDS. Only when we succeed in restoring and renewing the human capacities that have been battered by the epidemic can we be confident the most affected countries will be able to secure their futures.

And last, building a partnership in the response. The response to AIDS is beyond any one nation or any one agency—it needs partnership between regions, involving public and private sectors, governments, civil society, and business. UNAIDS itself is a unique partnership in the United Nations system, bringing together the joint efforts of eight cosponsoring organizations, focused on the one set of objectives.

Conclusion

AIDS has called into question the fundamental continuity of humanity—the passing from one generation to the next of basic values, of a legacy of happiness and prosperity, of memories and hopes.

Being able to make preparations for future generations is necessary to any notion of human

security. Without the security that allows people to plan for the legacy they will leave to their children and to their community, the very basis of hope in the future is called into question. Security means nothing if there is no future.



STATEMENT BY SAM NUJOMA President of the Republic of Namibia

Excerpts of Dr. Nujoma's speech to the Southern African Development Community (SADC) Summit, Blantyre, Malawi
11 August 2001

Our resolve to accelerate the implementation of the SADC socio-economic agenda and the consolidation of the economies of the region has been partially hampered by natural calamities [that] befell our region. We are all well aware that some member states of SADC did experience devastating floods, which have destroyed life, properties, and physical socio-economic infrastructure such as roads, schools, hospitals, housing, and shelters. There is no doubt that the efforts by those countries to address the problems of economic growth, poverty alleviation, and development in general have been negatively affected, and this in turn has impacted on the region as a whole.

As we are meeting here today, [the] HIV/AIDS pandemic continues to pose major threats to the development of our region. It is now estimated that about ten million of our citizens are living with HIV/AIDS. This accounts for about five percent of the total population of our region. The most unfortunate situation is that the majority of those affected are the young and the most economically productive age group of our population. This situation will surely impact negatively on the economic growth and development efforts we embark upon as a region.

Equally, the region has to deal with thousands of orphans and those children born with this deadly disease. The reality today is that we have in the region a traumatic situation, where either grandparents or children head households. Similarly, our governments are required to allocate huge and increasing resources to deal with this dilemma, thereby diverting those much-needed resources from the productive sectors that are essential to enhance economic growth and



development.

We are therefore called upon to urgently intensify and strengthen collective efforts as a region in minimizing the infection rates through an HIV/AIDS campaign as well as facilitating access to affordable medicine, treatment, and care for those already infected...

Gender equality is a matter of fundamental human rights, a pre-condition for democracy as well as an economic imperative.

**STATEMENT BY PAULA J. DOBRIANSKY
Under Secretary for Global Affairs,
U.S. Department of State**

*Excerpts of Secretary Dobriansky's remarks at the conference "Curtailling the HIV Epidemic: The Role of Prevention," hosted by The Henry J. Kaiser Foundation, Ford Foundation Auditorium, New York City
22 June 2001*

**Gender equality is a matter of fundamental human rights, a pre-condition for democracy as well as an economic imperative.
—Sam Nujoma**

We in SADC reflected this reality in the Declaration on Gender and Development and its 1998 Addendum on the Prevention and Eradication of Violence against Women and Children. It is here in Malawi, in 1997, where we signed the Declaration on Gender and Development and committed ourselves to...ensuring the equal representation of women and men in decision-making positions. It is here where we set ourselves a minimum target of at least 30 percent women...in our decision-making bodies by the year 2005.

The region is still haunted by the legacy of colonial occupation and foreign domination as manifested by existing inequalities in income distribution and access to means of production and livelihood. The unresolved land issue is one of those stark realities facing some of our member states. The prevailing situation is untenable and needs to be redressed in order to allow the majority of our people to participate in productive activities and to be self-reliant...

Recently, our region has witnessed a number of important developments. Most importantly, it has recorded positive economic performance. Its average economic growth during the year 2000 stood at 3.4 percent, which is an improvement in the 1999 growth rate of 1.8 percent. While this figure is a notable improvement on the figure of 1999, it is still significantly below the internationally projected minimum economic growth rate of six percent required to achieve sustainable economic development and substantial poverty reduction.

Secretary Powell summed up the challenge we are confronting during his recent visit to Africa: "There is no war that is more serious, there is no war that is causing more death and destruction, there is no war on the face of the earth right now that is more serious, that is more grave, than the war we see...in sub-Saharan Africa against HIV/AIDS."

The human toll has been enormous. A recent Brookings Institution study described the HIV/AIDS threat this way: "More people have died from HIV/AIDS over the last twenty years than from any other disease in human history—including the global influenza pandemic of 1918-19 and the Bubonic Plague."

Another report released this week by the International Crisis Group says that HIV/AIDS is "taking a toll as profound as any military confrontation around the globe, and it is a security threat to countries it assaults as well as their neighbors, partners, and allies."

The threat posed by the disease is all-encompassing. Last year, in its report *Global Trends 2015*, the National Intelligence Council stated: "AIDS, other diseases, and health problems will hurt prospects for transition to democratic regimes as they undermine civil society, hamper the evolution of economic institutions, and intensify the struggle for power and resources."

Clearly, HIV/AIDS is a global problem, and the United States is by no means immune from its ravages. The recent increase in infections in the [United States] after a period in which the rate had slowed is cause for concern in and of itself. Moreover, Americans—whether tourists traveling overseas, military and diplomatic personnel stationed abroad, or even those who never leave the territory of the [United States]—



must realize that the spread of HIV/AIDS knows no boundaries.

From both a security as well as a humanitarian standpoint, we cannot sit idly by. HIV/AIDS is wreaking havoc on the populations of many countries hit hard by its spread. Most people who become infected are young and entering the most productive stage of their lives. The cycle of sickness and death is already shredding the fabric of society in sub-Saharan Africa, with other regions soon to follow. It has lowered life expectancy in many countries, stunting social and economic development and overwhelming already struggling health care systems.

Similarly, the virus is taking a toll on the armed forces of many nations. Young, mobile soldiers are especially prone to being exposed to—and transmitting—HIV/AIDS. This will have a major impact not just within a nation's military but on

countries' ability to meet international peacekeeping responsibilities.

HIV/AIDS is a threat to security and global stability, plain and simple. Together with malaria and tuberculosis, HIV/AIDS has caused 25 percent of deaths worldwide. Twenty-two million people have died due to AIDS since its onset two decades ago. Another 36 million people worldwide are currently living with HIV/AIDS; more than five million of those were infected last year alone. In sub-Saharan Africa, the part of the world most devastated by the disease and home to 70 percent of the 36 million HIV/AIDS cases, AIDS is now the leading cause of death. But the problem is not unique to Africa, of course. India, Russia, and the Caribbean in particular are among many countries and regions struggling with the disease...

HUNGER AND FOOD SECURITY

STATEMENT BY ANDREW S. NATSIOS Administrator, U.S. Agency for International Development

*Excerpts from an address by Administrator Natsios at the "Partnership to Cut Hunger in Africa" conference, U.S. Department of State, Washington, DC
27 June 2001*

The bottom line is, we have been losing the war against poverty and hunger in sub-Saharan Africa.

Chronic hunger is still a worldwide problem. But in other regions, there is progress in food security. The latest estimates by the U.S. Department of Agriculture are that, outside Africa, the number of chronically hungry people will drop from 465 million to 255 million by 2010.

But in Africa, those same estimates indicate that the number of hungry in Africa will increase by about 10 million a year over the next decade. By 2010, 435 million Africans could face severe food insecurity.

There is no one reason why Africa faces a number of serious and interrelated difficulties. Natural disasters from drought to flooding have destroyed agriculture and infrastructure. Conflicts in many parts of Africa have cost thousands of lives and disrupted food production and access. Too few Africans have access to real economic opportunity.

On top of this, Africa faces the incredible threat of AIDS. The threat of AIDS to food security is severe: in

the hardest-hit African countries, there are estimates that these countries will lose between 13 percent and 23 percent of their labor forces over the next 20 years. The result will be severe farm labor shortages—at a time when we need to increase food production in Africa.

Unfortunately, as Africa has struggled, international support for agricultural development has faded. Since the mid-1980s, funding from international donors for agricultural research and development has declined by 80 percent.

In the mid-1980s, USAID put more than a billion dollars a year into agriculture activities—by 1997, that figure had dropped to \$214 million. We've managed to increase our support for agriculture to more than \$300 million this year—but still a far cry from the levels of past decades. That cut was due partly to severe reductions in USAID's overall budget—and also to increasing U.S. focus on other priorities like promoting democracy, protecting the environment, [and] increasing health and child survival efforts.

Many African governments also decreased their spending for agriculture and rural infrastructure. In part, these cuts reflected declining donor support, but they also reflected responses to failed policies. Price support programs turned out to provide disincentives rather than incentives to farmers. Fertilizer support programs were subject to inefficiencies and corruption.

Obviously the challenges are incredible. I believe that together we can reverse the tide. There is no magic

bullet—the causes of food insecurity are complex, and we must respond on a number of fronts. But we are not starting from scratch—we have decades of experience to draw upon in the United States and in Africa. We know what works. The key is to build partnerships that help us coordinate our efforts, maximize our resources, and ultimately to give more people access to adequate supplies of food.

We in USAID intend to fight for a new U.S. government focus to reduce poverty and hunger in Africa. We will shortly create a new central bureau of Economic Growth, Trade, and Agriculture to focus largely on agriculture. We have several specific goals for our USAID approach to this challenge:

1. Improve nutrition and diet of poor families;
2. Eliminate famine;
3. Dramatically cut absolute poverty;
4. Reduce income disparities between rural and urban families.

I believe that to accomplish these goals, we must agree on some basic principles upon which to base our strategies:

The first principle is: learn from our past mistakes—and our successes. I already mentioned the fertilizer and price support programs—they did not work once; let’s make sure they don’t have a chance to not work again...

The second principle is: get the economic policy framework right. We know that science-based, market-based economic policies give farmers and processors incentives to produce. Case in point: Malian farmers have increased the productivity of rice over the last 15 years to levels that were unthinkable in 1980. USAID and other donors supported policy and institutional reforms in the mid-1980s that increased incentives to invest in more intensive production and processing. Farmers were able to use high-yielding rice varieties developed by the International Rice Research Institute. Land tenure reforms led to improved management of both agricultural and natural resources. The result: rice production in the inner delta region of Mali doubled between 1993 and 2000.

The third principle is: make use of the latest agricultural research. We know that agricultural technology can increase productivity—if we ensure that rural farmers have access to appropriate technology...

The fourth principle is: focus on scale. We won’t succeed by trying to make specific communities, even

specific countries, food secure. The fact is famine or severe hunger in one country causes displacement and economic effects that hurt surrounding nations. The Sahel model I spoke of earlier shows that regional, coordinated approaches work to cut hunger, and I intend to focus on such large-scale initiatives.

So far, I’ve talked mostly about agriculture. But as you all know, to solve hunger in Africa, we must work beyond the agriculture sector to address poverty and hunger in Africa.

Together, we must fight the HIV/AIDS pandemic. The United States is the world leader in responding to HIV/AIDS. As Secretary Powell said in New York this week, President Bush has put the full force of his cabinet behind the U.S. response to this crisis. Only an integrated approach makes sense, an approach that emphasizes prevention and public education. But it also must include treatment, care for orphans, measures to stop mother-to-child transmission, affordable drugs, delivery systems and infrastructure, medical training. And of course, it must include research into vaccines and a cure...

Together, we must reduce conflict. We cannot improve food security in Africa without addressing current conflicts and preventing future ones. One civil war in one year can do as much damage as an earthquake. Infrastructure is destroyed, hospitals and schools are demolished, and educated people—those who are most mobile—flee and don’t return. To address the increase in conflict and tension, USAID will undertake a major new conflict prevention, management, and resolution initiative.

Together, we must accelerate economic growth. Reducing poverty and accelerating economic growth are essential to African stability and access to food...



**STATEMENT BY JACQUES DIOUF
Director-General, Food and Agricultural
Organization of the United Nations**

*Excerpts from Mr. Diouf’s keynote address on “Perspectives on Hunger, Poverty and Agriculture in Africa” at the National Gathering on Africa, Washington, DC
23 June 2001*

Unless urgent and substantial effort is made, FAO estimates that the percentage of the



undernourished population in sub-Saharan Africa will fall to 22 percent, but that the absolute number will increase from 180 million in 1995/97 to 184 million in 2015.

War, civil conflict, and disease have taken a particularly heavy toll on the region. Sixty-one percent of the African population has been affected by war and civil conflict, while the HIV/AIDS pandemic has reduced life expectancy by as much as 20 years in the countries affected the most, and is expected to reduce Africa's economic growth by one-fourth over the next 20 years.

Agriculture continues to dominate the economies and societies of most African countries and is an important vehicle for economic growth. In 1998 for the continent as a whole, the agricultural sector accounted for nearly 60 percent of the total labor force, 20 percent of total merchandise exports, and 17 percent of GDP. For sub-Saharan Africa, these figures are even higher, amounting to two-thirds of the labor force, one-third of exports, and nearly one-third of GDP. Agriculture is the main source of raw material for industry and provides a high proportion of manufacturing value-added in most African countries. Moreover, rural households derive almost 40 percent of their income from rural off-farm activities linked one way or the other to primary agriculture.

Poverty, Food Insecurity, and Agriculture

It is well known that poverty is at the root of hunger and undernourishment. However, what often escapes our attention is that hunger and malnutrition are also major causes of poverty. Hunger reduces the productivity of what is often the only asset that the extremely poor possess: their labor. Thus undernourishment, through productivity losses and nutrition-related health problems, is an economic handicap. The undernourished are often trapped in a vicious circle of undernourishment, low productivity, and hence continuous poverty. It follows that the reduction of food insecurity must be at the center of national and international poverty reduction programs.

In Africa, although concrete programs have to be adapted to national and local conditions, the prevalence of poverty and food insecurity in rural areas points to a common feature: anti-poverty and food security policies should emphasize rural livelihoods and also agricultural and other related rural activities on which the poor depend for their survival. Hunger and poverty are, and will remain for several decades

to come, rural phenomena in Africa, closely linked [not only] to agricultural production and productivity but also to rural employment and income generation which would allow sustainable and sustained socio-economic development.

In Africa, therefore, the battle against poverty over the next few decades will be won or lost in rural areas.

Coping with Disasters and Diseases

Natural and man-made disasters have increasingly become a serious threat to economic and social progress in developing countries, especially in Africa. The number of people facing serious food shortages in sub-Saharan Africa as a result of these disasters is currently estimated at over 28 million in 21 countries.

As a consequence, a principal challenge for African countries is to improve their preparedness for and prevention of the frequent disasters and diseases [that] are so detrimental to their food security and agricultural development.

FAO's Global Information and Early Warning System (GIEWS) identifies potential crisis situations arising from natural and man-made disasters and monitors ongoing agricultural production using a combination of high-tech satellite monitoring systems along with traditional on-the-ground observations. This objective information on the food availability situation allows both private voluntary organizations and bilateral donors to react more quickly in crisis situations in order to minimize human suffering and save lives.

The Health Crisis, in Particular the Spread of HIV/AIDS

Many of the problems of health that afflict peoples in Africa stem from hunger and malnutrition. It is only healthy, well-nourished children who can grow and develop normally and can learn and develop their mental capacities to the fullest. Good nutrition needs to be seen as playing an important role in preventing and mitigating the impact of infections.

The estimated annual number of new HIV infections in sub-Saharan Africa has been rising rapidly and reached four million persons in 1999. The most affected countries rely heavily on agriculture, and HIV/AIDS is expected to take a sizeable toll on the agricultural labor force, with labor force losses ranging from 13 to 26 percent in the nine most affected countries—posing a severe threat to food security.



Official Statements

Globalization, Trade, and Regional Integration: Opportunities and Challenges

African export patterns continue to be characterized by a small number of primary (often plantation-based) commodities and dependency on preferential access to a few developed-country markets.

An important reason for this is the supply-side constraints in the countries themselves, but others [factors] have their origins elsewhere.

African countries urgently need improved market access for their agricultural products, particularly for higher-value processed products; market-based incentives to increase investment in their own agriculture; and substantial infusions of technical and financial assistance in overcoming domestic supply constraints.

Resource Mobilization for Agricultural Development

In order to achieve a more rapid reduction of poverty and food insecurity in Africa, a much greater

share of resources, both domestic and international, must be devoted to agricultural and rural development than is presently the case.

A large share of resources for investment in primary agriculture and the rural sector will have to come from the private sector, first and foremost the farmers themselves. But the public sector has a large role to play in this effort: in particular, in technology generation and diffusion, basic infrastructure for water control, roads and market infrastructure, dissemination of information, and institution-building.

The spectacular increase in foreign direct investment flowing to developing countries in the last decade has largely bypassed Africa, and it has hardly touched its agricultural sector. This is distressing but not surprising. For attracting foreign private capital, the necessary investments in infrastructure (communications and information, irrigation and drainage, health and education) need to be put in place by governments with the assistance of donors. Public capital is essential for stimulating private initiative...

W

THE ENVIRONMENTAL CHANGE AND SECURITY PROJECT HAS A NEW WEB SITE!

Read out latest meeting summaries, view our publications,
browse our bibliographies, or join our forum at
<http://ecsp.si.edu>

Or email us at ecspwwic@wwic.si.edu



MEETING SUMMARIES

25 September 2001

BEYOND SUSTAINABLE AGRICULTURE: INCREASING FOOD PRODUCTION AND PROTECTING ECOLOGICAL DIVERSITY

Featuring **Jeffrey A. McNeely**, Chief Scientist, IUCN-The World Conservation Union; **Sara J. Scherr**, Fellow, Forest Trends and Professor, University of Maryland College Park; **Richard E. Rice**, Chief Economist, Center for Applied Biodiversity Science, Conservation International; and **Adela Backiel**, Director, Sustainable Development, U.S. Department of Agriculture

By **Robert Lalasz**

Eight hundred million people who live within and around the world's richest biodiversity areas (known as biodiversity "hotspots") suffer from massive poverty and food insecurity. **Jeffrey McNeely** and **Sara Scherr** discussed their preliminary research findings (available in the IUCN and Future Harvest report "Common Ground, Common Future") on strategies for increasing agricultural yield in these fragile regions while protecting wild biodiversity. The meeting was the first in a series of ECSP meetings focusing on issues pertinent to the Johannesburg 2002 Summit on Sustainable Development. **Richard Rice** and **Adela Backiel** served as discussants.



Jeffrey A. McNeely

- Increase or sustain yields on existing farms to reduce the destruction of habitat caused by expanding agricultural lands;
- Establish corridors of natural vegetation linking protected biodiverse areas;
- Establish more protected areas around farms that benefit farmers and local people (such as windbreaks or no-take reserves that increase fish yields elsewhere);
- Modify the mix of spacing between crops and non-crops to mimic natural habitat;
- Reduce agricultural pollution that is harmful to wildlife through organic farming and other means (such as vegetative filters along waterways);
- Improve the ways farmers manage soil and water (for example, by switching back to leaving fields fallow) to create environments that are more supportive of wildlife.

Lessons From the Field(s)

McNeely and Scherr located approximately 35 situations within the biodiversity hotspots in which agricultural productivity and biodiversity have remained steady or even increased. They then identified six common elements from these case studies that, under the umbrella term *ecoagriculture*, could serve as universal strategies for farming that is both productive and sustainable:

In order to implement these strategies, McNeely and Scherr recommended that: (1) conservation scientists and farmers should work together to develop more viable *ecoagriculture* methods; (2) these concepts

and methods should be disseminated through farmer organizations/communities; and (3) ecoagriculture should be encouraged through public policy (such as a reevaluation of pricing, subsidies, and regulations that discourage its methods). McNeely added that biodiversity protection has too often been left to the environment ministries of the world's governments and not integrated into agricultural finance or military planning.

Ecoagriculture Versus Parks?

Scherr stressed that preserving isolated intact ecosystems was an incomplete strategy for biodiversity. "Many protected areas are islands in a sea of agriculture," said Scherr, noting that agricultural activities have consumed at least 30 percent of the land in 45 percent of the world's protected biodiverse areas. "The viability of protected areas is very much affected by the matrix of use around them," she added. While pure conservation efforts continue to have their place, Scherr argued that ecoagriculture is a much more sophisticated strategy than mutually-exclusive approaches towards conservation and agriculture.

But while discussant Richard Rice called ecoagriculture "a useful concept," he noted what he considered limitations to its widespread adoption. While Rice said that a role clearly exists for targeted ecoagriculture interventions, he added (a) such interventions would only remain viable under favorable market conditions, and that (b) undisturbed ecosystems are still better than the patchwork of habitats McNeely and Scherr were proposing. He also decried the widespread dismissal of parks as a primary conservation tool, citing a Conservation International (CI) study that showed the effectiveness of parks in preventing loss of biodiversity at a low financial cost. Eighty-three percent of the parks around the world studied by CI have as much natural vegetative cover as they had over twenty years ago. Forty percent had more. "Parks are not perfect," said Rice, "but they are effective despite their underfunding"—which he estimated at \$1 per hectare per year.

Rice also noted that there are many situations for which neither parks nor ecoagriculture is a viable solution. For these, he advocated establishing *conservation concessions*, in which area resource owners are compensated for a region's conservation. "With conservation concessions," Rice said, "conservation becomes the market product rather than development." He said that this approach is also effective in retiring the cultivated areas of "sunset" (i.e., declining)

industries such as cocoa or coffee.

Rice concluded by arguing that ecoagriculture is a solution to agricultural issues, not to conservation. "Ecoagriculture lacks financial incentives, has a reliance on the stimulus of market forces, and is dependent on development for conservation." He felt that, considering limited resources for biodiversity programming, conservation funding should be used for proven conservation strategies instead of agricultural programs. "It's way too early to give up on parks," Rice said.

Entrées to Policymaking

Discussant Adela Backiel disagreed with Rice, calling ecoagriculture an important addition to the portfolio of conservation and sustainable agriculture options. "The report comes at a critical time," said Backiel. "We need to understand that biotechnology isn't the only solution to the problem of sustainable agriculture, and the report contributes to this reframing."

Backiel said that *Common Ground, Common Future* should address not only farmers but other key target audiences such as foresters, landowners, and state and local government officials. She also urged McNeely and Scherr to come together with policymakers to establish concrete policy recommendations. The upcoming World Food Summit in Rome, she said, provides an entrée for these discussions that contrasts with the sectoral categorizing of planning for Johannesburg 2002. Backiel went on to say that Johannesburg will deal with food security, if only as a theme that cuts across issues such as poverty eradication, energy, and freshwater resources. 

For more on this meeting, visit <http://ecsp.si.edu/archive/sustainag.htm>

Related Web Links

"Common Ground, Common Future"
http://www.futureharvest.org/pdf/biodiversity_report.pdf

Jeffrey McNeely
<http://iucn.org/2000/about/content/people/jmcneely.html>

Sara Scherr
<http://www.ciat.cgiar.org/poverty/scherr1e.htm>



2 October 2001

DEBATING THE REAL STATE OF THE WORLD: ARE DIRE ENVIRONMENTAL CLAIMS BACKED BY SOUND EVIDENCE?

Featuring **Bjørn Lomborg**, Associate Professor, University of Aarhus, Denmark; **David B. Sandalow**, Executive Vice-President, World Wildlife Fund (discussant); and **D. James Baker**, former Administrator, U.S. National Oceanic and Atmospheric Administration (discussant)

By Robert Lalasz

Could the world's environment actually be getting not worse but *better*? Bjørn Lomborg thinks so. His new book, *The Skeptical Environmentalist: Measuring the Real State of the World*, lit a firestorm of controversy when it was published last year in Europe. Lomborg visited the Wilson Center to present and defend the book (which has just been published in the United States). Discussants David Sandalow and James Baker criticized *The Skeptical Environmentalist* as largely sloppy, misleading, and full of fatal misinterpretations.

Lomborg, a former member of Greenpeace, said that *The Skeptical Environmentalist* came out of his effort to debunk the work of the late economist Julian Simon, who argued that most environmentalist concerns—from global warming to rapid population growth to scarcity of resources—are unsupported by scientific evidence. But to Lomborg's surprise, the results of his research and statistical analysis ratified most of Simon's positions. *The Skeptical Environmentalist* instead asserts that it is environmental advocacy groups who distort the state of the earth's health as a fund-raising technique, through what Lomborg terms "The Litany" of dire forecasts.

"Is This A Good Way To Spend Our Money?"

Lomborg argued that evidence clearly shows an

environmental apocalypse is not at hand. Hunger, natural resource abundance, species extinction, life expectancy, pollution—by United Nations and other independent measurements, Lomborg said, all these categories have vastly improved and will continue to improve, both for the industrialized and for the developing world. While there are still environmental problems and resource imbalances, Lomborg said, these are fewer and smaller than ever before; and policymakers should be rationally prioritizing societal needs instead of acting out of desperation. "We can only use our money once," said Lomborg, "so we should make sure we spend it in the best possible way. Are we making the right decisions now, or are we just handing over our wallets?"

Lomborg then sketched out a few of his specific findings. The world's percentage of starving people has dropped from 35 percent in 1967 to 19 percent today,

and is projected to drop to 6 percent by 2030. Crucial raw commodities such as oil have been decreasing in price because we are getting better at finding and exploiting them. Air pollution, by far the most injurious kind of environmental contaminant, is at its lowest point since 1585 in London. (Lomborg argued that, while air pollution is getting worse in the developing world, it will get better as developing countries follow the economic growth patterns of the



Bjørn Lomborg





ECSP Meetings

developed world.)

The Skeptical Environmentalist particularly targets the Kyoto Protocol for criticism. While global warming certainly is occurring, Lomborg said, Kyoto's measures would postpone its effects only slightly, and at a cost of \$150 billion to \$350 billion a year. "For the cost of Kyoto for one year," said Lomborg, "we could be giving clean water and good sanitation to every single human being on the planet"—which, he maintained, would

increase in rainfall, spread of disease, or unemployment," said Sandalow, "those would be considered pretty big problems."

Sandalow also called Kyoto a "paradigmatic case of decision-making under uncertainty," and accused Lomborg of emphasizing the uncertainties about climate change over the certainties. "Kyoto alone was never intended as the solution," said Sandalow. "It was intended to set the world in the right direction, and

Kyoto alone was never intended as the solution...It's not an indictment of Kyoto that it alone fails to solve the problem.

—David B. Sandalow

stop 200 million deaths and 500 million illnesses annually. "Is this a good way to spend our money?" he lamented.

Lomborg concluded by stating that spending on the environment is in fact a profoundly inefficient way to save lives. He cited a Harvard Center for Risk Analysis study that, while a life is saved for every \$9,000 in health care spending, it takes \$4.2 million in environmental spending to achieve comparable results. Lomborg added that U.S. environmental spending (currently at \$21 billion) could save 60,000 more lives "for free" if spent optimally on something else. "In other words," he said, "our current priorities are committing 60,000 statistical murders every decade."

Sandalow: Book Understates Environmental Problems

While agreeing that many global environmental and human security trends are getting better, **David Sandalow** said that he found *The Skeptical Environmentalist* "quite disappointing," full of obvious errors, sloppy sourcing, and chronic exaggeration of the positions of environmental advocacy groups and thinkers. "In the United States," Sandalow said, "there is a much more complex and less momentous view of environmental problems than that presented by Professor Lomborg." He said that the book was best understood as a provocative and ambitious polemic, and that readers should proceed with caution.

Sandalow went on to criticize Lomborg for underplaying significant environmental problems. For example, while *The Skeptical Environmentalist* concedes that global species extinction is now occurring at 1,500 times the natural background rate, Sandalow said that Lomborg characterized this phenomenon as "not a catastrophe, but a problem." "If we had a 1,500-time

to set the necessary advanced technology in motion. It's not an indictment of Kyoto that it alone fails to solve the problem."

Can Cost-Benefit Analysis Include Values?

James Baker called *The Skeptical Environmentalist* an impressive piece of work, and linked it to previous efforts to reprioritize environmental questions, such as Gregg Easterbrook's *A Moment on the Earth*. But although Lomborg's book is strong in factual information, Baker said, it is far weaker on analysis. Lomborg, Baker charged, does not have the background to interpret environmental data, and his failure to distinguish between peer-reviewed and non peer-reviewed material fatally compromises his argument.

In fact, Baker said, Lomborg's data about an improving environment is common knowledge, and well-represented in government and policy debates—the Report of the President's Council on Sustainable Development makes many of the same points. The real question, Baker said, is how we are going to manage the earth's resources in a period of rapid change. Lomborg's mistake, Baker said, is to focus on global averages to the exclusion of regional and local realities—such as how sea-level rise associated with climate change will affect small island states, or how overfishing will impact those nations dependent on the sea for protein.

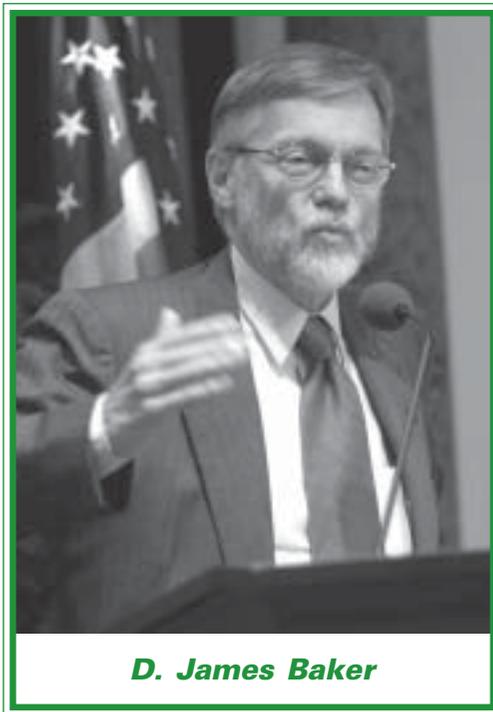
Baker also criticized Lomborg for an overreliance on cost-benefit analyses, saying that "values are critical in making decisions—you can't get them just from statistics." He cited MIT professor Robert Solow's inclusion of human and natural capital in GDP calculations as a better model than Lomborg's utilitarianism. "We don't make social judgements that





accept losers just because it costs less,” said Baker. A prime example of such a value-based judgement, Baker said, is the 1973 Endangered Species Act, which is now recognized as a basic expression of American values but which would fail conventional cost/benefit analysis.

Discussion focused on both the accuracy of Lomborg’s data and his societal priorities. Lomborg reiterated both his optimism about the future and his call for clear world priorities. As an example, he said that those who have criticized intensive agriculture in India for contaminating water wells there with arsenic were missing how that agriculture had saved hundreds of millions from starvation. “The people who acted are those who believed in the future,” Lomborg asserted, “who believed that technology probably could solve our problems.”



D. James Baker

Lomborg went on to defend his criticism of Kyoto, saying that he had based his cost-benefit analysis on the average predictions of six to twelve climate change models (including that of the International Panel on Climate Change). In response to a question about how global numbers mask a decline of some tree and bird species, Lomborg asked rhetorically if people really minded.

“People want clearings in forests for play,” he said. “Is it a worse forest, or better? And for whom?” He also defended cost/benefit analysis, saying that it is already (however unconsciously) the world’s default method of evaluation. “We all feign that we feel bad about it, but it’s a way of analyzing the status quo,”

Lomborg concluded.



For more on this meeting, visit <http://ecsp.si.edu/lomborg.htm>

Related Web Links

The Skeptical Environmentalist
<http://uk.cambridge.org/economics/lomborg/>

Bjørn Lomborg’s articles in *The Guardian*
www.guardian.co.uk/globalwarming

Environmentalists who disagree with Bjørn Lomborg
www.anti-lomborg.com

“Ten Pinches of Salt: A Reply to Bjørn Lomborg”
www.green-alliance.org.uk/Documents/Reports/ten%20pinches%20of%20salt.pdf

David Sandalow
www.worldwildlife.org/news/headline.cfm?newsid=292

James Baker
www.noaa.gov/baker.html

Kyoto Protocol
www.unfccc.de/resource/convkp.html

11 October 2001

THE WELLBEING OF NATIONS: DEVELOPING TOOLS FOR MEASURING SUSTAINABLE DEVELOPMENT

Featuring **Robert Prescott-Allen**, PADATA and author of *The Wellbeing of Nations*; **Thomas E. Lovejoy**, Lead Environmental Specialist for Latin America and the Caribbean, The World Bank (introduction); and **Melinda Kimble**, Senior Vice-President for Programs, UN Foundation (discussant)

By Robert Lalasz

While “sustainability” and “sustainable development” are two of the key concepts for 21st century national and global policymaking, the terms often evoke glazed eyes and lip service, according to researcher and consultant **Robert Prescott-Allen**.

To reinvigorate and sharpen these concepts, Prescott-Allen has invented several indices of human and ecosystem well-being that he says are much broader (and more precise) yardsticks of progress and health than such well-known indicators as the Gross Domestic Product or the Human Development Index. Prescott-Allen introduced his findings and his new Island Press book, *The Wellbeing of Nations: A Country-by-Country Index of Quality of Life and the Environment*, to a Wilson Center audience of population, development aid, and environment experts.

Two Questions

Prescott-Allen, who has founded and chaired several influential IUCN-The World Conservation Union projects and has 18 years experience evaluating and advising development strategies on four continents, said that every society should continually ask itself two questions: How sustainable are we? And how well are we? To answer these questions, Prescott-Allen said, we need a formal assessment method to provide clear numeric measurements that can be the basis for policy and can build public consensus for action.

Prescott-Allen defined “sustainability” (which he said is just another way of saying “the good life”) as a combination of (a) a high level of human well-being, and (b) the high level of ecosystem well-being that supports it. Much as the white of an egg surrounds and supports its yolk, Prescott-Allen said, an ecosystem surrounds and supports people. Any measure of well-being, therefore, must reflect this interdependence.

The Inadequacy of Present Indices

But why aren't present indices adequate for measuring the state of the world? Prescott-Allen argued that *human well-being* is both more than the strength of a market economy (which is what GDP measures) or a society's distance from deprivation (as measured by the Human Development Index). Instead, he said, human well-being consists of five dimensions:

- *Long lives in good health* and a stable population base;
- *Wealth* to secure basic needs and livelihoods as well as to promote enterprise and prosperity;
- *Knowledge* to live sustainably and fulfill potential as well as a vibrant culture;
- A community that *upholds the freedom of members*, has an *open and clean government*, and which is *safe from violence and crime*;
- *Benefits that are shared equally* by males and females and *shared equitably* among all strata of society.

Similarly, Prescott-Allen said that *ecosystem well-being* is more than low resource consumption (so it cannot be adequately measured by The Ecological Footprint) as well as more than the sum of a nation's environmental policies and practices (as measured by the Environmental Sustainability Index). Ecosystem well-being, according to Prescott-Allen, also has five dimensions:

- Conserving the *diversity and quality of the natural land ecosystem*;
- Conserving the *diversity and quality of water ecosystems*;
- Restoring the *chemical balance of global atmosphere* and the *quality of local air*;
- *Maintaining all wild species* and the genes in domesticated species;
- Keeping resource use *within the carrying-capacity of ecosystems*.



How To Measure Well-Being

The Wellbeing of Nations contains an exhaustive breakdown of each of these dimensions into the indicators that Prescott-Allen uses to develop his indices. The problem for any such work, Prescott-Allen said, is to convert these “apples and oranges” indicator measurements into common units.

Instead of using the inherently-limited options of physical units or money, Prescott-Allen opted for *performance scores*, which are the distance between a standard and the actual performance of a country. Using

Denmark—achieve “good” HWIs. No country is sustainable or even close (meaning that none scored “good” or “fair” on both the EWI and HWI). “Even though Sweden is at the top of the countries measured,” remarked Prescott-Allen, “it is still far from sustainability. This system does not simply compare relative positions from one society to another, but position in relation to something much more important, which is the idea of sustainability and human and ecosystem well-being together.”

For individual indices, the news was not much

This system does not simply compare relative positions from one society to another, but position in relation to something much more important, which is the idea of sustainability and human and ecosystem well-being together.

—Robert Prescott-Allen

international targets, national standards, and expert opinions to set his myriad performance standards, Prescott-Allen then mapped each country’s performances onto a 0–100 scale—making it “readily comprehensible to a wide range of lay people,” he said. The numeric scale also allows each score to be summed—for example, water withdrawal, inland water quality, and river conversion can be added to give a cumulative inland waters index for each country. “We can instantly see how any country is performing on any given indicator,” said Prescott-Allen.

The Barometer of Sustainability

Prescott-Allen’s work has to date yielded four indices: the *Human Wellbeing Index* (HWI); the *Ecosystem Wellbeing Index* (EWI); the *Wellbeing Index* (combining the HWI and the EWI, and thus measuring “sustainability”); and the *Wellbeing/Stress Index* (a ratio of how much harm a given country’s development does to the global ecosystem). *The Wellbeing of Nations* maps each country’s four scores onto a graph that indicates not only how countries are doing in relation to each other, but also how close they come to achieving “sustainability”—defined by Prescott-Allen as a “good” score for both human and ecosystem well-being. “Both must be treated together as equally important,” said Prescott-Allen. “There is not a fundamental tradeoff between the two.”

But the picture Prescott-Allen’s research produces is of a world with much work to do. Of the 180 countries tracked, only three—Sweden, Finland, and

better. The HWI shows two-thirds of the world living in “poor” or “bad” conditions, and only one-sixth of the world living in “fair” or “good” conditions. Most countries do even worse on the EWI: none scored “good,” primarily because the index measures not simply the impact of a country on its national environment, but also its impact on the global ecosystem.

Prescott-Allen labeled 37 countries (including North America and much of Europe) *ecosystem-deficit*: they have high standards of living but do not have adequate EWIs. Twenty-seven are *human-deficit* countries: these nations (primarily in Africa) make low demands on the global environment, but are deeply impoverished. And 116 are *double-deficit countries*—nations with both weak environmental performance and inadequate development. The Wellbeing Index, said Prescott-Allen, can also break down a country’s performance into its components, giving a clear picture of its strengths and weaknesses. “For instance, you can see at once that what is pulling the United States away from [sustainability],” said Prescott-Allen, “is air [quality], species and genes [preservation], and equity (the gap between the rich and poor).”

“A Matter of Choice”

“The bleaker image, however,” said Prescott-Allen, “is highlighted with some glimpses of hope.”

For example, the data in *The Wellbeing of Nations* clearly show that growth in a country’s human welfare

ECSP Meetings

(a higher HWI) does not necessarily result in environmental damage (a higher ESI). Prescott-Allen also pointed out that, at any level of development, some countries were clearly achieving the same quality of life for a lower environmental price. Ecuador, for example, has a better ESI than Colombia, even though the two countries have similar HWIs. While environmental conditions play a part in these disparities, Prescott-Allen remarked, there are other factors more readily within the grasp of human beings to change.

“Much of the relation between human well-being and environmental damage is matter of choice,” said Prescott-Allen. “The opportunity and capacity to make sound decisions is crucial. A high ratio of human welfare to ecosystem stress is strongly linked to good government, freedom, and good education—all three of which are essential conditions to sound decision-making.”

For more on this meeting, visit <http://ecsp.si.edu/archive/wellbeing.htm>

Related Web Links

Robert Prescott-Allen

http://www.idrc.ca/reports/read_article_english.cfm?article_num=1024

The Wellbeing of Nations

<http://www.islandpress.org/books/detail?command=search&db=IslandPress.db&SKU=1-55963-831-1>

Thomas E. Lovejoy

<http://www.usc.edu/admin/provost/tylerprize/01tyler>

PECS News



A Biannual Newsletter on Issues of Population, Environmental Change, and Security

Published by the Environmental Change and Security Project

Features of each issue:

Meeting summaries

Highlights from recent ECSP meetings, featuring remarks and ideas from such figures as Alan Hecht, U.S. National Security Council and Council on Environmental Quality; Crispian Olver, Department of Environmental Affairs and Tourism, South Africa; and Andrew Natsios, USAID Administrator.

Book reviews

Analysis of recent publications that look at population, environment, and/or security issues.

Report from the Field

Participants in the University of Michigan Population Fellows Programs share their field reports from cutting-edge population and environment activities.

Project News

Information on new ECSP publications, Web site features, and staff activities.

The next issue of PECS News will be published in November 2002. To receive a copy, please contact Robert Lalasz at lalaszrl@wwic.si.edu or call 202/691-4182. All issues of the newsletter are also available online at <http://ecsp/si/edu/PECS-News>.



30 October 2001

CONFLICT: A CAUSE AND EFFECT OF HUNGER

Featuring **Ellen Messer**, Visiting Associate Professor, School of Nutrition Science and Policy, Tufts University; **Marc J. Cohen**, Special Assistant to the Director General, International Food Policy Research Institute (IFPRI); and **Emmy Simmons**, Special Advisor to the Assistant Administrator of the Global Bureau, U.S. Agency for International Development (discussant)

By Robert Lalasz

Areas of famine are almost exclusively found in areas of armed conflict, and food wars—the use of hunger as a weapon in active conflict and the consequential food insecurity—left close to 24 million people in 1999 hungry and in need of humanitarian assistance. Saying that policymakers need to find ways to more closely marry conflict prevention and agricultural and development aid, former Wilson Center Fellow **Ellen Messer** and **Marc J. Cohen** of the International Food Policy Research Institute presented and discussed their new *Environmental Change and Security Project Report* article “Conflict: A Cause and Effect of Hunger.”



Ellen Messer

Emmy Simmons of USAID served as discussant.

Food and Conflict: Close Connections

Ellen Messer opened by saying that the authors’ ongoing project (which has been joined at times and for the current article by Thomas Marchione of USAID) has moved from (a) writing about the history of hunger to (b) looking at where famine and conflict persist in the modern world, and then to (c) how hunger has been used as a weapon. Currently, the team is studying the history of agricultural development in conflict and post-conflict zones as well as how conflict prevention can be worked into programs of peaceful and conflict-zone development projects. “There is great complexity

that goes into questions of conflict as well as food security,” said Messer. “We need to think about what kinds of information are missing and what we might do differently if we had this information.”

As an example of the close connection between food and conflict, Messer cited plunging coffee prices as an integral part of the Rwandan genocide of the mid-1990s; low crop prices made Rwandans feel that they had no future and “made them all the more ripe for exploitation and mobilization by unscrupulous leaders,” she said. Can a similar situation be avoided in Colombia, Messer asked, which is also beset by plummeting coffee prices? Another

area of concern is how to deliver food aid in ways that do not exacerbate rising tensions and intergroup competition over resources. Messer said that the selective way in which Rwandan food aid was distributed, for instance, added to the tension there.

Messer also outlined a series of goals that the authors’ research has highlighted for conflict and hunger prevention:

- Use *mapping* (now being done to identify areas of acute food shortages) to identify priority areas for conflict prevention and agricultural development;
- Study *how conflict prevention can be built into development aid and how food relief might be used to avert conflict*;

- Avoid macro models that predict conflict with just a few indicators (such as infant mortality rates) in favor of *nuanced analyses of particular situations of peace and conflict*;
- Study how women could be integrated into central agricultural decision-making and *how the participation of women could lead to more peaceful instead of conflictual outcomes*;
- Convince development and relief professionals to work together and share a common vision for peaceful development that can also prevent conflict;
- *Increase general development aid*, especially to Africa and for agriculture.

Causality and Controversy

Marc Cohen next outlined the major findings of “Conflict: A Cause and Effect of Hunger.” He began by noting that both armed conflicts and people needing humanitarian assistance in 1999 were overwhelmingly concentrated in sub-Saharan Africa and parts of Asia. “Not coincidentally,” he said, “these are areas of the world that are the center of gravity of food and security.”

Hunger as a consequence of conflict is easily understood, Cohen said: conflict in a poor area destroys crops, deploys landmines that injure people and make it unsafe to farm, and produces refugees and crowded camps that increase susceptibility to disease. In 13 of 14 countries in conflict in Africa from 1970–1994, Cohen said, food production declined by a mean of 12.3 percent in years of conflict.

Conflict also causes further food insecurity by interrupting or in many cases ending schooling for children. Cohen cited an IFPRI study that found female education and food availability as the two largest contributors to reduced child malnutrition from 1970–95. In addition, Cohen noted that, in sub-Saharan African countries experiencing conflict, losses in agricultural production because of conflict were equivalent to a very high percentage of aid these countries received; these losses also vastly exceeded the level of foreign direct investment.

However, food insecurity as a cause of conflict is

more controversial. Cohen sketched out the argument between the environmental security school and the more traditional conflict/peace studies school over whether environmental scarcities (of which food insecurity is a prime example) can be major causes of conflict. Cohen and Messer believe that food insecurity or environmental scarcity is not alone sufficient to trigger conflict, but that other factors (such as human rights violations, oppressive social inequalities, and, most importantly, cultural values that legitimate violent resistance) are necessary. “We would also argue that a thorough political-economic analysis of the food system and the politics of food is what is needed,” said Cohen.

Cohen added that a human rights perspective is critical to any effective food security initiative—not only emphasizing the long-affirmed right not to starve, but also a more broadly-conceived human-rights framework for analysis, planning, and evaluation of development programs.

An Institutional Perspective

Discussant Emmy Simmons of USAID welcomed “Conflict: A Cause and Effect of Hunger” and its emphases on linking relief to development, looking to civil-society participation, and emphasizing conflict avoidance rather than just dealing with conflict that is occurring. “Working for AID,”

Simmons said, “one is struck by the number of situations that one is dealing with in which conflict seems just around the corner or is in full swing or in which the AID program is being put on the ground in order to resolve a conflict and move a country toward recovery.”

However, Simmons said that agencies like AID do not implement the kind of recommendations made in “Conflict: A Cause and Effect of Hunger” either systematically or well. She stressed that AID, other donor agencies, and NGO partners are *action-oriented*. “In bad or deteriorating or needy situations, we say—‘OK, let’s do *something*.’” said Simmons. “We get on the ground and we try to figure out what is useful.” Such a climate, Simmons suggested, is not receptive to Messer’s suggestion, for example, that agricultural



Emmy Simmons



development might actually trigger conflict in some situations instead of alleviating it.

Yet Simmons stressed that, in coping with a rising trend of intrastate conflict (particularly in Africa and perhaps in Central Asia) as well as projected increases

flexible and focused kind of way,” Simmons said. She noted that the new reorganization of USAID potentially sets relief and humanitarian assistance efforts against long-term development in a competition for resources. “I want to thank our

We need to know how to bring together different kinds of resources—money, food, in-kind resources, intellectual, people—in a much more flexible and focused kind of way.

—Emmy Simmons

in global hunger by 2015, donors such as AID need to learn how to incorporate such finding in its collective action. “We need to know how to bring together different kinds of resources—money, food, in-kind resources, intellectual, people—in a much more

speakers here for kicking us off in thinking about this as a really serious issue that collectively we have to address,” she said. **W**

For more information, visit <http://ecsp.si.edu/archive/conflict.htm>

Related Web Links

Ellen Messer

<http://wwics.si.edu/fellows2000/messer/>

Marc J. Cohen and International Food Policy Research Institute

<http://www.ifpri.cgiar.org>

USAID: Global Bureau

<http://www.usaid.gov/about/reform/>

Food and Agricultural Organization of the United Nations (FAO): Global Information and Early Warning System on Food and Agriculture

<http://www.fao.org/WAICENT/faoinfo/economic/giews/english/giewse.htm>

FAO: *The state of food and agriculture 2001*

<http://www.fao.org/docrep/003/x9800e/x9800e00.htm>

International Fund for Agricultural Development (IFAD): *Rural Poverty Report 2001*

<http://www.ifad.org/poverty/index.htm>

Indra De Sosya & Nils Petter Gleditsch (1999): *“To cultivate peace: Agriculture in a world of conflict”*

<http://ecsp.si.edu/pdf/Report5-Sect1.pdf>

16 November 2001

U.S. FOREIGN POLICY AND GLOBAL HEALTH: ADDRESSING ISSUES OF HUMANITARIAN AID AND POLITICAL INSTABILITY

Featuring **Jordan Kassalow**, Senior Fellow, Council on Foreign Relations; **Andrew Fisher**, Director, HIV/AIDS Operations Research Project, Population Council; and **Alfred V. Bartlett**, Senior Advisor for Child Survival, U.S. Agency for International Development; and U.S. Senior Advisor, UN Special Session on Children

By Robert Lalasz

In the wake of recent anxiety about anthrax and other forms of bioterrorism, domestic and global public health have reemerged as issues both for U.S. national security planning and for its foreign policy formulation. At this Wilson Center meeting, three public health experts made the case for the United States to take global leadership on general health issues as well as the specific problems of HIV/AIDS and children's health.

A Matter of Self-Interest

Calling global health “a matter of intense self-interest” for America, **Jordan Kassalow**, an adjunct senior fellow at the Council on Foreign Relations, outlined three reasons why health should be more prominent on the U.S. foreign policy agenda: (1) Americans face a clear and present danger from infectious diseases as well as from man-made bioterror; (2) global health issues and risks undermine U.S. economic and security interests abroad; and (3) the United States has a unique opportunity to lead the world toward a healthier state.

Kassalow went on to argue that poor health internationally (a) stunts economic growth in myriad ways, (b) creates political instability, and (c) decreases military preparedness and peacemaking capabilities around the globe—all factors that undermine U.S. interests. For example, Kassalow said, if malaria had been eradicated years ago, Africa's GDP in 2000 would have been \$100 billion larger—five times the total foreign direct assistance that the continent received that year. Infant mortality is also recognized as highly correlated with state failure and declining social cohesion. And while medical resources are often a

primary target of modern warfare, military and peacekeeping readiness has also been affected (particularly in sub-Saharan Africa) by rising HIV infection rates in military personnel.

A “Unique Leadership Opportunity”

Kassalow called health a “unique leadership opportunity” for the United States, and he detailed five key areas for expanded activity:

- Approaching health as a *global public good* and linking it with health and poverty reduction;
- *Linking health to human rights*;
- Funding and facilitating *accelerated research and development on orphan drugs and vaccines* as well as *universal access* to these products;
- *Tying debt relief to health* through measurable objectives in health system development; and
- Replicating and expanding on those *public/private health partnerships* already in place.

Among Kassalow's specific recommendations were: an increase in U.S. global health spending by at least \$1 billion annually; funding of USAID for HIV/AIDS treatment and prevention in India, China, and Russia; and the endorsement of the President and Secretary of State for global health's priority in U.S. foreign policy. “American foreign policy works best when it combines high moral ideals with real-world interests,” said Kassalow. “Like the Marshall Plan, a foreign policy that seriously invests in global health would be a high point in the ethical life of this country and a wonderful example of service to mankind as an

Cosponsored by the Population Resource Center, the Environmental Change and Security Project, and the Wilson Center's Conflict Prevention Project



investment in our future.”

The Devastation and Continuing Threat of HIV/AIDS

Andrew Fisher of the Population Council next focused on the monumental consequences of HIV/AIDS for global public health and well-being. “My take-home message,” said Fisher, “is that this is an epidemic that continues to rage on, and it’s not stopping...Even if we had a vaccine tomorrow, the consequences of AIDS would go on for generations.”

Fisher detailed a list of staggering statistics about the epidemic: 22 million dead through 1999; 36 million living with HIV/AIDS; 5.4 million newly infected each year; and an estimated 44 million to be orphaned by 2020, most of them living in Africa. Indeed, Africa remains the epicenter of HIV/AIDS, with three-quarters of all people living with the virus. HIV has infected more than 20 percent of many sub-Saharan African country populations, and in some communities infection rates are as high as 70 percent.

Fisher said effective solutions to the epidemic require multiple perspectives. Consideration of human rights is critical, he argued, because AIDS glaringly exposes the tears in society’s fabric—everything from intolerance of racial, religious, and sexual minorities to the vulnerability of young and impoverished women. Prevention, care, support, and treatment are obviously also crucial and provide opportunities at each step for the message of prevention.

But perhaps the most important factor in fighting AIDS, said Fisher, is to mobilize a series of very different communities in the battle. The Population Council has worked with groups as disparate as Thai business executives (towards non-discriminatory work environments) as well as commercial sex workers in Brazil and Calcutta (to build their sense of community and solidarity in the support of widespread condom use). Fisher also stressed the need to scale up programs, strengthen health care systems, support new initiatives in other sectors being impacted by the epidemic, and accelerate the drive for an HIV microbicide and vaccine.

Global Children’s Health and Poverty

Andrew Bartlett of USAID then reviewed the improving but still unsatisfactory state of children’s health worldwide and its links with global security. The major causes of mortality for children under five (such as respiratory infections, diarrheal diseases, malaria, and vaccine-preventable diseases) are far more

easily dealt with by the U.S. health care system than they are in developing countries. But the United States, Bartlett argued, has an enlightened self-interest in helping to address these problems internationally.

A substantial part of the existing global disease burden falls on children under five, and there are proven links between widespread childhood diseases and (a) increased poverty as well as (b) a demographic transition to a low mortality/low fertility pattern, which can retard a society’s economic growth. While inexpensive interventions (such as immunization and micronutrients) have vastly improved children’s health, Bartlett said, there is still a tremendous unmet need. For example, a quarter of children worldwide are still not immunized, and over 40 percent goes untreated for pneumonia.

Although the United States is a leading financial and technical donor for children’s health programs, Bartlett argued that this leadership needs to be taken up and expanded. Disseminating new vaccines against the major childhood diseases, he said, is one step that could immediately save over half of the 10.5 million children who die each year. **W**

For more on this meeting, visit <http://ecsp.si.edu/globalhealth.htm>

Related Web Links

Jordan Kassalow
<http://www.crf.org/public/resource.cgi?pers!3407>

Population Council: HIV/AIDS Operations Research Project
<http://www.popcouncil.org/horizons/horizons.html>

USAID, Child Survival
http://www.usaid.gov/pop_health/cs/index.html

UN Special Session on Children
<http://www.unicef.org/specialsession/>

Population Resource Center
<http://www.prcdc.org>



4 December 2001

THE ROAD TO JOHANNESBURG: SETTING THE AGENDA FOR THE WORLD SUMMIT ON SUSTAINABLE DEVELOPMENT

Featuring **Crispian Olver**, Director-General, Department of Environmental Affairs and Tourism, Government of South Africa; **John F. Turner**, Assistant Secretary, Bureau of Oceans and International Environmental and Scientific Affairs, U.S. Department of State; **Judith Ayres**, Assistant Administrator for International Activities, Office of International Activities, U.S. Environmental Protection Agency; and **Alan Hecht**, Director of International Environmental Affairs, National Security Council and Council on Environmental Quality

By **Robert Lalasz**

Policymakers need to move beyond the principles and agenda established at the 1992 Rio United Nations Conference on Environment and Development and achieve *implementation* at the Johannesburg 2002 World Summit on Sustainable Development, according to **Crispian Olver**, South Africa's Director-General for Environmental Affairs and Tourism. Speaking publicly for one of the first times on the United States' approach to Johannesburg 2002, three high-level Bush administration officials said the White House largely concurs with South Africa's Summit priorities as set forth by Olver.

The Work Still to be Done

The state of the world, said Olver, can be broken down into three components: a *global economy* with increasing inequality despite unprecedented productivity and capital accumulation; a *global society* with unprecedented consumption and mobility, but where 1.1 billion people live in severe poverty; and a *global environment* with declining environmental assets and limited environmental rights, particularly for the poor.

While global infant mortality rates and adult illiteracy have fallen and per capita incomes have risen dramatically in recent years, Olver listed many other trends that continue to hinder universal prosperity. For example, in 2050 4.2 billion people will be living in countries unable to meet the basic requirement of 50 liters of water per capita per day. Over one billion people still live on less than one dollar a day, with Southeast Asia, sub-Saharan Africa, and Latin America

becoming systematically poorer. Over one billion people remain undernourished and underweight, one billion live on environmentally fragile lands, and 15.5 million will die from AIDS in the next five years in the 45 most affected countries.

A New Global Deal

South Africa's position, said Olver, is that poverty and inequality today pose the greatest threats to sustainable global development. "Any program that we talk about at Johannesburg has got to involve a discussion about developed-developing country relationships in terms of governance, trade, investment, debt relief and others," Olver said. He added that governments must also seek out sustainability partnerships with industry and with the broader civil society.

The thrust of the Johannesburg Summit, Olver said, should be towards a "new global deal" that focuses on the three pillars of sustainable development: economic development, social development, and the environment. Olver stressed that the "global deal" has got to be "far more about implementation and delivery and far less about haggling over brackets and text." The Summit, he said, must emphasize clear targets as well as clear commitments to those targets and the strategies, delivery mechanisms, monetary mechanisms, and resources being used to achieve them.

The U.S. Reaction

Assistant U.S. Secretary of State **John F. Turner** said he was delighted by Olver's overview of the issues.

Cosponsored by The Environmental Change and Security Project, the Wilson Center's Africa Project, IUCN-The World Conservation Union, and the Natural Resources Defense Council



“His scope and his themes and his processes are going to work well with what this administration is thinking of,” said Turner.

Turner then outlined a number of specific areas in which he said the United States hopes to make progress at Johannesburg: (a) governance and local capacity building; (b) leveraging the private sector’s ingenuity and resources for sustainable development, particularly in conjunction with development assistance; and (c) other priority areas such as: infectious diseases; water; climate; energy; fisheries and marine resources (especially declining fish stocks); forestry (including implementation of the Tropical Forestry Act); land degradation; and biodiversity.

Judith Ayres of the U.S. Environmental Protection Agency cited several recurring themes that will be priorities for the United States at Johannesburg: poverty reduction; the necessity of recognizing that healthy economies go hand in hand with healthy environments; and redoubling efforts to engage industry and the private sector in the pursuit of sustainable development worldwide.

Seeking Concrete Results

Alan Hecht of the National Security Council and the White House Council on Environmental Quality said that poverty alleviation and development are crucial to President Bush’s overall global strategy, and that the United States would be examining many vehicles toward these goals. But Hecht stressed the role of the private sector because “it simply dwarfs the amount of other money available.” The challenge for Johannesburg, said Hecht, is to “find ways to stimulate that hidden capital” as well as to make capital more available to the world’s marginalized by making developing countries more attractive for private-sector investment.

The social pillar of sustainable development is also crucial to the mission of Johannesburg, said Hecht. “What could be more unsustainable,” he said, “than

people who have no sense of hope, no education or who are stricken with AIDS and other diseases?” While the United States will continue to offer government assistance, Hecht added that Johannesburg should underscore the responsibility developing-country governments have to their own people. “We care about many people in the world,” said Hecht, “but their own governments have to care more.”

Finally, Hecht said the environmental challenge for Johannesburg will be to focus on a narrower set of issues “for which there is really high risk and for which action will really help people, and to give it political focus and momentum.” Such issues, Hecht said, include: clean water; energy for the two billion who do not have it; forestry; soil; coral reefs and fisheries; health; and proper response to emergency conditions and disasters and improving capabilities for dealing with them.

Overall, Hecht echoed Olver’s calls for an emphasis on practical implementation

at Johannesburg. “The White House wants concrete results,” he said. “We’re not afraid of a deal, a compact. But it’s important to see what’s in it.”



Dr. Crispian Olver

For more on this meeting, visit <http://ecsp.si.edu/johannesburg.htm>

Related Web Links

South African Government: Department of Environmental Affairs and Tourism
<http://www.environment.gov.za>

Council on Environmental Quality
<http://www.whitehouse.gov/ceq>

U.S. Department of State: Bureau of Oceans and International Environmental and Scientific Affairs
<http://www.state.gov/g/oes>



ECSP Meetings

5 December 2001

“GLOBAL PROBLEMS—GLOBAL SOLUTIONS”

Featuring **The Right Honorable Margaret Beckett, MP**, UK Secretary of State for Environment, Food, and Rural Affairs

By Robert Lalasz

Urging the United States to more actively address climate change and other environmental issues, **Margaret Beckett**, the United Kingdom’s Secretary of State for Environment, Food, and Rural Affairs, outlined for a Wilson Center audience the UK’s agenda for implementing the Kyoto Protocol, global sustainable development, and free and fair trade. It was Mrs. Beckett’s first speech in the United States since becoming the head of this new UK governmental department in June.

Global Problems Need Concerted Action

After offering her condolences to the people of the United States for the death and destruction caused by the September 2001 terrorist attacks, Mrs. Beckett called September 11 “a wake-up call to all of us, not just to the dangers of terrorism, but to our mutual interdependence as a world community.” Citing climate change, clean water, poverty, migration, and disease as issues of vital importance, Mrs. Beckett said concerted global and practical action would be essential in solving these problems. “We live in a world,” said Mrs. Beckett, “where stability and prosperity at home depend crucially on the ability of the international community to act together in pursuit of interests that transcend both national borders and traditional notions of sovereignty.”

Mrs. Beckett lauded the compromises each

country made in reaching agreement at the 2001 Climate Change Convention in Marrakech, Morocco. “But it seemed strange in Marrakech,” Mrs. Beckett added, “to be pressing ahead on a matter of such vital importance without the United States participating fully beside us.” She urged the Bush administration to implement “far-reaching domestic policies, compatible with the Kyoto framework,” and she cited UK moves towards low-carbon technology innovation and emission-trading markets as possible models for the United States.

“If the developed world takes positive action, there will be a much greater prospect of engaging developing countries on tackling their own contributions to climate change,” Mrs. Beckett concluded. “The U.S. has decided to follow its own path. But I hope in due course that path, along with the one being followed by the rest of the world, will lead us to the same place.”



Margaret Beckett

Johannesburg and the “New Global Deal”

Mrs. Beckett also cited *poverty* and *environmental degradation* as enormous challenges for global leadership, and said that the Johannesburg Summit presented a critical opportunity “to promote resource efficiency and make sure globalization works to spread prosperity for all.” Indeed, she said, one in five people globally lack access to safe drinking water; half lack safe sanitation; and two billion lack sustainable

Cosponsored by The Environmental Change and Security Project, and the Wilson Center’s West European Studies Program and Project on America and the Global Economy





energy. “These shocking statistics call for radical new approaches,” said Mrs. Beckett. She added that the drive for sustainable development is especially important for Africa, where “civil unrest, grinding poverty, and mass migration” have created “the desperate conditions on which war and even terrorism feed.”

Above all, Mrs. Beckett said, the Summit must be about *delivery* on commitments made at the 1992 Summit in Rio, not a renegotiation of past agreements. Mrs. Beckett said that the UK wants to narrow down the Summit’s agenda to three to five practical programs that address such issues as clean water, capacity building, and good governance. “We hope very much that President Bush will attend and take a leading role,” she said.

Mrs. Beckett then outlined the UK’s new agenda for promoting rising prosperity and social justice on a global scale—the four building blocks for what she called “a new global deal”:

(finance, tourism, energy, forestry, and water) to demonstrate the benefits of partnership action for sustainable development.

The Promise of Doha

Mrs. Beckett also held up the 2001 World Trade Organization Summit at Doha, Qatar as an example of strong and concerted global action—on the reduction of agricultural subsidies as well as the environment. European agriculture policy, she said, has already started to shift away from protectionism of farmers to consumer issues such as food safety, environmental benefits, and stability and security for depressed rural areas.

Doha, Mrs. Beckett, said, was also a large advance on the interface between trade and environment: a chance to clarify the murky relationship between multilateral environmental agreements and WTO rules, and a liberalization of trade in environmental goods and services. She argued that protecting the

The U.S. has decided to follow its own path. But I hope in due course that path, along with the one being followed by the rest of the world, will lead us to the same place.

—Margaret Beckett

- Increasing poor countries’ capacity to participate in the global economy;
- Encouraging sustainable development standards for corporations and fostering developing-country investment forums between the private and public sectors;
- Adopting a new trade regime so that developing countries can participate on fair terms in the world economy; and
- Transferring substantially additional resources from the richest to the poorest countries in the form of development investment.

environment and maintaining open and fair-trading systems are “not only compatible, but can be mutually reinforcing.” “We will not use negotiations in the WTO,” Mrs. Beckett vowed, “to introduce illegitimate barriers to trade. We will use them to deliver concrete outcomes which are good for both trade *and* the environment.” **W**

For more on this meeting, visit <http://ecsp.si.edu/beckett.htm>

This bold agenda is tantamount to “throwing down the gauntlet for a global campaign against poverty and for social justice,” asserted Mrs. Beckett. “The UK government is determined to forge ahead with this agenda—to turn rhetoric into reality—and Tony Blair has set up a new, cross-departmental Cabinet Committee to promote this work.” The UK 2000 program, she said, has initiatives across five sectors



24 January 2002

INFECTIOUS DISEASES AND GLOBAL CHANGE: THREATS TO HUMAN HEALTH AND SECURITY

(A Meeting of the AVISO Policy Briefing Series)

Featuring **John D. Eyles**, Professor, McMaster University School of Geography and Geology; Director, McMaster Institute of Environment and Health; **Steve Lonergan**, Professor, University of Victoria, Department of Geography; and **John E. Borrazzo**, Environmental Health Advisor, Bureau of Global Health, USAID (discussant)

By Robert Lalasz

Global environmental change and human activity are increasing human vulnerability to infectious diseases (IDs) and endangering our security, according to **John Eyles**, an expert in environmental health policy. Eyles addressed policymakers and practitioners in the latest meeting of the AVISO briefing series, which presents policy-friendly briefs on environmental change and human security issues.

The Antecedents and Consequences of Infectious Disease

Eyles began by recounting his recent work in Uzbekistan, where the disappearance of the Aral Sea and the impact of that disappearance on the local population have become what Eyles called one of the globe's worst contemporary environmental disasters. The destruction of the Aral ecosystem by the Soviet government has had profound consequences, ranging from the decimation of local fishing and agriculture to respiratory and kidney problems and to the possible movement of fatal diseases and viruses from Redemption Island, where the Soviets tested biological weapons.

Eyles said that the Aral case is a dramatic example of how threats to human health are usually consequences of human activity. "For every action," he said, "there is a consequent reaction—perhaps unintended, but not unpredictable." In a similar way, he argued, IDs have become a major threat to global health, wealth, and security. And their distribution and spread also raises questions of justice and equity as they attack particular populations disproportionately, especially those living in poverty in the developing world. Yet IDs anywhere can have a global impact, said Eyles, through globalized trade and travel and the destabilization of strategic regions.

IDs: A Review

According to the World Health Organization (WHO), six diseases (pneumonia, tuberculosis, diarrheal diseases, malaria, measles, and HIV/AIDS) cause 90 percent of all ID deaths. *Pneumonia* particularly affects children, especially those born with low birth weight and who are malnourished. Pneumonia, Eyles said, often coexists with *diarrheal diseases*, which themselves claim two million children under five annually.

Tuberculosis also kills two million people each year, and one-third of the world's population is infected with the TB bacillus. Eyles called TB's reemergence especially worrisome because (a) it is occurring in parts of the world (such as Eastern Europe) whose public health systems have been weakened by social and economic upheaval; and (b) because the strains of reemergent TB are more drug-resistant and linked to HIV/AIDS. As for HIV/AIDS, over 34.1 million people worldwide are living with the virus, with two-thirds in sub-Saharan Africa. "By early 1999, 11 million in sub-Saharan Africa had died of AIDS," said Eyles, "equivalent to the number that perished in the slave trade."

But the death toll from *malaria* far exceeds that of even AIDS-related mortality, killing a child somewhere in the world every 30 seconds. "Malaria for me is a sentinel to the consequences of human activity and their global impacts on human health," said Eyles. "While its effects have hit mainly poor people in rural areas, its reach is spreading. The building of infrastructure, the migration of people, changing weather patterns, and global travel and trade create different reservoirs for mosquitoes to breed, making control difficult."



Ecological Change and IDs

Any ecological change can alter the relationships between humans and nature, said Eyles, increasing microbial risk and threatening human health. “We have just borrowed the world from bacteria and viruses,” he said. For example, the reemergence of Lyme’s Disease in the Northeastern United States and the surge of hanta virus in the American Southwest and China have coincided with accelerated human development in those areas.

WHO, Eyles said, has identified two sets of hazards leading to this vulnerability: *traditional*, and *modern*. While traditional hazards are associated with a lack of development (such as poverty, lack of safe drinking water, and sanitation), modern hazards are associated with unsustainable development practices and include air, water, and soil pollution. These hazards, said Eyles, conspire “to ensure the conditions for the development and diffusion of infectious diseases around the world, especially in the developing world.”

Eyles said that traditional hazards remain the main key to ID spread. IDs are “back with a vengeance” in India and sub-Saharan Africa, he said, because of pervasive malnutrition and a lack of funds or attention to basic health care, sanitation, and the elements of well-being. In addition, he said, intensive agricultural practices, dams, dikes, heavy industries, deforestation, migration, and increasing urbanization all have a hand in increasing susceptibility to IDs.

Security and Solutions

It would be a mistake to categorize IDs as a remote problem, said Eyles. Societies debilitated by disease cannot enter the world economy as full partners, and their populations may pose threats to our political security because they are denied resources to which they feel entitled—such as adequate nutrition, shelter, clean air and water.

Some argue, Eyles pointed out, that the lending policies of such international finance organizations as the IMF may be crippling developing countries’ abilities to invest in health and social services. He cited Zimbabwe as an example of a country that has tried (and failed) to meet IMF social spending reduction targets and yet which continues to significantly reduce its health-care spending. Instead of offering fiscal solutions, Eyles said, the international community should be prioritizing public health and improving upon established programs. His specific recommendations included:

- Learning and extending successful demonstration programs (such as the meningitis reduction in sub-Saharan Africa being carried out through partnerships with national governments, WHO, and nongovernmental organizations);
- Expanding inexpensive and effective ID control programs (e.g., treated bednets for malaria);
- Developing a surveillance and monitoring system for effective ID control (modeled on the WHO DOTS program for TB control);
- Funding more research to make linkages between global measurements of ID rates and local field studies;
- Strengthening health systems at the national and local levels through integrated policies that emphasize the importance of public health;
- Placing ID treatment on an equal footing with prevention; and
- Extending G-20 deliberations beyond finance to include health.

Environment, governments, and equitable distribution matter for ID control, said Eyles. All three are crucial factors to include in the necessary programs of research, donor assistance, sustainable development, and trade relations. Without them, he said, we simply cannot achieve infrastructure changes in the environments that breed disease. **W**

Related Web Links

AVISO 8: “Infectious Diseases and Global Change”

<http://www.gechs.org/aviso/AvisoEnglish/eight.shtml>

Bureau of Global Health, USAID

http://www.usaid.gov/pop_health/

“The World Health Organization Report on Infectious Diseases: Removing Obstacles to Healthy Development”

<http://www.who.int/infectious-disease-report/pages/textonly.html>

“The Urgency of a Massive Effort Against Infectious Diseases”

<http://www.who.int/infectious-disease-report/dlh-testimony/testmo.pdf>

13 February 2002

THE BIOTECH QUAGMIRE: NEXT STEPS IN THE GENETICALLY MODIFIED FOOD DEBATE BETWEEN AMERICA AND EUROPE

Featuring **Julia A. Moore**, Public Policy Fellow, Woodrow Wilson Center; **Benno van der Laan**, Cabinet Stewart/European Union Affairs Consultancy; and **Gilbert Winham**, Fellow, Woodrow Wilson Center

By Robert Lalasz

Transatlantic tensions over the sale and regulation of genetically-modified (GM) foods have perhaps never been greater. The European Union's 1998 moratorium on new genetically-modified organisms (GMOs) in Europe has been followed by proposed European Parliament legislation that would require all foods with GM content to be labeled as such and to offer full traceability of that content. In turn, the United States has called such moves protectionist and has threatened to protest them to the World Trade Organization (WTO).

Two Wilson Center Fellows and a Washington-based consultant on European Union affairs outlined the state of the GM debate and the chances for policy reconciliation over the issue between Europe and the United States. While the outcome of the European legislation is far from clear, panelists recommended that U.S. export policy must aim for international harmonization instead of confrontation.

"A Very Public Food Fight"

Julia Moore, a current Wilson Center Public Policy Fellow and former official with the National Science Foundation, Physicians for Social Responsibility, and World Wildlife Fund-U.S., said the public debate over GM food is less about science or trade than it is about public trust.

The recent mad-cow-disease scare and outbreak of foot-and-mouth disease in Britain, Moore said, have shaken Europeans' confidence in their governments' ability to ensure food safety; they have also made Europeans profoundly skeptical about scientific and

bureaucratic pronouncements over the safety of GM foods.

In contrast, said Moore, Americans like new technologies and trust the U.S. Food and Drug Administration to keep foods and medicines reasonably safe. And while developing countries are attracted to biotechnology's promise of alleviating domestic hunger as well as improving agricultural exports, Moore said, they worry about the European Union (EU) using genetic modification as a trade barrier.



Julia A. Moore

New Reports and Developments

Moore then highlighted recent developments that she said are significant to the debate over GM foods:

- The EU is being forced by enlargement (from 15 to 27 members) to reform its agricultural policies and to reassess how to build a competitive, 21st century European economy.
- In January 2002, the European Commission (EC) released a report that Moore said calls biotechnology the important "next wave" for knowledge economies.
- In fall of 2001, a review of 15 years and \$60 million worth of EC-sponsored research was released. It concluded that GM food and crops pose no greater health and environmental risks than conventional food.
- The latest data show that in the year 2000, worldwide plantings of transgenic crops (mostly cotton, corn, and soybeans) exceeded 100 million acres—a 25-fold increase since 1996.



- The new European Food Safety Authority will begin operations this year.
- On 4 February 2002, a French government advisory body recommended after two years of research field trials that genetically modified sugar beets posed very little risk of contaminating other crops and were safe to grow on a commercial basis.

“If France can begin a public discussion of GM food in a practical and concrete way—not about scary

spring of 2003.

Ag-Biotech Regulations: Europe versus the United States

While trade relations between Europe and the United States have historically converged on most questions, **Gilbert Winham** of the Wilson Center said that agriculture biotechnology (or “ag-biotech”) fits into a longstanding tension between the two parties over agriculture. Winham said that ag-biotech is now threatening to seriously destabilize U.S.-EU trade.

If France can begin a public discussion of GM food in a practical and concrete way...then I think there is hope that Europe will debate GM in a more rational way in the future.

—**Julia Moore**

American-grown soybeans that are a mystery ingredient in their food, but about solid and friendly French sugar beets,” said Moore, “then I think there is hope that Europe will debate GM in a more rational way in the future.”

Traceability and Labeling

Benno van der Laan next outlined the complicated route that proposed EU legislation on traceability and labeling of GM foods must travel before it becomes law. The genesis of the law, Van der Laan said, lies in the current moratorium against approvals of new GM foods. Six countries pushed for this moratorium, he said, because they felt European consumers should know exactly what is in their food.

The new proposals will require any food product whose content is greater than one percent GM to be labeled as such. Foods would also be labeled if genetically-modified organisms (GMOs) were used in their processing, even if no DNA or protein of GMO-origin remained in the final product. The regulations would also force food producers to closely track GM varieties as they move through commercial channels.

The new proposals have been applauded by European consumer groups, said Van der Laan, and some have sought to extend them to animals fed with GM animal feed. But, he added, biotech manufacturers and other countries have criticized the proposals as unworkable and possibly protectionist, and pressure against the measures from some European quarters is also building. Still, Van der Laan said, he expects the EU process to produce some kind of legislation by

U.S. public policy, Winham said, tends to view biotech products as essentially equivalent to products that already exist and thus pays little special attention to them. Since there is no scientific evidence that biotech products are harmful, said Winham, U.S. regulatory regimes are seen to be inapplicable to these products. U.S. law instead makes food producers principally responsible for assuring the safety of biotech products. The threat of lawsuit or criminal prosecution is assumed enough to enforce due diligence from producers.

“The system is widely regarded as successful by the U.S. public,” said Winham, “even though polling data indicate that same public would strongly favor the labeling of ag-biotech foods.”

But the EU regulatory system differs sharply, said Winham. EU regulators operate in an environment conditioned by both the historic “precautionary principle” as well as a series of food and health scandals that have no counterpart in America. The EU, said Winham, has therefore consistently differentiated ag-biotech products from those developed through traditional plant breeding methods.

Winham said that the EU proposals on labeling and traceability would deeply impact some four billion dollars of U.S. trade, applying to many current U.S. exports and greatly increasing their production costs. Even if these costs are borne and requirements met, Winham said, European consumers might still boycott GM products. The proposals, warned Winham, also endanger (a) the principle of scientific risk assessment, (b) the comparative advantage built up by the United States in ag-biotech, and (c) a technology that could

ECSP Meetings

help address future food needs.

The Next Steps

Winham cautioned against the U.S. taking the EU to a WTO dispute settlement panel over the issue, as U.S. Trade Representative Robert Zoellick has threatened. Such a complaint against the current EU moratorium is likely to present a strong case (in that the moratorium violates both GATT and the SPS Agreement). But Winham argued that European public pressure would make implementation of such a ruling impossible, and that the complaint would do great damage to the WTO and destabilize European elections set for later this year.

Winham said the U.S. should instead proceed on three fronts:

- Maintain pressure in the WTO and the Codex Alimentarius for the principle of food-safety standards based on science (important in shaping the ag-biotech policies of developing countries);
- Make a greater effort to publicly fund those developing countries interested in developing their own ag-biotech capabilities;
- Continue to press the EU on various elements of the proposed regulations (such as extending labeling to the meat of animals fed with GM feed).



Benno van de Laan

“Our efforts should be to develop harmonized international standards, not to strive for a decisive victory,” said Winham. 

For more on this meeting, visit <http://ecsp.si.edu/bioquag.htm>

Related Web Links

Benno van der Laan

<http://www.cabinetstewart.com/team.html>

Julia A. Moore

<http://wwics.si.edu/mediaguide/moore.htm>

Gilbert R. Winham

<http://wwics.si.edu/Fellows01/winham/winham.htm>



February 14, 2002

DOES POPULATION MATTER? NEW RESEARCH ON POPULATION CHANGE AND ECONOMIC DEVELOPMENT

Featuring **Nancy Birdsall**, President, Center for Global Development, and **Steve Sinding**, Professor of Clinical Public Health, Mailman School of Public Health, Columbia University

By **Robert Lalasz**

Does population growth matter to economic development? Emphatically yes, according to the new book *Population Matters: Demographic Change, Economic Growth, and Poverty in the Developing World*. The book attempts to resolve the three-decade-old debate among U.S. economists, demographers, and policymakers about the connections between population and development. Two of the book's editors, Nancy Birdsall and Steve Sinding, outlined its findings at an ECSP Wilson Center meeting attended by demographic NGO officials and leading U.S. policymakers.

The History of a Relationship

Steve Sinding began by taking the audience through the history of post-World War II thought on the population-development relationship. "When I entered the population field in the early 1970s," Sinding said, "there was a broad policy consensus that population growth inhibited economic development"—a relationship that impelled funding for programs to reduce population growth.

However, Sinding said, the consensus began to unravel at the end of the 70s, and the election of Ronald Reagan as U.S. president in 1980 brought into power a group of officials skeptical about any connection between population and economics. When Sinding joined USAID in 1983, he said, he and his colleagues "found ourselves increasingly justifying population programs on grounds of human welfare rather than macroeconomic impact." This new consensus held into the 1990s: indeed, the 1994 UN Conference on Population and Development in Cairo took an exclusively individual-welfare approach to population programs.

However, interesting research in the mid-1990s on the spectacular economic success of the "Asian tigers" found that "population and demographic policy had mattered a lot," as Sinding put it. *Population Matters*, he said, builds on this work by bringing together a group of scholarly articles that treat the relationships

of population to development, poverty, and the environment. "It really is a major step forward in the debate," Sinding said.

Population Does Matter: New Findings

Nancy Birdsall cited two major messages from *Population Matters*. First, there is good evidence that slower population growth creates the potential to increase the pace of aggregate economic growth. Second, said Birdsall, rapid fertility decline at the country level helps create a path out of poverty for many families.

Birdsall said recent studies on demographic change and economic growth explain differences in regional economic development (such as Africa's slow growth versus the burst of growth in East Asia between 1960-95). Four decades of data on demographic and economic change in developing countries, she said, have allowed researchers to unbundle the effects of different age structures on growth.

The newer studies indicate that increases in the size of working-age populations are positively associated with economic growth, while increases in the size of a country's youth to 15 years are negatively associated with growth. "The demographic experience of East Asia is good news for regions now on a path of fertility decline such as Latin America and, much more recently, Africa," Birdsall said.

East Asia: The Demographic Bonus

The case of East Asia is key to the overall argument of *Population Matters*, said Birdsall. In this region, the ratio of working people to their dependents grew from 1975—producing a "demographic bonus" that will last until 2025. This changing age structure, said Birdsall, is driven mostly by fertility decline.

More workers, said Birdsall, potentially produce more total output, greater wealth accumulation, and an increasing supply of human capital. Studies in *Population Matters* conclude that the increase in savings associated with East Asia's demographic bonus can be

credited with one-third of the region's total six percent average annual per capita growth rate from 1965-90. In fact, Jeffrey Williamson in *Population Matters* attributes as much as one-half of East Asia's "economic miracle" to its demographic bonus.

Policy Matters, Too

Birdsall stressed, however, that countries must have the proper policies and institutions in place to benefit from a demographic bonus. For example, East Asia was able to absorb the rising supply of labor because it had instituted fiscal discipline, open and competitive markets, and public investment in education and health care. Rule of law, property rights, and political stability are also crucial. Latin America, she said, has much less effectively exploited its demographic bonus because it has not been as quick to implement such policies.

"While good policies and institutions moderate the negative effects of rapid population growth and reinforce the positive effects of the demographic bonus," said Birdsall, bad policies and institutions do precisely the opposite. Good policies, she added, are also a critical factor in forming a "virtuous circle"—a feedback cycle in which positive factors reinforce and build on each other. For example, Birdsall said, a technological change or fix (such as oral rehydration therapy or widely-available contraceptives) in a good policy environment leads to ultimately higher economic growth, which can lead to lower fertility and increased life expectancy, driving down the age dependency ratio and feeding more economic growth.

Poverty and Population

Population Matters, said Birdsall, also extends the population-development discussion to the effects of population change on poverty rates. The association of high fertility and high poverty does not prove that one causes the other, Birdsall said. But studies in *Population Matters*, she said, confirm that high fertility at a country level does appear to increase absolute poverty levels by (1) slowing economic growth and growth-induced poverty reduction, and (2) skewing distribution of consumption against the poor.

In Brazil, for example, a decline in poverty associated with what has been a dramatic reduction in fertility is equivalent to what would have been produced by a 0.7 percent greater annual increase in per capita GDP. Another analysis of 45 developing countries found that, had the average countries in the dataset reduced their birth rate by 5 per 1000 throughout the 1980s, the average poverty incidence

in these countries of 18.9 percent in the mid-80s would have been reduced to 12.6 percent between 1990 and 1995. "We find a causal relationship across countries between changes in fertility and changes in poverty," Birdsall said.

"It goes right back to Malthus," she added. "If you have higher fertility and more unskilled labor entering the workforce, you keep the wage-rate of unskilled workers relatively low compared to what it would have been if the unskilled had been more scarce."

Policy Implications

Birdsall suggested five steps for capitalizing on demographic bonuses: (1) undo existing policy-induced market distortions (such as restrictions on contraceptives); (2) ensure economic policies that strengthen land, labor, and financial markets; (3) invest heavily in education and health programs; (4) improve the status of women; and (5) subsize voluntary family planning and information services. She added that the events of September 11 show the risk associated with an unexploited demographic window of opportunity.

Sinding noted that, while John F. Kennedy talked about sponsoring a foreign aid program that "got at the root causes of radicalism" in 1961, today such aid founders because of a lack of policymaker support. Developing countries, he said, have agreed since the mid-70s that demographic policies are an important part of development. "If the book has the effect of at least getting World Bank economists *not* to tell ministers of finance *not* to invest in reproductive health programs," Sinding said, "it will have been worthwhile." 

For more on this meeting, visit <http://ecsp.si.edu/popmatters.htm>

Related Web Links

Population Matters: Demographic Change, Economic Growth, and Poverty in the Developing World
<http://www.oup-usa.org/isbn/0199244073.html>

Center for Global Development
<http://www.cgdev.org>

Mailman School of Public Health
<http://cpmcnet.columbia.edu/dept/sph/>

14 March 2002

EU ENLARGEMENT AND ENVIRONMENTAL QUALITY IN CENTRAL AND EASTERN EUROPE AND BEYOND

Featuring (Panel 1) **JoAnn Carmin**, Department of Urban Affairs and Planning, Virginia Tech; **Miranda Schreurs**, University of Maryland, College Park; and **Petr Jehlicka**, The Open University, UK

(Panel 2) **Douglas Crawford-Brown**, Carolina Environmental Program, University of North Carolina-Chapel Hill; **Alexander Carius**, Adelphi Research Institute; **Liliana Botcheva-Andonova**, Earth Institute, Columbia University; and **Regina Axelrod**, Adelphi University

(Keynote address) **Tom Garvey**, Regional Environmental Center for Central and Eastern Europe

(Panel 3) **Max Stephenson**, College of Architecture and Urban Affairs, Virginia Tech; **Andreas Beckmann**, World Wide Fund for Nature, Austria; **Barbara Hicks**, New College of the University of South Florida; and **Ruth Greenspan Bell**, Resources for the Future

(Panel 4) **John Pickles**, Geography and International Studies, University of North Carolina, Chapel Hill; **John Kramer**, Mary Washington College; **Ingmar von Homeyer**, Ecologic, Germany; and **Stacy D. VanDeveer**, University of New Hampshire

By Robert Lalasz and Naomi Greengrass

European Union (EU) accession is no longer a question of “if” but “when” for the countries of Eastern and Central Europe. But accession has required these countries to adopt wholesale European regulations on a broad number of topics, including environmental standards and protection. This day-long Wilson Center conference explored the potential effects EU enlargement might have on national and EU environmental quality and policies. Conference participants reflected on the tremendous environmental progress made in many candidate countries since 1995; they also expressed guarded optimism about the ultimate environmental consequences of enlargement.

Implications of EU Eastern Enlargement for the Environment (Panel 1)

In this panel chaired by **JoAnn Carmin** of

Virginia Tech’s Department of Urban Affairs and Planning, **Miranda Schreurs** of the University of Maryland-College Park argued that trends indicate enlargement will push the EU (currently a global environmental leader) to the “highest common denominator” of environmental protection instead of bringing the environmental quality of member countries down to the level of candidates.

Joint implementation of environmental standards, Schreurs argued, is an important opportunity for cooperation, allowing more developed Western countries to invest in environmental protection in the east and gain credit for Eastern Europe’s lower emissions levels. But she also pointed out that, while on paper Eastern Europe appears to be improving environmental protection, what will happen on the ground is the looming question. For example, will the West invest heavily in Central and Eastern European

Co-sponsored by the Wilson Center’s East European Studies Program and the Environmental Change and Security Project; the Center for Slavic, Eurasian, and East European Studies and the Center for European Studies at the University of North Carolina, Chapel Hill; and Virginia Tech University’s School of Public and International Affairs and its Institute for Metropolitan Research.

environmental protection capacities? Can Eastern Europe build capacity as quickly as the last wave of new members (southern Europe) did? Will citizens take an active role in agenda-setting and monitoring? And how long will the EU maintain its environmental leadership role?

Petr Jehlicka of the Open University (UK) explored candidate countries' potential environmental role in the EU. Indicators show, said Jehlicka, that these nations will adopt a more passive and reactive role to environmental regulation rather than push their own agenda within Europe. This future path, Jehlicka argued, results from both (a) the weakness and limited resources of environmental NGOs and government ministries in the East, as well as (b) the EU's focus on adopting the *acquis communautaire* and building inward-looking capacities—to the exclusion of encouraging outward-looking, EU-level activism.

The Impact of EU Enlargement on Environmental Policies, Practices, and Institutions (Panel 2)

In this panel chaired by **Douglas Crawford-Brown** of the Carolina Environmental Program, University of North Carolina-Chapel Hill, **Alexander Carius** of the Adelphi Research Institute began by outlining the different priorities of the three institutions (the EU, the United Nations Economic Commission for Europe, and the Organization for Security and Cooperation in Europe) responsible for promoting environmental policy in Central and Eastern Europe. Carius argued that these institutions need to cooperate more closely on and develop structured and coordinated approaches towards integrated environmental policy in an enlarged EU, particularly with regards to cross-border cooperation.

Liliana Botcheva-Andonova of Columbia University's Earth Institute then examined the effects of EU regulations on various industries in the candidate countries, concluding that the integration process has enhanced the already-positive linkages between demand for "green" products and the environment in Eastern and Central Europe. She cautioned, however, that environmental policy and

assistance must adapt to the diversity of situations across Eastern and Central Europe.

Finally, **Regina Axelrod** of Adelphi University highlighted the EU's lack of comprehensive regulations for nuclear reactor issues by recounting the controversy surrounding the Czech Republic's Temelin nuclear power plant. Temelin, which is located close to the Austrian border, has raised tension between the two countries, with Austria threatening to block Czech accession into the EU until the plant's safety is assured.



Alexander Carius

EU Enlargement: Is It Sustainable? (Keynote Address)

In a wide-ranging speech, Regional Environmental Center for Central and Eastern Europe chair **Tom Garvey** argued that, while enlargement does not guarantee sustainable development, the process will ultimately positively affect European environmental quality both in the short- and long-term. Key to this process, he said, will be "a large measure of public awareness and support both for the parliamentary process of adoption as well as for the active involvement of the public in monitoring the actual implementation and enforcement of

those rules and regulations." He also cited a European Commission study which said that, while infrastructure costs to implement the environmental *acquis* are high, the ultimate financial benefits to the EU by 2020 from full implementation will be between 134 and 810 billion Euros.

But Garvey worried about the capacity for the EU to keep up with the environmental consequences of region-wide prosperity. He noted that the state of Europe's environment has not improved since the commencement of the Environment for Europe process. While there are indications that the EU that is beginning to integrate environmental concerns and requirements into all sectoral policies, Garvey said that it is going to be more difficult in accession countries with very rapid growth to move towards sustainability. "The *acquis communautaire* is necessary but not sufficient," he said. "Sustainable development needs to be taken seriously."



Public Participation, Nongovernmental Organizations, and EU Enlargement (Panel 3)

In this panel chaired by **Max Stephenson**, College of Architecture and Urban Affairs, Virginia Tech, **Barbara Hicks** of the University of South Florida's New College emphasized how the EU influences on environmental movements in Central and Eastern Europe through agenda-setting and shaping the means and conditions of activism. Hicks concluded that the EU has generally helped strengthen major environmental organizations in candidate countries; these organizations now tend to focus on institutional procedures—such as lobbying and writing reports—to pressure their governments to implement EU policies.

Andreas Beckmann of the World Wide Fund for Nature, Austria highlighted the importance of NGOs as advocates for the environment, as a source of expertise and practical support in environmental initiatives, and as promoters of democracy. Beckman said that EU funding for NGOs has been overly slow and bureaucratic, while private funders (such as the Soros Open Society Institute) have offered “well-targeted, fast, and flexible” assistance. But in the future, with foreign donors leaving the region, “EU support will become increasingly important,” asserted Beckmann.

Resources for the Future's **Ruth Greenspan Bell** concluded by saying that EU enlargement offers eastern NGOs the opportunity to act as watchdogs as well as the ability to bring litigation against national governments in EU and national courts. However, Bell noted, the new environmental regulations have been imposed on Eastern European countries from outside without including them in the law-making process.

Future Challenges of EU Eastern Enlargement for the Environment (Panel 4)

In this panel chaired by **John Pickles** of the University of North Carolina, Chapel Hill, **John Kramer** of Mary Washington College began by arguing that, while the EU has kept the environment on Eastern Europe's political agenda, the EU has also become a convenient scapegoat for candidate governments who must enact politically difficult measures. Among the coming challenges for accession countries, Kramer said, include cutting energy overconsumption.

Ingmar von Homeyer of the Ecologic Institute next outlined the likely effects of integration on EU environmental governance. Von Homeyer stressed the

need for firm institutionalization of a Community-wide policy integration regime.

The University of New Hampshire's **Stacy VanDeveer** wrapped up the conference by highlighting the broad environmental progress Central and Eastern Europe has recently achieved. “It's important to recognize the tremendous amount that has been accomplished in Central and Eastern Europe in harmonization, expertise, discourse on the environment, and environmental politics.” VanDeveer called on both EU member and candidate countries to continue capacity-building efforts (particularly through non-Brussels actors) and for the EU and West to stop exporting its unsustainable practices to the region. **W**

For more on this meeting, visit <http://ecsp.si.edu/eugreen.htm>

Related Web Links

European Union:
<http://europa.eu.int>

Wilson Center: East European Studies:
<http://wwics.si.edu/ees/index.htm>

Regional Environmental Center for Central and Eastern Europe:
<http://www.rec.org>

19 March 2002

ON THE BRINK: A FILM IN THE 2002 ENVIRONMENTAL FILM FESTIVAL IN THE NATION'S CAPITAL

Featuring **Geoffrey D. Dabelko**, Woodrow Wilson Center; **Cynthia McClintock**, George Washington University; and **Robert Zakin**, Editor, On the Brink

By **Robert Lalasz**

The linkages among environmental degradation, population growth and migration, and violent conflict are complex and difficult to communicate effectively. But Screenscope Inc. filmmakers Hal and Marilyn Weiner have taken up the task in their new film *On the Brink*, which explores these linkages through visits to Bangladesh, India, South Africa, Peru, and the United States-Mexico border. A rough-cut of the film was screened at the Wilson Center as part of the 2002 Environmental Film Festival in the Nation's Capital.

A Vicious Cycle in Bangladesh

On the Brink, which will be shown as part of PBS's new season of the series "Journey to Planet Earth," begins in the slums of Calcutta, a city of 14 million with high unemployment and a large unskilled and cheap labor force. According to the film, one Calcutta slum contains in its one square mile 750,000 squatters, most of whom are Bangladeshis fleeing from environmental degradation, overcrowding, economic deprivation, and violence in their native country.

Indeed, Bangladesh itself is one of the most densely populated countries in the world, with nearly 132 million people (half the United States population)

occupying land the size of New York state. Its per capita annual income of \$225 is among the world's poorest. Severe population pressures and the subdivision of agricultural land to subsequent generations are also provoking mass migration in Bangladesh from rural to domestic urban areas as well to foreign cities such as Calcutta.

These population and poverty dynamics combine with Bangladesh's poor infrastructure, high levels of malnutrition and disease, water scarcity, and an increasingly degraded and unstable environment to provoke conflict. As Thomas Homer-Dixon of the Project on Environmental Scarcities, State Capacity, and Civil Violence at the University of Toronto says in *On the Brink*, "in combination with weak governance and ethnic strife, environmental stress is a tectonic stress that increases the likeli-

hood of conflict."

Better News in South Africa

On the Brink then examines South Africa, which, despite its 1994 transition to democracy, is still defined by the legacy of apartheid. Many villages there, the products of apartheid's resettlement of South African blacks to environmentally marginal lands, are still



Cynthia McClintock



without opportunity. The film shows an open-pit magnesium ore mine, where people earn 30 cents an hour collecting large chunks of ore for 12 hours a day. As in Bangladesh, large numbers of rural South Africans are migrating to urban areas—an influx that overwhelms a typical city’s infrastructure.

Alexandra, South Africa is one such city. According to *On the Brink*, it has 500,000 people—yet its sewage and waterworks are designed to service 40,000. Tens of thousands of people have poured in from the countryside each year, ending up in squatter settlements that promote not only crime but also disease because of inadequate sanitation. Yet Alexandra has become a success story. Spurred by overcrowding and a dangerously declining water table, the city relocated its shantytown residents to new homes

are from drought-stricken central Mexico, but many also come from environmentally degraded areas in Central and South America.

The film depicts the migration economy in Agua Prieta, the Mexican city across the border from Douglas, AZ. Agua Prieta’s economy is based on smuggling people: on any one night, 5,000 people are in “stashhouses” there, waiting for the signal to cross. Four hundred die in the Sonoran Desert each year trying to enter illegally into the United States. But many more make it—up to 1.5 million annually.

On the Brink concludes that developed countries must address environmental security as a major foreign policy issue. Bangladesh, Peru, and other areas are just examples of how water scarcity, land degradation, and forest depletion can help destabilize societies and even

The cameras don’t lie. When people live without privacy, sanitation, or water, it can’t help but exacerbate conflict.
—Robert Zakin

funded by a central government grant. *On the Brink* emphasizes that the difference between Alexandra and similar cities in Bangladesh is that South Africa has the resources to deal with its environmental problems.

Peru’s Ongoing Scarcity

Half of the population of Peru’s capital city Lima consists of migrant laborers, many of whom now live in shantytowns after leaving lands that have become unsuitable for agriculture. *On The Brink* outlines the link between the decline of Peruvian agriculture and the rise of the Sendero Luminoso (Shining Path), a Maoist rebel movement born in the Andean highlands and supported by Peruvian peasants radicalized by environmental scarcity.

Sendero Luminoso, whose profile reached its height after the group terrorized Lima in a week-long 1992 spree of bombings, dissolved after the September 1992 arrest of its charismatic leader, Abimael Guzman. Yet tens of thousands of rural Peruvians continue to migrate to Lima annually. *On the Brink* argues that the land scarcity, environmental degradation, and poverty of Peru’s rural areas have still not been resolved, and that violence remains a possibility despite the decline of Sendero Luminoso.

Across the Rio Grande

On the Brink also maintains that environmental scarcity has caused substantial migration from Mexico into the United States. The majority of these migrants

contribute to revolution.

The Challenge of Multicausality

ECSP Director **Geoffrey Dabelko** began the after-screening discussion by lauding Screenscope for “taking on a monumental challenge to express the complexities of environmental security—complexities on the ground, complexities of research, and complexities of communications.” Dabelko said that, while researchers are always looking for a “silver bullet” to explain the occurrence of conflict, multicausality is a more accurate analysis. “Environment and population growth work with other political and social factors in this regard,” he said.

In addition, while compelling case studies exist for the links between environmental scarcity and conflict, Dabelko said that extrapolation into a universal model is difficult. Even the State Failure Task Force, he noted, has had a hard time saying anything definitive about environment’s contribution to violence and state failure. But USAID is adopting a conflict-prevention framework to incorporate environmental security considerations, a move that Dabelko argued will enrich the agency’s efforts and make them more effective.

Hope for Peru

Cynthia McClintock, a professor of political science and international affairs at George Washington University, said that *On the Brink* would bring



problems rarely seen in the United States to the attention of a wide public. She said the great strength of the film was to highlight the material problems—environmental and economic—underlying violence.

McClintock, who has written extensively about Peruvian peasants and Sendero Luminoso, said problems in Colombia and Peru are very much rooted in environmental scarcity. “These movements often begin in rural areas with the support of dispossessed peasants,” she said. With an annual three- to four-percent population growth rate in Latin America, rural populations continue to expand, subdividing already marginal agricultural land. McClintock added that these population pressures are accelerating the soil depletion, soil salination, and lack of water for irrigation. “More people and less land means more poverty,” she said.

However, McClintock cited a number of reasons for hope in Peru—from recent democratization and development of civil society in Latin America to the experience of the ancient Incas, who sustained a very large population on arid lands through careful irrigation control. She also noted that family planning has cut into the massive population growth rates of Latin America in the last 20–30 years. And McClintock praised international financial organizations (particularly the World Bank) for adopting “much savvier policies” that are less neglectful of environmental problems. But problems obviously remain, she said—including coca growing and cocaine processing, which generate serious environmental hazards and are a major polluter of some South American rivers.

Film's Genesis

On the Brink's editor **Robert Zakin** told the audience during open discussion that the *Journey to Planet Earth* series is much more driven by issues such as environmental security than it is by situation or geography. He also said that the filmmakers were originally in Bangladesh to film for an episode on global disease when a bomb went off 30 feet from their camera—heightening their interest in how environmental pressures can contribute to conflict. “The cameras don't lie,” said Zakin. “When people live without privacy, sanitation, or water, it can't help but exacerbate conflict.” 

For more on this meeting, visit <http://wcsp.si.edu/brink.htm>

Related Web Links

Screenscope, Inc.

<http://www.screenscopefilms.com/>

Journey to Planet Earth

http://www.pbs.org/teachersource/science_tech/planetearth/

2002 Environmental Film Festival in the Nation's Capital

<http://www.dcenvironmentalfilmfest.org>

Geoffrey Dabelko

<http://wwics.si.edu/mediaguide/dabelko.htm>

Cynthia McClintock

<http://www.gwu.edu/~psc/mcclintock.html>



4 April 2002, San José, Costa Rica

TRANSBOUNDARY WATER COOPERATION IN CENTRAL AMERICA: A REGIONAL WORKSHOP OF THE ENVIRONMENT, DEVELOPMENT, AND SUSTAINABLE PEACE INITIATIVE

By Alexander Carius, Geoffrey D. Dabelko, and Alexander López

Cooperation and conflict over transboundary water in Central America was the focus of the first regional workshop organized under the auspices of the Environment, Development, and Sustainable Peace Initiative (EDSP). Aimed at bridging the gap between North and South, this workshop brought together a distinguished group of 35 international experts to discuss the opportunities and limitations for a comprehensive promotion of sustainable peace in Central America.

The main objective of EDSP is to develop a constructive dialogue among Northern and Southern policymakers, civil society groups, and scholars on how to prevent environmental conflicts and develop a constructive agenda for peace and sustainable development. A core element of the effort is to develop cornerstones for an agenda for “environment and sustainable peace.” Fostering new efforts to begin bridging both the knowledge and policy gaps between South and North is a critical aspect for the success of this project.

Environment, Conflict, and Security

Conference co-organizer **Alexander López** of the Costa Rica NGO FUNPADEM kicked off the workshop with a presentation entitled “Environment, Conflict, and Security as a Study-Subject in Central America.” López called for greater attention to the links between environment, conflict, and security issues

in Central American border regions. This focus, he said, is warranted for three reasons. First, the richest ecosystems in the region are found in its border areas. Thus, transboundary dynamics produced by ecosystem exploitation could contribute to social stress and potentially to conflicts.

Second, said López, the international nature of these ecological zones demands new environmental governance forms that extend beyond the classical concepts of sovereignty, national interest, and territoriality. Third, the joint management of these ecosystems faces difficulties because of territorial disputes. Over the last two years, he noted, Central America has witnessed increasing interstate tensions in at least three of its ten land borders. Finally, the regional integration process could create environmental degradation across borders that would be perceived as transnational threats given the ease with which pollution permeates state boundaries.



Pascal Girot

Development and Environment

Álvaro Fernández of Development Observatory at the University of Costa Rica followed with “Environment and Development in Latin America and the Caribbean.” Fernández, one of the contributors to the *UNEP’s Global Environmental Outlook for Latin America and the Caribbean*, highlighted the major socioeconomic pressures on the environment in the region—including poverty, income inequality,

Cosponsored by FUNPADEM (Costa Rica), Universidad Nacional (Costa Rica), Adelphi Research (Germany), and the Environmental Change and Security Project

unsustainable agriculture, industrial development, unplanned urbanization, population density, demographic growth, trade, and consumption issues.

Fernandez also said that urbanization, biodiversity loss/deforestation, and regional impacts of global climate change stand out as three prominent environmental challenges for Central America. He said that three-quarters of the region's population lives in large cities where air quality threatens human health and water shortages are common. Depletion and destruction of forest resources is a central issue in the region's environmental agenda. Finally, the regional impact of climate change is reflected in phenomena such as forest fires, natural disasters such as hurricanes

is not occurring at this time, he argued, and the probability of conflict remains moderate in large measure because the United States perceives conflict in the region as contrary to its interests.

Next, **Pascal Girot** of the UN Development Programme and the University of Costa Rica spoke on "Vulnerability and Adaptation to Climate Change and Disasters in Central America." Central America demands heightened levels of adaptation, said Girot, because increasing environmental stresses and the concentration of populations in the most vulnerable ecological regions makes natural disasters such as Hurricane Mitch more destructive. Girot stressed that vulnerability is a complex web of external events or

Fostering new efforts to bridge both the knowledge and policy gaps between South and North is a critical step in the path to a sustainable environment and sustaining peace.

and floods, and the rise of sea levels, which threaten many coastal cities.

Finally, Fernandez argued that global multilateral environmental agreements and non-binding instruments have (a) increased public awareness of environmental issues in Central America, and (b) contributed to the creation of some national institutional structures for the implementation of such multilateral agreements. Thus, environmental issues in Central America are already integrated into the development agenda, and the region's countries have begun to adapt their legal and institutional framework to the new paradigm of sustainable development.

Rivers, Climate Change, and Disasters

In his presentation entitled "Conflict and Cooperation in Central American River Basins," **Carlos Granados** of the University of Costa Rica focused on the San Juan River and the Lempa River, two of the twenty-three international river basins in Central America. Conflict potential over the region's river basins flows from countries viewing the basins as sovereignty concerns and not ecosystems. In the case of the Lempa River, Granados and his team of Central American researchers found that conflict potential was only moderate. While El Salvador is more dependent on the Lempa River than its other riparians, it is also more responsible for the majority of the river basin's environmental deterioration.

In the case of the San Juan River, Granados said, declining water quality and its damage to fishing and human health is an increasing concern. Overt conflict

threats and the internal capacity of the community to respond to such events. Socio-environmental factors, he said, are critical.

Cooperation in Water and Conservation

Aaron Wolf of the Oregon State University Department of Geography then presented "Global Water Crisis," an introduction to the field of transboundary water cooperation and his Transboundary Freshwater Disputes Database. Wolf debunked the commonly held view that "water wars" are ongoing and imminent. He analyzed a comprehensive set of 1,800 water interactions over the past fifty years that resulted in multiple outcomes ranging from war to cooperation. Of these 1,800 events, said Wolf, fully two thirds resulted in cooperation. Thus, the last 50 years have seen only 37 acute disputes (those involving violence) while, during the same period, 157 treaties were negotiated and signed. But, as Wolf noted, "[t]he likelihood of conflict rises as the rate of change within the basin exceeds the institutional capacity to absorb that change." He suggested that finding the most resilient and appropriate institutions is therefore the paramount challenge for addressing water disputes.

Finally, **Olivier Chassot** and **Guisselle Monge** of the Great Green Macaw Research Conservation Project presented "The Green Macaw: A Flagship Species for Developing Joint Conservation Actions in Southeast Nicaragua and Northeast Costa Rica." This example of transboundary joint management of the



green macaw's habitat demonstrates the confidence-building opportunities presented by local projects in biodiversity-sensitive border areas.

The macaws' remaining breeding habitat is situated between Nicaragua's Indio-Maiz Biological Reserve and the large conservation complex in Costa Rica that includes La Selva, Braulio Carillo National Park. At the regional scale, the area provides ecological linkage between highland and lowland ecosystems for species that seasonally migrate between these areas. At the continental scale, this area is the last remaining connection between Nicaragua and Costa Rica of the Mesoamerican Biological Corridor, a corridor that has served as a major genetic pathway between North and South America since the land bridge was established over three million years ago. The project shows how a bottom-up approach integrating local concerns into transboundary initiatives can make a unique contribution to sustainable peace.

Discussion among a group of forty and distinguished guests (including journalists, activists, academics, and Costa Rican and U.S. government officials) sounded a number of themes:

- Build leadership in the South through education and stemming the brain drain to the North;
- Focus on sustainable livelihoods as critical to sustainable development and sustainable peace;
- Reconceptualize links among development, security, and conflict in order to integrate basic survival needs of developing countries and to develop appropriate policy measures;
- Promote greater South-South dialogue on grassroots approaches to environment, development, and sustainable peace;
- Increase Northern awareness and knowledge of Southern concerns (especially donor agencies);

- Ensure sustained donor support to institutions and programs until self-sufficient or completed;
- Avoid conflating traditional security and environment agendas.

EDSP: Agenda and Goals

At the conclusion of the regional workshop, EDSP convened its first core group meeting of distinguished practitioners and scholars to develop jointly an agenda on environment, development, and sustainable peace. This two-day meeting continued the focus on water, conflict, and cooperation with a presentation by core group member Aaron Wolf; the discussion also extended debates on applied research and policymaking on environment, development, conflict, and cooperation.

EDSP was conceived in large part because current efforts to translate environment, population, and conflict debates into a positive and practical policy framework for environmental cooperation and sustainable peace have not been successful. More importantly, these efforts have failed to engage a broad community of stakeholders, particularly in the global South. Fostering new efforts to bridge both the knowledge and policy gaps between South and North is a critical step in the path to a sustainable environment and sustaining peace.

EDSP's activities have been designed to develop options for institutional cooperation around integrated development, environmental, foreign, and security policies and programs. Through multiple tracks, EDSP collaborators will communicate "environment and sustainable peace" strategies to researchers, practitioners in civil society, and national and international policymakers. **W**

For more on the EDSP Initiative, see our interview with EDSP co-chairs Alexander Carius and Alexander López on page 321.

9 April 2002

THE JO'BURG MEMO: FAIRNESS IN A FRAGILE WORLD— A MEMORANDUM FOR THE WORLD SUMMIT ON SUSTAINABLE DEVELOPMENT

Featuring **Wolfgang Sachs**, Senior Fellow, Wuppertal Institute for Climate, Environment, and Energy; **Ashok Khosla**, Director, Development Alternatives, India; and **Hilary French**, Vice President, Worldwatch Institute, USA

By Robert Lalasz

Many observers of the preparatory meetings (or “prepcoms”) for August’s World Summit on Sustainable Development in Johannesburg are discouraged by the Summit’s emerging priorities, which seem largely to ignore the interconnections among equity, the environment, and consumption practices.

In an effort to highlight these linkages, the Heinrich Böll Foundation has just published *The Jo’burg Memo: Fairness in a Fragile World*, which provides both a critical account of the post-Rio 1992 decade and recommendations for Johannesburg based on the “mutual and intricate relationship of ecology and equity.” Three authors of the memo discussed its points and their hopes for the future of sustainable development at this Wilson Center meeting.

The Böll Foundation’s **Sascha Müller-Kraenner** introduced *The Jo’burg Memo* by saying that “everyone at the Third Summit prepcom in New York in March saw why we need a document like this.” He said that the prepcom’s 150-page text has sacrificed context and vision for super-specialization. For *The Jo’burg Memo*, Müller-Kraenner added, the Böll Foundation asked representatives of governments, nongovernmental organizations, business, and others to think broadly about where the international community has fallen short and how to restore vision and synthetic thinking

to the Johannesburg process.

“Marrakesh Trumped Rio”

Wolfgang Sachs, coordinator/editor of *The Jo’burg Memo*, began his overview by bluntly asserting that

there was no substantive reason even to hold the Summit this year. He said that the decade since Rio has seen no progress on the environment and considerable backsliding on global sustainable development. While Rio provoked a number of treaties, conventions, and institutional adjustments (such as the widespread creation of national environment ministries), Sachs said that these moves have created “process without results.”

“In essence, Marrakesh (the 1994 agreement that established the World Trade Organization) trumped Rio,” said Sachs. A wave of economic globalization, he argued, has

largely washed away sustainable gains that could have been made at microeconomic level and has instead promoted a “robber economy” that “has exposed the national treasures of developing countries to the pull of world markets.” In OECD countries,” Sachs said, “sustainable development is now a largely forgotten issue.”

The Jo’burg Memo, said Sachs, lays out the ideal Johannesburg agenda—one that weights development, equity, and ecology equally. The ecological fragility of



Ashok Khosla

Cosponsored by the Environmental Change and Security Project and the Heinrich Böll Foundation



the planet is “a historically new situation,” said Sachs. “How can we achieve fairness in a finite world?” *The Jo’burg Memo* calls for curtailment of overconsumption, poverty eradication through a rights-based approach, and new environmental governance institutions that enforce those rights.

Poverty and Power

“There is lots of talk about poverty,” said Sachs, “but very little about wealth.” And yet overconsumption, he argued, is the largest force for global unsustainability and poverty. The resource

cannot be sustained if applied to the world. In fact, he said, this model is destroying the livelihood base in developing countries.

And if the West fails to deal with sustainable development issues, Khosla said, the resultant environmental destruction would lead to massive migration and destabilization. “The sea-level rise and deforestation will lead to the South exporting people to the North on a scale that will dwarf the boat people,” said Khosla. While the United States has a “major and historically unique” position to bring about change in development patterns, Khosla said that it has instead

There is lots of talk about poverty, but very little about wealth.
—Wolfgang Sachs

claims of the global consumer class, Sachs said, are causing resource conflicts and threatening the one-third of humanity who live directly from nature.

In addition, *The Jo’burg Memo* argues that markets and a needs-based approach can never solve global poverty. “Poverty is not a matter of lack of income, but lack of power,” said Sachs. The poor, he said, must have rights to land, water, and access to finance. New global governance institutions—such as a World Environmental Organization, an International Energy Agency, and an International Court of Arbitration—should enforce these rights. And the link between ecology and equity must be forcefully stressed.

Johannesburg, said Sachs, presents an excellent opportunity to demonstrate that livelihoods, poverty reduction, and environmental protection are inextricably linked. “But it’s not going to happen in Johannesburg,” concluded Sachs.

The Failure of the International System

Ashok Khosla said that, while the South has much work to do to conserve the environment and reform its governance systems, the North holds the key to global sustainability. He pointed out that, while the international system had pledged \$600 billion dollars at Rio for the implementation of Agenda 21, no more than \$3 billion of this money has actually been spent. “This is such a massive failure of the international system that we have to ask if we are talking about these issues in a realistic way,” Khosla said.

Sustainable development, said Khosla, encompasses both sustainable consumption patterns and production systems. But Khosla argued that the Western model of development—hyperefficiency, reliance on fossil fuels, centralized energy grids—

abnegated its responsibility. “Instead of advocating SD—sustainable development—[the United States] has achieved FSD—Full Spectrum Dominance,” he said.

Governance Recommendations

Hilary French then detailed the three areas of governance recommendations in *The Jo’burg Memo*: rights, redirecting markets, and institutional reforms. First, the document stresses the need at Johannesburg to discuss *community resource rights*—over forests, fisheries, and ecosystems writ large. French pointed to the Convention on Biodiversity and the Aarhus Convention as good models for an overarching convention on such rights. The Convention on Biodiversity (which addresses fair access, equitable sharing of benefits, full and effective participation of local peoples, and prior and informed consent for the harvesting of biological wealth) has the support of many developing world countries, but the United States has refused to become a party.

The Jo’burg Memo also advocates tax shifts and subsidy removals to make the global marketplace more responsive to sustainability development principles. French said that taxes should shift from labor to the consumption of natural resources, internalizing external environmental costs into pricing.

She also argued that removing government subsidies for environmentally-harmful activities (such as fossil-fuel extraction or industrial agriculture) would free up \$800 billion to \$1 trillion in the first year alone—in contrast to the \$650 billion cost of implementing Agenda 21 estimated at Rio. The Fourth WTO Ministerial Conference at Doha made a good start on this, French added, using WTO rules to attack



subsidies that promote overfishing. In this vein, she said that multilateral environmental agreements need to take precedence over WTO rulings.

Finally, French said that *The Jo'burg Memo* stresses corporate accountability and institutional reform. Social responsibility, she said, has proven too lax a strategy for enforcing sustainable corporate behavior: instead, corporations need to be subject to binding codes through a convention of *socially accountable production*—a process that should begin at Johannesburg. French also argued that the United Nations Environmental Programme (UNEP) should be transformed into a World Environmental Organization that oversees global environmental governance and the further development of standards and agreements.

Governments are Crucial

In open discussion, Sachs also said that the “Type II” initiatives (voluntary partnerships, instead of the “Type I” government initiatives) now being talked up for Johannesburg should not be used as a pretext for governmental inaction. “The problem now is the absence of international governance,” he said, “and Johannesburg is proposing even more absence of such governance!” French added that the “current fashion for multistakeholder initiatives” fails to challenge power relations and thus is doomed to ineffectiveness.

After Rio, Sachs added, UN attempts to gather support for regulating transnational corporations (TNCs) were minimized and then eventually discarded. “We need to create a space where public rights prevail, as in Aarhus,” he said. He also criticized development-financing initiatives proposed at the recent Monterrey International Conference on Financing for Development for using old and non-participatory models of delivery that also failed to take sustainable development seriously.

“The rich countries are using a social welfare approach to save the WTO, and the same will happen at Johannesburg,” Sachs said. “The Summit will pay more attention to saving the free-trade regime as a way of solving poverty. It’s a self-defeating approach.”

French criticized the United States for recommending sustainable development to other countries “even though people elsewhere see U.S. development as paradigmatically unsustainable.” The State Department’s lead on U.S. preparations for the Summit, she said, means that this focus on “the other” is institutionalized. Sachs recommended that Europe “forget about the U.S. as long as the Bush

administration exists,” and make its own selective multilateral compacts to “try out some form of global deal ourselves.”

For more on this meeting, visit <http://ecsp.si.edu/boll.htm>

Related Web Links

The Jo'burg Memo: Fairness in a Fragile World

www.boell.org/docs/Memo-mF.pdf

Heinrich Böll Foundation

<http://www.boell.org>

Wolfgang Sachs

http://www.wupperinst.org/Publikationen/buecher/planet_dialectics.html

Wuppertal Institute for Climate, Environment, and Energy

<http://www.wupperinst.org>

Ashok Khosla

<http://www.earthforum.org/9904/khosla/biography.htm>

Development Alternatives, India

<http://www.devalt.org>

Hilary French

<http://www.worldwatch.org/bios/french.html>

Worldwatch Institute

<http://www.worldwatch.org>

16 April 2002

INVESTING IN HEALTH FOR ECONOMIC DEVELOPMENT: REPORT OF THE COMMISSION ON MACROECONOMICS AND HEALTH

Featuring **Jeffrey D. Sachs**, Director, Center for International Development and Galen L. Stone Professor of International Trade, Harvard University

By Robert Lalasz

One of the United States' preeminent economists told a Wilson Center audience that the international community must address shortcomings in global health if it is serious about addressing global poverty. **Jeffrey Sachs**, Harvard University professor and chair of the World Health Organization's Commission on Macroeconomics and Health, said that \$35-\$40 per capita annually—one penny out of every ten dollars of developed-country GNP—would alleviate the world's most fatal diseases and allow poor countries to participate fully in the global economy.

Three Truths About Global Disease

In outlining the findings of the commission's December 2001 report (*Macroeconomics and Health: Investing in Health for Economic Development*), Sachs said that the last two decades have seen the world divide into not only rich and poor but healthy and diseased. While life expectancy in rich countries is approaching 80, it hovers near 50 in the poorest developing countries. One out of every five children dies before the age of five in poor countries, versus one for every 165 in the developed world.

By the end of the 1990s, developing-country public-health systems that were already woefully underfunded were overwhelmed with the pandemic of HIV/AIDS and resurgent diseases such as malaria. Sachs said that the WHO commission, made up of finance and public-health experts, reached a consensus

on the health crisis based on three basic truths:

1. *Fighting disease is vital to economic success.* "This seems so obvious," said Sachs. "But we kind of pretended that, well, AIDS is something that's here, but we're going to work on trade and finance and so forth as if that AIDS pandemic could be put into a corner. Well, trade alone won't work if your 20 percent of your labor force is dying of HIV/AIDS. Either we're going to get the disease pandemics under control, or the economic crisis—particularly in Africa—is going to continue to deepen."

2. *The vast part of the health gap is explained by a few conditions—infectious diseases, nutritional deficiencies, and unsafe childbirth—that are overwhelmingly related to poverty.* "And one of the things that's known about these conditions is a set of effective interventions," said Sachs. "People don't have to die of these diseases in anywhere near the numbers they are."

For example, Sachs noted, almost one million children are dying of measles in developing countries because immunizations aren't reaching

them and poor nutrition may already have suppressed their immune systems. Perinatal tetanus, said Sachs, does not even exist in the United States but kills 500,000 annually in the developing world. And the inexpensive drug chloroquine continues to be the first-line treatment for malaria in many countries despite its increasing ineffectiveness.

3. *Poor people cannot afford even the inexpensive and readily-available measures against these diseases.* The WHO



Jeffrey D. Sachs

commission concluded that \$25 billion annually would pay for 41 essential health interventions that would cover perhaps two-thirds of the population of the poorest 46 countries over the next ten years. But Sachs stressed that even this figure was too expensive for poor countries to afford. “When you’re at \$200 per capita income, like Malawi, \$40 per capita is 20 percent of GNP,” he said. “Twenty percent of GNP is typically more than the entire public-sector budget for developing countries, especially at that income level.”

How the Developed World Has Fallen Short

Sachs called on donor countries to bridge this funding gap. “Let’s stop merely lecturing these countries and realize that they can’t get serious about these problems until we do,” he said. “It’s not a matter of telling countries what you hear endlessly—cut your military budget and provide for health, or the president bought an airplane rather than investing in the health sector, or if it weren’t for the dialysis machines you’d have primary health,” he said. “These are lies. The story of what’s happening is that at \$200 per capita or \$300 per capita [income], you cannot afford to stay alive in a malarial, tubercular, HIV/AIDS-ridden environment. And therefore millions of people die. It’s no more complicated than that.”

Sachs, who is also special advisor to UN Secretary-General Kofi Annan on the Millennium Development Goals, estimated that meeting the goals for health would cost well under the standard donor target of 0.7 percent of developed-country GNP. But he lamented that the international community has been less than responsive to this mission as well as to reducing the debt-burdens of poor nations.

“In my opinion,” said Sachs, “the rich countries, led by the U.S., have basically used the [structural adjustment policies of the] IMF and World Bank as their buffer against the clamoring masses. For 20 years we’ve kind of faked it. But the pathogens don’t care. The AIDS pandemic got totally out of control in front of our eyes, with all of the science and medicine that we have, and we stood by and watched 25 million people die without giving a single person in a poor country access to antiretroviral drugs from U.S. money.”

Sachs went on to criticize the strictures donors place on their current health investments. “We’ve had rules that donors would support capital costs, but not recurrent costs—we won’t pay for doctors, nurses, and drugs,” he said. “We have these strange norms which are a little hard to believe if you’re not in this business.”

Sachs also said that the international public health community has been conditioned to ask for far too little funding to address these problems. “I explained to Peter Piot, head of UNAIDS, that we don’t even talk about millions anymore,” said Sachs. “That’s rounding error in the modern economy. We do \$1.6 trillion dollar tax cuts. We talk about hundreds of billions. We don’t even deal it in millions—that’s off the decimal points.”

“What the rich world has not done until now,” he added, “is to ask what would really be needed to solve the real problems, including the specific targets that we have set for ourselves. So what I am hoping to do [as special advisor] is study how the Goals can be accomplished and ask actually how much they cost.”

“It seems to me that [striving to meet the Goals] is the essence of global solidarity,” Sachs concluded. “And that seems to me the essence of living in a peaceful and humane world.” 

For more on this meeting, visit <http://ecsp.si.edu/sachs.htm>

30 April 2002

THE GREAT NORTH KOREAN FAMINE: FAMINE, POLITICS, AND FOREIGN POLICY

Featuring **Andrew S. Natsios**, Administrator, United States Agency for International Development; and **Richard Solomon**, President, U.S. Institute of Peace (introduction)

By **Robert Lalasz**

The 1990s famine that killed millions of North Koreans has been the least understood humanitarian catastrophe of the decade—almost exclusively because of the extreme secrecy and defensiveness of the North Korean government. USAID Administrator **Andrew Natsios**' new book, *The Great North Korean Famine*, details not only how that defensiveness led to the crisis, but also the regime's cruel policies and the inadequate U.S. and international response. Natsios outlined his findings to a Wilson Center meeting that included Charles Pritchard, the current U.S. State Department Special Envoy to North Korea.

"One of the Greatest Disasters of the Decade"

Richard Solomon of the U.S. Institute of Peace, which published the book, introduced Natsios as a "scholar-official of the highest order." And he praised *The Great North Korean Famine* for highlighting issues from the catastrophe that have wide applicability to today's foreign policymaking.

"For example, how do you balance moral values against geo-political-strategic interests?" Solomon said. "How do you decide to send food to people living under control of a hostile state? Deploy troops to face a hostile government? Dispatch officials to deal with war criminals?"

Solomon called the famine, which lasted from 1995 through 1999, one of the three greatest humanitarian disasters of the decade—on a par with Rwanda and Bosnia. He praised Natsios' work to publicize the catastrophe, and said that food and economic security were still unresolved issues for North Korea.

"I Didn't See A Famine At First"

Natsios said that his book was based on research

and interviews he did on a June 1997 trip to North Korea while working for World Vision-USA. "I didn't see a famine at first," Natsios said. But two associates convinced him to conduct interviews with Korean refugees who were crossing the Chinese border to find food. Those interviews, along with 1600 other refugee interviews by the Korean Buddhist Sharing Movement NGO as well as the border dispatches of *South China Morning Post* reporter Jasper Becker, convinced Natsios that a full-blown famine was at hand.

Many famines have obvious indicators (such as plummeting agricultural production and rising malnutrition and morbidity). But Natsios said that, with a regime such as North Korea's that tightly controlled information, analysts and humanitarian agencies must look for far less-obvious signs. "All famines take place in a political context," Natsios said. "And there has been no known famine in a democracy. In a democracy, people take action long before that point. Famines take place under centralized governments precisely because information can be hidden."

What Caused the Famine?

Natsios said that an annual FAO crop assessment determined that the North Korean famine was largely caused by the country's Stalinist economic system—not by flooding, as the government still maintains. "North Korea and Cuba are the world's only Stalinist agricultural systems, where there is no incentive to produce food," said Natsios. "The production of food actually went into reverse during the famine." He also said that unsustainable land development techniques such as burning and deforestation led to what flooding there was.

In addition, Natsios said, Russia and China had

Cosponsored by the Wilson Center's Asia Program, Conflict Prevention Program, and the Environmental Change and Security Project

stopped sending heavily-subsidized food supplies and oil to North Korea after the end of the Cold War. “The North Korean agricultural system is the most chemicalized in the world,” said Natsios. “So when they lost oil and grain subsidies all within 12 months, it was disastrous.”

And short-term government decisions, said Natsios, exacerbated that disaster. “The central focus of the [North Korean] regime is survival,” he said. “They will say that survival of the Korean state and people is always more important than survival of the individual.” This principle, said Natsios, explains why the regime made the 1995 decision to “triage” the entire northeast region of the country—in essence, blocking food shipments to that portion of the population in order to ensure subsistence food supplies for the capital Pyongyang, whose support was critical to the government. “No food deliveries were made to that region for two-and-a-half years,” said Natsios. Workers in “unessential industries” such as mining were also triaged.

The turning point in the regime’s domestic credibility, Natsios argued, was when it cut rations to farmers. “Since the prices the PDS [the public distribution system] paid farmers for food was extremely low,” said Natsios, “the system collapsed when farmers began hoarding food.” And since North Koreans’ ration-cards were only honored in the residents’ hometowns, the system’s breakdown led to widespread migration and corruption.

How Many Died?

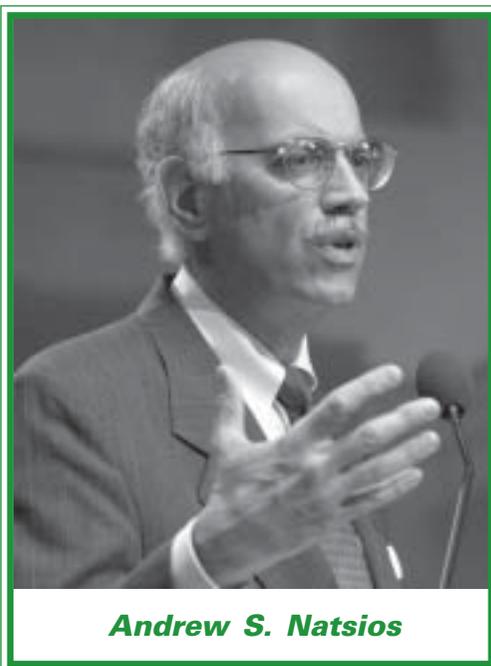
The North Korean government position remains that 225,000 to 235,000 people died during the famine—although one official’s figure of 2.5 million was swiftly denied. Natsios estimated that a figure between 2.5 million and 3.5 million deaths is reasonably accurate. He said that recorded death rates in towns, cities, and regions whose records were accessible show that somewhere between 10 and 19 percent of their populations perished in the famine. Tellingly, only 55 percent of people voted in North Korea’s 1998 national elections—in a country in which

not voting is a crime. “Either the missing were on the move looking for food,” Natsios said, “or their deaths were unrecorded.”

Security and Political Consequences

Natsios said that the famine traumatized North Korean society from bottom to top. In a culture built around extended families, he said, the decisions heads of households had to make about who would and would not eat were utterly demoralizing. But the famine also undercut the North Korean government’s legitimacy in a number of ways:

- North Koreans were no longer reliant on the state for food. In fact, said Natsios, the country’s major source of food now is the 300 farmers’ markets that sprung up across the country in the wake of the famine.
- Internal migrations of people looking for food “profoundly changed the [population’s] whole view of the state,” said Natsios, completely draining popular support for the regime and its policies. Also, the state switched during the famine from propaganda to massive police brutality as a means of maintaining power, further alienating the populace.
- In addition, the international food aid that eventually arrived ended North Koreans’ isolation from the West and the world and debunked the myths of North Korean superiority and self-reliance.



Andrew S. Natsios

The International Response

Answering audience questions, Natsios said that he wrote the book partly as “a catharsis for [my] anger at the inaction of the United States” in the first years of the famine. While many NGOs tried to force the U.S. government to respond, Natsios said, the intelligence wing of the U.S. State Department was debating with the CIA and the Pentagon over whether the famine really existed or was just a ploy by the North Korean regime.

By the summer of 1996, U.S. MIA-recovery teams working in North Korea had reported definitive signs of widespread hunger. But Natsios said that it took



until July 11, 1997 for the State Department to first make a large food donation and use the word “famine” in describing the situation. “We were late,” said Natsios. “The food arrived after the death rate had begun to decline, although it did stabilize the situation and saved a lot of kids.”

“The resources [in North Korea as well as Japan and the West] were always there to stop the famine,” argued Natsios. And while accountability is always a

question in food aid distribution, Natsios added that the United States should not blame the UN for failing to establish the monitoring preconditions for effective distribution. “The UN can’t force these regimes into accountability,” said Natsios. “It must be the EU and the U.S.”



For more on this meeting, visit <http://ecsp.si.edu/nkfamine.htm>

Related Web Links

The Great North Korean Famine

<http://www.usip.org/pubs/catalog/greatnkf.html>

Richard Solomon

<http://www.usip.org/oc/gts/solomon.html>

Andrew S. Natsios

http://www.usaid.gov/about/bio_asn.html

U.S. Institute of Peace

<http://www.usip.org>

U.S. Agency for International Development

<http://www.usaid.gov>

New Publication From ECSP

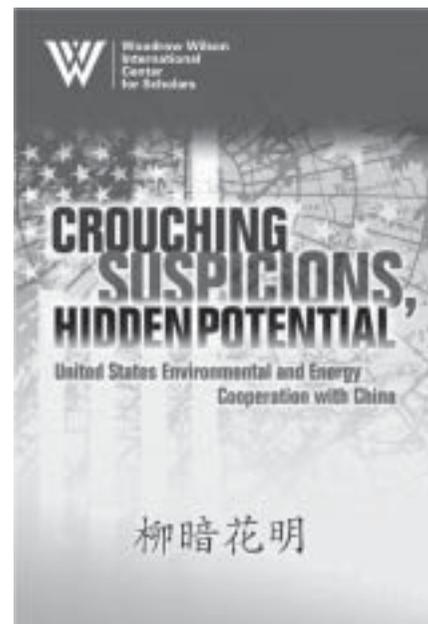
CROUCHING SUSPICIONS AND HIDDEN POTENTIAL: U.S. ENVIRONMENTAL AND ENERGY COOPERATION WITH CHINA

By Pamela Baldinger and Jennifer L. Turner

China already consumes more energy and emits more greenhouse gases than any country except the United States. Moreover, China’s recent breakneck pace of modernization already has left it with nine of the world’s ten most polluted cities. Northeast Asia is beset with acid rain from China’s sulfur emissions, and even countries halfway around the globe are feeling the impact of China’s pollution problems and inefficient use of natural resources. Thus, China’s energy and environmental policies have an enormous impact on the United States and the rest of the world. Yet energy and environmental issues have not played a prominent role in U.S.-China relations.

The new ECSP/China Environment Forum publication, *Crouching Suspicions and Hidden Potential*, succinctly summarizes U.S.-China cooperation in the areas of energy and environmental protection. It highlights opportunities for U.S. policymakers, business, and nongovernmental organizations to further such cooperation; it also analyzes barriers to present and future cooperative efforts.

To obtain a copy of *Crouching Suspicions and Hidden Potential*, contact ECSP Senior Project Associate Jennifer L. Turner at chinaenv@erols.com or 202/691-4233.



8 May 2002

FINDING THE SOURCE: THE LINKAGES BETWEEN POPULATION AND WATER

Featuring **Don Hinrichsen**, consultant to the United Nations; **Henrylito D. Tacio**, Asian Rural Life Development Foundation; **Ruth S. Meinzen-Dick**, International Food Policy Research Institute; **Paul P. Appasamy**, Madras School of Economics, Chennai, India; **Anthony Turton**, University of Pretoria; and **Jeroen F. Warner**, Middlesex University

By Robert Lalasz

Population and fresh water are widely recognized as two of the most important issues facing humanity. Yet too few policymakers are aware of the close links between population growth and water supplies, or the ramifications of these connections for livelihoods, economic productivity, and political stability.

The new ECSP publication *Finding the Source: The Linkages Between Population and Water* takes an important step towards increasing knowledge about these interconnections. The publication's three articles—each written by a different Northern-Southern author team—detail the impacts of population growth on freshwater supplies, intersectoral competition for water, and society's capacity to deal with water and other natural-resource scarcities. The authors of *Finding the Source* came to the Wilson Center to discuss their articles and put forward a common message: global water problems are still soluble—but only with concerted international action that includes efforts to address population growth.

Growing Populations + Finite Water Supply = Water Crisis

In presenting the article “The Coming Freshwater Crisis is Already Here,” author **Don Hinrichsen** argued that rapidly-growing population and economic development are placing tremendous stresses on the world's finite water supply. “There is no more water now than there was 3,000 years ago, when the population was two percent of the 6.2 billion people we have today,” said Hinrichsen.

Hinrichsen showed a series of slides to illustrate the myriad difficulties these stresses are causing worldwide. In Manila, many residents have been reduced to using canal water, which causes illness even after being boiled for 30 minutes. In Arayana State, India, extended families must gather their water supplies from a tap that is open only three hours

weekly. In Khazakistan, irrigation demands have shrunk the Aral Sea by more than one-half over the last 30 years, while surrounding farmlands have become salinized and unusable.

By 2030, said Hinrichsen, anywhere from 2.5 to 4 billion people will be living in water-short countries. “The bind we are in,” said Hinrichsen, “is that, while global population tripled in the 20th century from two to six billion, water use increased six-fold over that period.” And while developing-country population growth rates are declining, populations in the planet's poorest countries are still growing. The world is also now using more water for agricultural and industrial use than ever before, he said, straining a resource that is already seriously degraded.

Co-author and Filipino journalist **Henrylito Tacio** followed by outlining how Asia, one of the wettest regions in the world, is beset with a water crisis. Over 800 million people in Asia have no access to safe drinking water, said Tacio, and even more have inadequate sanitation. Freshwater withdrawal levels have increased dramatically, while water levels in countries such as the Philippines have dropped 50 percent in the last twenty years. Soil erosion and watershed pollution are rampant. And a food crisis looms: Asian nations use up to 86 percent of their water supplies for agriculture.

Tacio said that, while Asia has made tremendous social and economic gains in the last three decades, it is still home to two-thirds of the world's poor. “Efforts to reducing poverty won't matter if basic needs for reliable drinking water and sanitation aren't met,” he argued. Tacio added that continuing high levels of water stress will endanger economic growth for the entire region.

How Urbanization Affects Competition for Water

Ruth Meinzen-Dick and **Paul Appasamy** followed by outlining (from their article “Urbanization



and Intersectoral Competition for Water”) how the last 50 years of global urbanization have created unprecedented competition for water. The total population of cities has increased by two billion people since 1950, and another two billion urban residents are projected for 2025—95 percent of them in developing countries. This rapid pace of urbanization, said Meinzen-Dick, geometrically increases the challenges of apportioning water resources. “We talk about calorie poverty and income poverty, but water poverty should also be a common concept,” added Appasamy.

Population and Water Resources in the Developing World

Tony Turton, who heads the University of Pretoria’s African Water Issues Research Unit, next discussed how “resource scarcity” depends as much on a given society’s capacity and ingenuity as the raw amount of a resource it controls. Scarcity is a relative term, said Turton; what is scarce in one environment is abundant in another. And while scarcity can be caused by climate, it is more often induced by factors such as institutional bottlenecks, resource capture, pollution, or politics. “How do we start to engineer

There is no more water now than there was 3,000 years ago, when the population was two percent of the 6.2 billion people we have today.

—Don Hinrichsen

Meinzen-Dick noted that water use in all sectors—domestic, industrial, and agricultural—increases dramatically in cities. Authorities (particularly in developing countries) are thus increasingly being forced to make national water-allocation decisions that often shortchange rural and environmentally sensitive areas as well as women and the poor. Appasamy, who directs the Madras School of Economics in Chennai, India, added urban water use is hurting agricultural needs because demand is closing most open water basins worldwide. Urban industrial pollutants are also often damaging surface and ground water as well as soil, biodiversity, fisheries, and agriculture.

Finding new sources of water to meet the demands of cities is getting more difficult, said Appasamy, although solutions through infrastructure (such as new dams, desalination plants, and leak monitors) and techniques (such as rooftop and ground collection of rainfall) have yet to be fully exploited. Others have suggested reallocation through tradable water rights and water markets. But Appasamy argued that *pricing* could be a key component to managing increasing water use, both urban and rural.

Efficient pricing, said Appasamy, limits water-intensive crops as well as pollution, can lead to household conservation, and could help pay for wastewater treatment. He added that most households in his native India are willing to pay for water if they can be assured reliable supplies. He also advocated decentralized water systems with more local control (such as river basin organizations among riparians) that also promote (a) access for the poor, and (b) accountability for water managers as well as polluters.

social systems for adaptability to long-term changes in natural resources?” asked Turton.

Turton, who co-authored the article “Exploring the Population-Water Resources Nexus in the Developing World” with **Jeroen Warner**, categorized resources as *first-order* (natural) and *second-order* (social, such as technical ingenuity or resource-trading mechanisms). Turton and Warner used population growth and water availability per capita as measures of first-order resources; as second-order resource measurements, they chose GNP per capita and percentage of population with access to safe water. The authors then applied these measures to twenty African countries, combined each country’s statistics, and mapped the results onto a grid.

The grid demonstrates how countries with low first-order water resources (such as South Africa or Mauritius) can, through relatively higher second-order resources, actually be more water secure than “water-rich” countries such as the Democratic Republic of Congo or Mozambique, whose social and political instability have made them unable to exploit their water.

“Second-order resources will be the determinant whether we have enough water to support future population growth,” said Turton. “In order to manage demand, developing countries need intellectual capital, institutional and administrative capacity, political legitimacy, a culture of payment, and an increased level of complexity over time. The countries that don’t have it will be more and more susceptible to social and political instability.”

Warner, a Dutch researcher at Middlesex

ECSP Meetings

University, then outlined the potential and pitfalls of using Global Information Systems (GIS) to help find new water supplies and manage existing resources. While GIS provides us with an unprecedented way of managing data, Warner argued that it does not always lead to better decision-making because of bias in data choice and interpretation. Data for water is particularly fluid, he said, and political debates about distribution and equity need to be informed not only by science but also by underlying values. Indeed, he said, GIS can easily feed into an accelerating trend of data securitization by states.

Warner also noted that the expense of

sophisticated GIS applications both puts them out of the reach of poor and marginalized groups. And GIS is not yet capable of mapping the nuances of social ingenuity, capacity, and stability. “Why are farmers in Bangladesh better predictors of flooding than meteorologists?” Warner asked. “They count the rats on their farms.” While GIS can help refine our knowledge of the population-water nexus, Warner said that we must open its use up to a debate about competing knowledges. “How you look at a river is how you map it,” he said. **W**

For more on this meeting, visit <http://ecsp.si.edu/popwater.htm>

Related Web Links

Finding the Source

<http://ecsp.si.edu/popwater.htm>

Don Hinrichsen

http://www.actionbioscience.org/environment/hinrichsen_robey.html

Henrylito D. Tacio

<http://www.fao.org/docrep/u7760E/u7760e09.htm>

Ruth S. Meinzen-Dick

<http://www.ifpri.cgiar.org/srstaff/meinzenr.htm>
<http://www.ifpri.cgiar.org/events/seminars/2000/071300.htm>

Asian Rural Life Development Foundation

<http://mozcom.com/~arldf/>

International Food Policy Research Institute

<http://www.ifpri.org/>

Madras Institute of Development Studies

<http://mids.tn.nic.in/default.htm>

African Water Issues Research Unit (AWIRU)

<http://www.up.ac.za/academic/cips/awiru.html>



4 June 2002

HIV/AIDS IN THE RANKS: RESPONDING TO AIDS IN AFRICAN MILITARIES

Featuring **Nancy Mock**, Associate Professor, Tulane University School of Public Health, and **Stephen Talugende**, Hospital Administrator, Uganda People's Defense Forces

By **Jennifer Wisnewski Kaczor**

With some sub-Saharan African countries having up to 60 percent of their populations infected with HIV, security policymakers and researchers are increasingly regarding AIDS as a security issue. But one aspect of AIDS that has received less attention is the HIV-infection crisis within sub-Saharan African militaries. Even during peacetime, military personnel globally have higher rates of sexually transmitted infections than their surrounding populations—and HIV-infection rates for African militaries are even higher.

These figures raise troubling questions for the readiness of these militaries, the health of non-combatants in conflict and peacekeeping zones, and ultimately the political stability of many African countries. In this Wilson Center meeting, **Dr. Nancy Mock** provided an overview of current research on HIV and security, and **Captain Stephen Talugende** of the Uganda People's Defense Forces related the Ugandan military's experience with HIV prevention programs.

Conventional Wisdom and the Data Dearth

Mock presented what she called the conventional wisdom on HIV prevalence in African militaries, which theorizes that military populations are particularly vulnerable to HIV infection because (a) they are in the most sexually active age group, (b) the culture of the military promotes risk-taking behavior, (c) military members are highly mobile and live away from their families, and (d) military members have cash available to purchase sex.

Mock also related UNAIDS estimates that HIV rates are two to five times higher among soldiers in some African countries than for non-military populations, with these rates rising for both groups during times of conflict and war. Uniformed service members of less-developed countries, said Mock, are especially vulnerable to HIV infection.

Mock then turned to the impact of HIV on military

forces in sub-Saharan Africa, citing some shocking statistics:

- AIDS is the number one cause of death in the Congolese Armed Forces;
- The rate of HIV/AIDS infection in the South African National Defense Force may be as high as 60-70 percent;
- According to U.S. Defense Intelligence estimates, 40 to 60 percent of soldiers in Angola and the Democratic Republic of the Congo are infected with HIV. For the Zimbabwean and Malawian armed forces, estimates are as high as 70 to 75 percent.

Mock cautioned, however, that few African militaries have the capacity to collect and analyze the data required to generate estimates of HIV infections; most extant statistics are based on small-scale studies and non-probability sampling techniques. For others, such information is classified as a matter of national security. The reality, Mock said, is that very little reliable data exist for prevalence rates within African uniformed services, and data for rebel troops and paramilitary groups are even more difficult to get. In addition, data on knowledge/behavior/practices do not exist. Mock said this data dearth leads some analysts to conclude that prevalence differentials between African civilian and military populations may not be as high as conventional wisdom purports.

The Relationship Between HIV and Security

Mock also noted that, contrary to conventional wisdom, HIV-prevalence data among general African populations suggest that countries with less conflict tend to have higher rates of infection. She hypothesized that peace and stability bring improved transportation infrastructure and increased trade and movement of economic goods within and among countries. This ease of movement and increased economic activity then

provide a vector of transmission for the disease.

But Mock suggested that current analyses do not provide a clear picture of the complexity of the relationship. Though overall prevalence rates suggest that infection rates rise during peacetime, she cautioned that very little comparative data is collected in countries during and after conflict. But Mock suggested that societies during and after conflict are particularly vulnerable to HIV infection because: (a) conflict displaces people from their homes; (b) militaries are on the move; (c) during transitions, peacekeepers are deployed across borders; and (d) during transitions, military members with HIV may be reintegrated without testing, counseling, or treatment.

Recommendations

Mock suggested a number of recommendations to address HIV prevalence in the military:

- Establish a culture of evidence-based management strategies within the military and civilian sectors as well as mechanisms for data sharing;
- Conduct pilot studies of baseline prevalence rates and disseminate their results to enhance military participation in community HIV prevention, especially in the context of demobilization;
- Look to other regional models of civil-military collaboration for “disaster management,” such as collaborations in Latin America and the Caribbean region;
- Support multi-sector approaches that build partnerships and networks among military and civilian government and nongovernmental institutions—efforts that will survive well beyond the funding cycles of donor agencies.

Uganda: A Program for Success

Talugende next related his experience administering the Post Test Club in the Ugandan People’s Defense Forces. The Post Test Club was formed in 1990 to: (a) lobby for better care and support of AIDS patients by the Ugandan military authorities; (b) create partnerships with other support organizations; (c) take active involvement in HIV prevention through public speaking, community education, and peer health education; (d) implement childcare and orphan care; and (e) provide treatment for members. Talugende attributed the drop in the Ugandan military’s HIV prevalence rate—from over 10 percent in 1990 to less than 7 percent today—to

the efforts of the Club. He said that over 7,000 service members and families now participate in the Club’s voluntary programs.

According to Talugende, the program has strengthened and encouraged openness about HIV/AIDS in the Ugandan military as well as reduced the stigma and discrimination suffered by infected service members. “The Club,” he said, “builds confidence and hope, maintains the military’s professionalism, and is cost-effective.”

Challenges Remain

But Talugende also noted continuing challenges facing the project—particularly, a lack of drugs and medications as well as limited administrative support and training for volunteer educators in public speaking and communication. Talugende also said that the death and ill-health of committed Club members has made continuity of leadership and participation in the organization a particular challenge.

Open discussion focused on the data questions raised by Mock, who reasserted that an evidence-based management strategy was absolutely critical to the success of treating HIV in Africa. Some attendees argued that not enough reliable data existed to justify to the U.S. military that HIV is a security issue. Others questioned whether the secrecy of military culture would ever allow implementation of an evidence-based approach to HIV infection. But both Mock and Talugende felt that these norms were changing and that a strong data-based case would prompt the United States to fund HIV prevention programs among developing country (and especially African) uniformed services.

Will the epidemic prevent African nations from fielding military forces? Talugende felt that, because a person can live for some time with the virus without showing symptoms of AIDS, African nations would still be able to field armies and participate in peacekeeping missions—a concern raised by some groups studying this issue. **W**

For more on this meeting, visit <http://ecsp.si.edu/hivmil.htm>



UPDATE: NONGOVERNMENTAL & GOVERNMENTAL ACTIVITIES

This section of the Report highlights the environment, population, and security activities of academic programs, foundations, nongovernmental organizations, government offices, and intergovernmental organizations. If your organization is not listed or if you have an organization to recommend, please contact Robert Lalasz at lalaszrl@wwic.si.edu.

Academic Programs	p. 273
Foundations	p. 278
Nongovernmental Organizations	p. 281
Governmental Activities	p. 300
Intergovernmental Activities	p. 304

ACADEMIC PROGRAMS

Carolina Population Center

The Carolina Population Center was established at the University of North Carolina at Chapel Hill (UNC-CH) in 1966 to coordinate university-wide programs in population. Fifty-eight scholars are currently holding faculty appointments in sixteen UNC-CH departments. The Carolina Population Center provides a multidisciplinary community to carry out population research and train students. The Center's research projects are: the Cebu Longitudinal Health and Nutrition Survey; China Health and Nutrition Survey; Lead and Pregnancy Study; the MEASURE *Evaluation* Project; Nang Rong Projects; the National Longitudinal Study of Adolescent Health; Distance Advancement of Population Research; Alternative Business Models for Family Planning; Life Course Studies; Pregnancy, Infection and Nutrition Study; Dietary Patterns and Trends in the United States; Nutrition Transition Program; WHO Multi-Country Study Proposal; and Russia Longitudinal Monitoring Survey. *For more information, contact:* Carolina Population Center, University of North Carolina at Chapel Hill, 123 W. Franklin St., CB#8120 University Square, Chapel Hill, NC 27516-2524; *Tel:* 919/966-2157; *Fax:* 919/966-6638; *Email:* cpcweb@unc.edu; *Internet:* <http://www.cpc.unc.edu/>

Centre for Development and the Environment (SUM)

SUM is a part of the University of Oslo and aims to generate and communicate knowledge in the field of development and environment by promoting and undertaking interdisciplinary work in collaboration with the established departments of the University. In addition, SUM conducts courses and disseminates research results through publications, seminars, conferences, and workshops. The Centre's research is explicitly policy-oriented, using an interdisciplinary approach on the specific theme of environment and development. The three guiding principles of the Centre are: (1) to address the problems and challenges of poverty and environmental degradation; (2) to emphasize that the multi-disciplinary approach of development or environment is insufficient; and (3) to bridge the gap between research and policy to meet the needs of policymakers. *For more information, contact:* the Centre for Development and the Environment, the University of Oslo, P.O. Box 1116, Blindern N-0317 Oslo, Norway; *Tel:* 47-22-85-89-00; *Fax:* 47-22-85-89-20; *Email:* Liv.Norderud@sum.uio.no; *Internet:* <http://www.sum.uio.no>

Center for Environmental Systems Research

The goals of the Center for Environmental Systems Research, created at the University of Kassel in 1995, are: (a) to increase understanding about the functioning of environmental systems and the causes of environmental problems, and (b) to identify "sustainable" pathways into the future—i.e., pathways that allow development



Updates

of society in harmony with nature. The uniqueness of the Center lies in the combination of approaches it uses to reach these goals. First, it takes a *systems approach* in that its researchers use and further develop the methods and instruments of systems thinking (such as systems analysis and computer simulation). Second, it takes an *interdisciplinary approach* by drawing on knowledge from the different social and natural sciences. Third, it has a *problem-oriented approach* in that it aims to identify and solve critical environmental problems. These approaches together provide a dynamic and distinctive style of environmental research. In order to reach these goals, the Center has adopted a matrix structure for organizing its activities, consisting of three research groups and five cross-cutting main research themes. Members of the research groups “Global and Regional Dynamics,” “Society-Environment Interactions,” and “Eco-balances” collaborate in projects that cover the following research themes: (1) regional and global environmental change; (2) environmental change and human security; (3) world water—strategic analysis and assessment; (4) energy and materials management; and (5) lifestyles and sustainability. The Center strongly emphasizes collaboration with other institutions both inside and outside of Germany. It plays an important role in many international scientific activities such as the World Water Assessment Program, the Global Environmental Outlook of the UN, the International Water and Climate Dialogue, the Intergovernmental Panel on Climate Change, and the Millennium Assessment on World Ecosystems. The Center focuses on links between science and policy by using its research findings to help develop national and international environmental policy. *For more information, contact:* Dr. Joseph Alcamo, Director, or Dr. Karl Heinz Simon, Deputy Director, The Center for Environmental Systems Research, University of Kassel, Kurt-Wolters-Strasse 3, 34109 Kassel, Germany; *Tel:* 49-561-804-3266; *Fax:* 49-561-804-3176; *Email:* alcamo@usf.uni-kassel.de or simon@usf.uni-kassel.de; *Internet:* <http://www.usf.uni-kassel.de/usf/>

Environmental Policy and Society (EPOS)

EPOS is a research network with a small secretariat at Linköping University in Sweden, led by Professor Anders Hjort-af-Ornäs. Since its beginning in 1991, EPOS has been concerned with societal impacts of environmental policy change—not only on the environment, but also on the sociocultural and socioeconomic security of the local community under the impact of regional, national, and global policies. EPOS departs from a community perspective as a means to seek the more general principles that form political dimensions of both environmental and socioeconomic processes of change. This approach means, by definition, an interdisciplinary mode of operation; problems addressed are essentially social, but aspects other than those of social science are also required. The current focus of EPOS is on action and policy research with an emphasis on institutional capacity, awareness, and social capital. It has ongoing activities that focus on subjects ranging from sustainable livelihoods in Eastern African drylands to the sociocultural framework of small and medium-sized enterprises in Swedish local communities to the processes of sociocultural, economic, and environmental adaptation among ethnic groups in the mountainous areas of Northern Vietnam. *For more information, contact:* EPOS, Tema Institute, Linköping University, 581 83 Linköping, Sweden; *Tel:* 46-13-28-25-10; *Fax:* 46-13-28-44-15; *Email:* epos@tema.liu.se; *Internet:* <http://www.tema.liu.se/epos>

The Global Environmental Change and Human Security Project (GECHS)

In May 1996, the Scientific Committee of the International Human Dimensions of Global Change Programme (IHDP) formally adopted as a core project the Global Environmental Change and Human Security (GECHS) initiative developed by the Canadian Global Change Programme and the Netherlands Human Dimensions Programme. The objectives of the project are three-fold: to promote research activities in the area of global environmental change and human security (which recognizes the essential integrative nature of the relationship among individual, community, and national vulnerability to environmental change); to encourage the collaboration of scholars internationally; and to facilitate improved communication and cooperation between the policy community/user groups and the research community. *For more information, contact:* GECHS International Project Office, P.O. Box 1700, Victoria, B.C. Canada V8W 2Y2; *Tel:* 250/472-4337; *Fax:* 250/472-4830; *Email:* info@gechs.org; *Internet:* <http://www.gechs.org>



GECHS at University of California-Irvine

Established in 1999, the GECHS project office at the University of California-Irvine oversees discussions, research, and policy initiatives related to environment and security. The three primary objectives of the project are: (1) to conduct and publish field-based research in the area of global change and human security; (2) to promote dialogue and encourage collaboration among scholars from around the world; and (3) to facilitate communication and cooperation among the policy community, other groups such as NGOs and CBOs, and the research community. Principal areas of expertise include transnational security issues, South Asia, and adaptation to environmental stress. Current research projects include studies of adaptation to the impacts of environmental stress on small island states; the social and ecological effects of landmines; environmental stress, conflict, and insecurity in Pakistan; environmental stress and children at risk in Guatemala; global change and terrorism; and environmental change and social adaptation. *For more information, contact:* Dr. Richard A. Matthew, GECHS-UCI, 212C Social Ecology I, University of California, Irvine, CA 92697-7075; *Tel:* 949/824-4852; *Fax:* 949/824-8566; *Email:* rmatthew@uci.edu; *Internet:* <http://www.gechs.uci.edu>

The Johns Hopkins University: Population Information Program (PIP) and Population-Environment Resources

PIP supplies health and family planning professionals and policymakers with authoritative, accurate, and up-to-date information in its journal *Population Reports*, the POPLINE bibliographic database, and the Media/Materials Clearinghouse (M/MC). PIP is supported by the U.S. Agency for International Development (USAID). PIP also has a Web site that links users to population-environment resources. The site (<http://www.jhuccp.org/popenviro/>) features: articles on population-environment issues from *Population Reports*; reports from Johns Hopkins Center for Communication Projects population-environment projects in Ecuador and Indonesia; a databank of population-environment photos, videos, posters, and other visuals; and links to other Web sites, listservs, and organizations. The site also allows users to do POPLINK searches for population-environment abstracts and to order CD-ROMs of *Population Reports*' special issue "Population and the Environment: The Global Challenge." *For more information, contact:* Population Information Program, 111 Market Place, Suite 310, Baltimore, MD 21202; *Tel:* 410/659-6300; *Fax:* 410/659-6266; *Email:* webadmin@jhuccp.org; *Internet:* <http://www.jhuccp.org/pip.stm>

Hampshire College: Population and Development Program

The Population and Development Program at Hampshire College was established in 1986 as the international companion to the College's Civil Liberties and Public Policy Program. The Program aims to provide students with a multi-disciplinary framework to understand population dynamics and reproductive rights issues internationally. It combines teaching, research, activism, and advocacy in the fields of: international women's health; reproductive rights; and population, environment, and security. It monitors changing trends in population policies and critiques conventional neo-Malthusian analyses of population and the environment from a pro-choice, feminist perspective. Among the Program's recent initiatives are the "Differenttakes" issue paper series and the design of an alternative population curriculum for secondary schools. The Program also serves as an institutional base for the Committee on Women, Population, and the Environment (CWPE), a multiracial network of feminist scholars and activists. CWPE has played an active role in challenging anti-immigrant initiatives in the U.S. environmental movement. *For more information, contact:* Population and Development Program, Hampshire College/CLPP, Amherst, MA 01002; *Tel:* 413/559-5506; *Fax:* 413/559-6045; *Email:* popdev@hampshire.edu; *Internet:* <http://hamp.hampshire.edu/~clpp/popdev.html>

Harvard Center for Population and Development Studies

The Harvard Center for Population and Development Studies is a university-wide research center, founded in 1964 as part of the Harvard School of Public Health. The Center's primary aim is to advance understanding of world population and development issues—especially those related to health, natural resources and the environment, human security, and socioeconomic development. The Center's work is characterized by a multidisciplinary approach, a commitment to integrate gender and ethical perspectives in its research, and a strong policy orientation. The Center attempts to advance knowledge through collaborative research,



Updates

publications, seminars, and a working-paper series. In addition to advancing knowledge, the Center seeks to foster capacity-building and promote international collaboration to improve health and well-being around the world. About thirty-five full-time residents—including faculty, research fellows, and graduate students—pursue work mainly through multidisciplinary working groups. Other participants are drawn from Harvard faculties and Boston-area universities. The Center also regularly invites visiting scholars from around the world. The Center's current research programs focus on gender and population policies, demographic transitions, the burden of disease, health equity, and human security. The Center's human security program explores concepts of security through research on ethics and international policy, human survival crises during complex humanitarian emergencies, environmental security and new diseases, and population and security. *For more information, contact:* Winifred M. Fitzgerald, Executive Director, Harvard Center for Population and Development Studies, 9 Bow Street, Cambridge, MA 02138; *Tel:* 617/495-2021; *Fax:* 617/495-5418; *Email:* cpds@hsph.harvard.edu; *Internet:* <http://www.hsph.harvard.edu/hcps>

Korea University: Imin International Relations Institute (IRI)

IRI is currently conducting the Environmental Security in East Asia project. The objective of the project is to review and examine major environmental security issues in East Asia. The project is one of the three projects sponsored by the United Nations University (UNU) under the title of Non-Traditional Security Issues in East Asia. Dr. Ramesh Thakur, Vice Rector of UNU, is Project Head. The Project focuses on three main areas: (1) environment and security-theoretical overview and analytical framework; (2) issues and cases; and (3) coping with environmental security problems in East Asia. *For more information, contact:* Imin International Relations Institute, Korea University, 5th floor, Incheon Memorial Bldg., 5-1 Anam-dong, Sungbuk-ku, Seoul 136-201, Korea; *Tel:* 82-2-927-5265; *Fax:* 82-2-927-5265; *Email:* irikor@unitel.co.kr; *Internet:* <http://www.korea.ac.kr/~ilmin/>

Stanford University Center for Environmental Science and Policy (CESP)

CESP, one of the five research centers that make up Stanford University's Institute for International Studies (IIS), operates an integrated teaching and research program in environmental studies. CESP employs an international, inter-school, and interdisciplinary approach to seek answers to a number of environmental policy questions. Some of these areas of study include: the consequence of increasing population and per capita energy demand on the global climate; the effect of economic globalization on environmental quality; how to modify farming practices to make agricultural production less sensitive to climate change and less harmful to surrounding environments; the relationship between regional environmental quality and the propensity for conflict; and the potential roles for market-based environmental regulations in national and international environmental protection efforts. In all of its efforts, CESP seeks to promote linkages among environmentalists both within and outside of Stanford. The Center serves as the focal point for work at Stanford on sustainability and on global change. *For more information, contact:* Lori McVay, Assistant Director for Finance and Administration, Center for Environmental Science and Policy, Encina Hall, Suite 400, Stanford, CA 94305-6055; *Tel:* 650/725-2606; *Fax:* 650/725-1992; *Email:* Lori.McVay@stanford.edu; *Internet:* <http://cesp.stanford.edu>

U.S. Army War College: Center for Strategic Leadership (CSL)

CSL supports the College's curriculum as well as serving both governmental and nongovernmental customers. CSL conducts and hosts strategic war games, political-military simulations, peacekeeping courses and exercises, crisis management exercises, and conferences. The Center also conducts research. CSL's National Security Issues Branch, the outreach arm to the national security community, helps senior decision-makers address national security issues and emerging threats. Recent events have included conferences and simulations such as "Contagion and Stability" (co-sponsored by USAID and the Wilson Center); "Central American Environmental Defense Program in the Meso-American Biological Corridor" (in Costa Rica); and "Strengthening the Bonds of Environmental Cooperation Between Security Forces in the Southern Cone of the Americas" (in Paraguay). *For more information, contact:* Center for Strategic Leadership, 650 Wright Avenue, Carlisle, PA 17013-5049; *Tel:* 717/245-4093; *Fax:* 717/245-3030; *Email:* CSL_Info@csl.carlisle.army.mil; *Internet:* <http://carlisle-www.army.mil/usacsl/>



University of Maryland: Harrison Program on the Future Global Agenda

The Harrison Program on the Future Global Agenda promotes research, teaching, and public dialogue on issues related to ecological security, long-term sustainability, energy and environmental policy, and global governance. Located within the Department of Government and Politics at the University of Maryland, the Harrison Program hosts international visitors, conducts conferences and workshops, sponsors promising doctoral students as Harrison Dissertation Fellows, hosts a speaker series for the campus community, and conducts a vigorous program of research and publication on core program themes. Current research areas include environmental peacemaking initiatives, projections of long-term sustainability, comparative energy policy in advanced industrial democracies, informal institutions of global governance, and global water politics and policy. *For more information, contact:* Dr. Ken Conca, Harrison Program, Department of Government and Politics, University of Maryland, College Park, MD 20742; *Tel:* 301/405-4125; *Email:* kconca@gvpt.umd.edu; *Internet:* <http://www.bsos.umd.edu/harrison>

University of Michigan Population Fellows Programs

The University of Michigan Population Fellows Programs were established in 1984 with funding from USAID to develop future leaders in international population. The Programs offer fellowships and related activities that provide career-development opportunities for promising professionals; offer technical assistance to organizations working on population-related issues in the developing world; and foster best practices, intersectoral cooperation, and diversity among practitioners. The Programs' core activity is their Population and Population-Environment Fellowships, which are available to early-career U.S. professionals who have a relevant graduate degree and experience. Fellows work on two-year assignments with organizations that support family planning, reproductive health, and population-environment projects in the developing world. Fellows gain on-the-job experience while assisting their organizations with program design, implementation, and evaluation. The Programs also offer a Compton PEAK Fellowship for early-career professionals from sub-Saharan Africa, Mexico, and Central America to build their leadership capacity in international family planning, reproductive health, and population-environment. Other activities include mini-grants for graduate students pursuing population-related internships; a two-week summer course in international population; and internships for students of Minority-Serving Institutions. The Population Fellows Programs have also partnered with the Environmental Change and Security Project on the Population, Environmental Change, and Security (PECS) Initiative. This initiative brings together specialists from the governmental, academic, and nongovernmental communities to discuss the implications of population, health, and environmental issues for global security. Population and Population-Environment Fellows contribute field-level insights to this important nonpartisan dialogue on the program and policy options for addressing the roots of conflict. *For more information, contact:* The University of Michigan Population Fellows Programs, 1214 South University, 2nd Floor, Ann Arbor, MI 48104-2548; *Tel:* 734/763-9456; *Fax:* 734/647-0643; *Email:* michiganfellows@umich.edu; *Internet:* <http://www.sph.umich.edu/pfps>

University of Pretoria: African Water Issues Research Unit (AWIRU)

AWIRU at the University of Pretoria, South Africa is currently conducting research to develop a scientific, multidisciplinary understanding of the role of water as a source of socioeconomic and political stability. AWIRU is focusing on the social aspects of water within the context of developing countries, particularly in Africa. An advisory council (composed of three eminent scholars with a global, regional, and national perspective on water issues) oversees the program. To meet its objectives, AWIRU takes an integrative approach specifically designed to develop self-confident and self-sufficient corps of specialists capable of addressing the increasingly complex water-resource management needs of Southern Africa. Past projects include the Shared Rivers Initiative as well as participation in the Second World Water Forum and the Sovereignty Panel at the Forum. *For more information, contact:* Anthony Turton; AWIRU, University of Pretoria Department of Political Sciences, Pretoria, 0002, Republic of South Africa; *Tel:* 27-12-420-4486; *Fax:* 27-12-420-3886; *Email:* art@icon.co.za, awiru@postino.up.ac.za; *Internet:* <http://www.up.ac.za/academic/libarts/polsci/awiru>



Updates

University of Toronto: Project on Environmental Scarcities, State Capacity, and Civil Violence

The Project on Environmental Scarcities, State Capacity, and Civil Violence at the University of Toronto has investigated the impacts of water, forests, and cropland resource scarcities on governmental capabilities in the developing countries of China, India, and Indonesia. The project asks the following question: if capacity declines, is there an increased likelihood of widespread civil violence such as riots, ethnic clashes, insurgency, and revolution? The project has targeted its finding for the public and policymakers in Canada, the United States, China, India, and Indonesia. Funding has been provided by The Rockefeller Foundation and The Pew Charitable Trusts. Publications to emerge from the project include *Ecoviolence: Links Among Environment, Population, and Security*, edited by Thomas F. Homer-Dixon and Jessica Blitt, and a new second edition of *Environment, Scarcity, and Violence* by Homer-Dixon. *For more information, contact:* Thomas Homer-Dixon, Principal Investigator, Peace and Conflict Studies Program, University College, 15 King's College Circle, University of Toronto, Toronto, Canada M5S 3H7; *Tel:* 416/978-8148; *Fax:* 416/978-8416; *Email:* pcs.programme@utoronto.ca; *Internet:* <http://www.library.utoronto.ca/pcs/state.htm>

Yale Center for Environmental Law and Policy

The Yale Center for Environmental Law and Policy was established in 1994 by the Yale Law School and the Yale School of Forestry and Environmental Studies. The Center brings together faculty and students from throughout Yale University to address pollution control and natural resource management issues at the local, state, national, and global scales. The Center seeks to bring analytic rigor to environmental debates and to engage government officials, business people, and leaders from nongovernmental organizations as well as the academic community in an interdisciplinary dialogue. The Center is directed by Daniel Esty, who has a joint appointment in both the Law and Environment schools. *For more information, contact:* Yale Center for Environmental Law and Policy, 301 Prospect Street, New Haven, CT 06511; *Tel:* 203/432-3123; *Fax:* 203/432-6597; *Email:* YCELP@yale.edu; *Internet:* <http://www.yale.edu/envirocenter>

FOUNDATIONS

Carnegie Corporation

Formed in 1911 by Andrew Carnegie, the Carnegie Corporation awards grants in four broad areas: (1) education, (2) international peace and security, (3) international development, and (4) strengthening U.S. democracy. The grants are made to non-profit organizations and institutions for work that falls into one of these categories and promises to have national or international impact. Areas of interest under international peace and security include: nonproliferation of weapons of mass destruction; fostering democracy and integration of the former Soviet states with the world economy; and new threats to world peace. In addition, the Corporation also awards approximately 20 fellowships for one or two years of study for a maximum amount of \$100,000 to young scholars whose research is in the Corporation's fields of interest. *For more information, contact:* The Carnegie Corporation, 437 Madison Avenue, New York, NY 10022; *Tel:* 212/371-3200; *Fax:* 212/754-4073; *Internet:* <http://www.carnegie.org/>

Compton Foundation, Inc.

The Compton Foundation was founded to address community, national, and international concerns in the fields of peace and world order, population, and the environment. In a world in which most problems have become increasingly interrelated and universal in dimension, and where survival of human life under livable conditions is in jeopardy, the Foundation is concerned first and foremost with the prevention of war and the amelioration of world conditions that tend to cause conflict. Primary among these conditions are the increasing pressures and destabilizing effects of excessive population growth, the alarming depletion of the earth's natural resources, the steady deterioration of the world's environment, and the tenuous status of human rights. To address these problems, the Compton Foundation focuses most of its grant-making in the areas of peace and



world order, population, and the environment, with special emphasis on projects that explore the interconnections between these three categories. The Foundation believes that prevention is a more effective strategy than remediation, that research and activism should inform each other, and that both perspectives are needed for productive public debate. *For more information, contact:* Compton Foundation, Inc., 535 Middlefield Road, Suite 160, Menlo Park, CA 94025; *Tel:* 650/328-0101; *Fax:* 650/328-0171; *Email:* info@ComptonFoundation.org; *Internet:* <http://www.comptonfoundation.org>

Ford Foundation

The Ford Foundation is a resource for innovative people and institutions worldwide. Its goals are to strengthen democratic values, reduce poverty and injustice, promote international cooperation, and advance human achievement. A fundamental challenge facing every society is to create political, economic, and social systems that promote peace, human welfare, and the sustainability of the environment on which life depends. The Foundation believes that the best ways to meet this challenge are to encourage initiatives by those living and working closest to where problems are located; to promote collaboration among the non-profit, government, and business sectors; and to assure participation by men and women from diverse communities and at all levels of society. The Foundation works mainly by making grants or loans that build knowledge and strengthen organizations and networks. Since its financial resources are modest in comparison to societal needs, it focuses on a limited number of problem areas and program strategies within its broad goals. Founded in 1936, the Foundation operated as a local philanthropy in the state of Michigan until 1950, when it expanded to become a national and international foundation. Since inception, it has been an independent, non-profit, nongovernmental organization. It has provided over \$10 billion in grants and loans. *For more information, contact:* The Ford Foundation, 320 East 43rd Street, New York, NY 10017; *Tel:* 212/573-5000; *Fax:* 212/351-3677; *Email:* office-communications@fordfound.org; *Internet:* <http://www.fordfound.org/>

Richard and Rhoda Goldman Fund

The Richard and Rhoda Goldman Fund is a private, charitable family foundation that supports non-profit organizations that enhance the quality of life, particularly in the San Francisco Bay area. The Fund's areas of focus include: environment, population, Jewish affairs, violence prevention, children and youth, the elderly, social and human services, health, education, and the arts. In 2000, the Fund provided \$17,430,587 in grants for environment projects and \$2,589,666 for population projects. *For more information, contact:* Richard and Rhoda Goldman Fund, One Lombard Street, Suite 303, San Francisco, CA 94111; *Tel:* 415/788-1090; *Fax:* 415/788-7890; *Email:* info@goldmanfund.org; *Internet:* <http://www.goldmanfund.org>

The John D. and Catherine T. MacArthur Foundation: Program on Global Security and Sustainability

The objective of the MacArthur Foundation's Program on Global Security and Sustainability is to promote (a) peace within and among countries, (b) healthy ecosystems worldwide, and (c) responsible reproductive choices. The Foundation encourages work that recognizes the interactions among peace, sustainable development, reproductive health, and the protection of human rights. It supports innovative research and training, the development of new institutions for cooperative action, and new strategies for engaging U.S. audiences in efforts to advance global security and sustainability. The Foundation recognizes the importance of three specific global issues: arms reduction and security policy; conservation and sustainable development; and population and reproductive health. These are three core areas of the Program. In addition, the Global Challenges area focuses on emerging opportunities and threats in a period of rapid globalization—the development of complex political, social, and economic interconnections that result from the increased capacity for people, goods, capital, and information to move freely across national borders. *For more information, contact:* The John D. and Catherine T. MacArthur Foundation, Office of Grants Management, 140 South Dearborn Street, Chicago, IL 60603; *Tel:* 312/726-8000; *Fax:* 312/920-6258; *Email:* 4answers@macfound.org; *Internet:* <http://www.macfdn.org>



Updates

The David and Lucile Packard Foundation

The David and Lucile Packard Foundation is a private family foundation created in 1964 by David Packard (1912-1996), co-founder of the Hewlett-Packard Company, and Lucile Salter Packard (1914-1987). The Foundation provides grants to non-profit organizations in the following broad program areas: science, children, population, conservation, arts, families and communities, and special areas that include organizational effectiveness and philanthropy. The Foundation provides national and international grants and also has a special focus on the Northern California counties of San Mateo, Santa Clara, Santa Cruz, and Monterey. The Foundation had \$6.2 billion in assets at the end of 2001 and awarded more than \$454 million in grants during 2001. The Foundation is directed by an eight-member board of trustees that includes the four children of the founders. A staff of 160 employees conducts the day-to-day operations of the Foundation. *For more information, contact:* The David and Lucile Packard Foundation, 300 Second Street, Suite 200, Los Altos, California 94022; *Tel:* 650/948-7658; *Fax:* 650/948-5793; *Email:* inquiries@packfound.org; *Internet:* <http://www.packard.org/>

Ploughshares Fund

Founded at a time when global nuclear conflict seemed a real and immediate possibility, the Ploughshares Fund set out to unite concerned individuals in efforts to end the nuclear arms race and the threat of nuclear annihilation. In the intervening years, the character of the nuclear threat has changed but not dissipated. With gifts from thousands of people and a few foundations, Ploughshares has made grants totaling more than \$20,000,000. The Ploughshares Fund supports national and grassroots initiatives for stopping the spread of weapons of war, from nuclear arms to landmines. Its programs focus on ending the threat from nuclear, chemical, and biological weapons; stopping the spread of weapons of war; addressing the environmental legacy of the nuclear age; promoting public understanding and participation; and preventing global and regional conflict. Ploughshares Fund invests in a wide range of innovative and realistic programs—from scientific research to media, behind-the-scenes dialogue, grassroots organizing, and even lobbying. It is often referred to as a “mutual fund for peace and security.” *For more information, contact:* Ploughshares Fund, Fort Mason Center, Bldg. B, Suite 330, San Francisco, CA 94123; *Tel:* 415/775-2244; *Fax:* 415/775-4529; *Email:* ploughshares@ploughshares.org; *Internet:* <http://www.ploughshares.org/>

The Rockefeller Brothers Fund: “One World: Sustainable Resource Use” and “Global Security Program”

The goal of the Rockefeller Brothers Fund’s Sustainable Resource Use program is to “foster environmental stewardship which is ecologically-based, economically sound, culturally appropriate, and sensitive to questions of intergenerational equity.” At the global level, the program promotes international discussions on climate change and biodiversity preservation; it also supports and publicizes practical, cost-effective models that can contribute to international agreements on these issues. The Global Security Program comprises grant-making in the pursuit of “a more just, sustainable, and peaceful world by improving the cooperative management of transnational threats and challenges,” working with public and private actors around the globe. The program focuses on constituency building, transparency and inclusive participation, the challenges of economic integration, and emerging transnational concerns. *For more information, contact:* The Rockefeller Brothers Fund, Inc., 437 Madison Avenue, 37th Floor, New York, NY 10022-7001; *Tel:* 212/812-4200; *Fax:* 212/812-4299; *Email:* rock@rbf.org; *Internet:* <http://www.rbf.org/>

Rockefeller Foundation: Global Inclusion Program

The Global Inclusion Program’s goal is “to help broaden the benefits and reduce the negative impacts of globalization on vulnerable communities, families and individuals around the world.” The Global Inclusion Program seeks to identify and understand the impacts of global trends and monitor the pace and scale of change within its four core programmatic themes: (1) creativity and culture; (2) food security; (3) health equity; and (4) working communities. The Foundation’s Food Security program works to improve the food security of the rural poor in sub-Saharan Africa, Asia, and Latin America, focusing on the generation of agricultural policies, institutions, and innovations that will provide for sustainable livelihoods. The Health Equity program seeks to advance global health equity by addressing the disparities in health achievement that arise because of



factors including genetic predisposition, crowded living conditions, environmental exposures, food insecurity, and inadequate access to health care. The Global Inclusion Program reaches across boundaries of discipline and experience in analyzing, interpreting, and debating important global trends and issues related to poverty and exclusion. It recognizes that, at any given moment, discrete or even crosscutting issues can affect each of the Foundation's themes and demand an overarching response acknowledging the interconnected and intertwined themes of people's lives—their health, food, work, and creative expression. *For more information, contact:* Rockefeller Foundation, Global Inclusion, 420 Fifth Avenue, New York, NY 10018; *Tel:* 212/869-8500; *Fax:* 212/764-3468; *Internet:* <http://www.rockfound.org/global>

Soros Open Society Institute (OSI)

OSI is a private operating and grant-making foundation that promotes the development of open societies around the world and is active in more than 50 countries located in: Central and Eastern Europe; the former Soviet Union; Guatemala; Haiti; Mongolia; and South, Southern, and West Africa. Established in 1993 and based in New York City, OSI is part of an informal network of autonomous foundations that together form the Soros Foundations Network. Both OSI and the Foundations share a common mission of promoting democracy through support to a range of programs in education, civil society, media, and human rights as well as in social, legal, and economic reform. The three broad categories for OSI programs are: (1) network programs, (2) U.S. programs, and (3) other initiatives. *For more information contact:* Office of Communications at the Open Society Institute-New York, 400 West 59th Street, New York, NY 10019; *Tel:* 212/548-0668; *Fax:* 212/548-4605; *Internet:* <http://www.soros.org>

Summit Foundation

The Summit Foundation's grant-making addresses four main program areas: (1) addressing global population issues; (2) protecting biodiversity in Latin America and the Caribbean; (3) linking population and the environment; and (4) innovations in sustainable design. The Foundation supports the mutually-reinforcing goals of: (a) expanding access to family planning and reproductive health care; as well as (b) empowering women and youth through educational and economic opportunity, particularly for those living in the world's poorest regions. The Foundation also supports linked field-based projects that stress the close connections among population growth, poverty, unsustainable consumption, and natural-resource depletion. *For more information, contact:* The Summit Foundation, 2099 Pennsylvania Avenue NW, 10th Floor, Washington, DC 20006; *Tel:* 202/912-2900; *Email:* info@summitfdn.org; *Internet:* <http://www.summitfdn.org/>

The Turner Foundation

The Turner Foundation, established by philanthropist and CNN founder Ted Turner, provides grants to organizations for projects in the areas of environment and population. The Foundation seeks to: protect water and reduce toxic impacts on the environment; improve air quality by promoting energy efficiency and renewable energy and promoting improved transportation policies; protect biodiversity through habitat preservation; and develop and implement sound, equitable practices and policies designed to reduce population growth rates. The Foundation focuses on domestic (U.S.) projects but will consider international programs. For habitat protection programs, the Foundation gives priority to programs in Mexico, Argentina, Russia, Brazil, and British Columbia, Canada, in addition to domestic projects. *For more information, contact:* The Turner Foundation, One CNN Center, Suite 1090, South Tower, Atlanta, GA 30303; *Tel:* 404/681-9900; *Fax:* 404/681-0172; *Internet:* <http://www.turnerfoundation.org>

NONGOVERNMENTAL ORGANIZATIONS

The Access Initiative

The Access Initiative is a global coalition of public-interest groups seeking to promote public access to information about, participation in, and justice in environmental decision-making. The Initiative is lead jointly by the World Resources Institute (Washington, DC); the Environmental Management and Law Association



Updates

(Budapest); Corporación Participa (Santiago); Advocates Coalition on Environment and Development (Kampala); and the Thailand Environmental Institute (Bangkok). The Initiative's goals are to (a) strengthen the capacity of civil-society interest groups to track the progress of national-level implementation of participation and access guidelines, and (b) raise awareness and governments' commitment to implementing Principle 10 of the Rio Declaration and the public participation provisions of Agenda 21. Using the proceedings at the World Summit on Sustainable Development as a political catalyst, the Initiative will seek to highlight the importance of having access to the information and decision-making processes necessary to participate meaningfully in the management of the natural environment. *For more information, contact:* Gretchen Hoff, Program Coordinator, 10 G Street NE, Suite 800, Washington, DC 20002; *Tel:* 202-729-7768; *Email:* gretchen@wri.org; *Internet:* <http://www.accessinitiative.org/>

Adelphi Research

Adelphi Research is a non-partisan, non-profit think tank for the development and implementation of innovative sustainable-development strategies and the advancement of sustainability science. Its research, public-policy consulting, and policy dialogues focus in particular on global environmental change and international environmental regimes. Adelphi Research provides advice to public-sector institutions worldwide, including: several national ministries (environment, development, and foreign policy); the European Commission; OECD; and the OSCE. Current research projects and consultancy services are conducted in the areas of good governance, environmental technology and technology transfer, sustainable financial services and funding mechanisms, sustainable transport and mobility, sustainable development, peace and foreign policy, climate change, energy, and sustainable water-management. Adelphi's key activities comprise: *research* (comparative studies and analysis); *strategic advice* (monitoring decision-making processes, policy briefings for international negotiations, and policy and communication strategies); *implementation* (implementation studies, evaluating and optimizing tools for sustainability, financing schemes, and management guidelines); *communication* (mediation, seminars, international expert workshops, stakeholder dialogues); and *knowledge transfer* (dissemination strategies, multi-media documentation, publications, lectures, and other presentations). Adelphi's program on "Environment, Development and Sustainable Peace" (www.sustainable-peace.org) is composed of a series of research and consulting projects and stakeholder dialogues conducted on behalf of international organizations and national governments. It aims to promote the integration of environmental concerns into foreign and security policy and to facilitate transborder environmental cooperation. Adelphi is directed by Alexander Carius and Walter Kahlenborn and builds on a multidisciplinary and experienced team of scientists and consultants. *For more information, contact:* Adelphi Research, Caspar-Theyss-Str. 14a, 14193 Berlin; *Email:* office@adelphi-research.de; *Internet:* <http://www.adelphi-research.org>.

African Centre for Technology Studies (ACTS): Ecological Conflicts E-Discussion Group

ACTS, a Nairobi-based international policy research organization, offers an e-discussion group on the ecological or environmental sources of conflicts in sub-Saharan Africa. The Centre established the group as a part of the Ecological Sources of Conflicts in sub-Saharan Africa Project, which focuses on policy research, information dissemination, and capacity-building. The Project has two overall objectives: (1) to assess the extent to which ecological or environmental factors (such as natural-resources scarcity or abundance and environmental improvement or degradation) contribute to political conflicts in sub-Saharan Africa; and (2) to promote the integration of ecological or environmental considerations into regional conflict prevention and management policies and mechanisms. The e-discussion group is intended to: (a) contribute to the implementation of the project; (b) disseminate and share research findings with a geographically and disciplinarily diverse group of scholars; (c) disseminate reference information, Web site links, and announcements of meetings, fellowships, and study opportunities; (d) to share and debate viewpoints on the multiple sources of conflict in sub-Saharan Africa; and (e) encourage collaborative research on issues of common interests. *For more information, contact:* African Centre for Technology Studies, P.O. Box 45917, Nairobi, Kenya; *Tel:* 254-2-524000/524700; *Fax:* 254-2-522987/524001; *Email:* acts@cgiar.org; *Email to subscribe:* Ecologicalconflicts-subscribe@yahoogroups.com; *Internet:* <http://www.acts.or.ke> or <http://groups.yahoo.com/group/Ecologicalconflicts>



The Aspen Institute: Program on Energy, the Environment, and the Economy

The Aspen Institute is an international non-profit educational institution dedicated to enhancing the quality of leadership and policymaking through informed dialogue. The goal of the Program on Energy, the Environment, and the Economy is to provide the leadership and the forum for collaborative dialogue in the areas of energy and environmental politics. It brings together individuals from many different segments of government, industry, the investment community, environmental, and other public interest groups as well as the academic world to address critical issues related to energy and the environment. Recent or current activities include: an annual Energy Policy Forum; a Mexico-U.S. Border Environmental Dialogue; a series on integrating environmental and financial performance; a series on non-proliferation and environmental aspects of nuclear waste policies; an annual Pacific Rim energy workshop; a series on Dams and Rivers; an annual Environmental Policy Forum; and an annual seminar on Environmental Values and Policies. *For more information, contact:* John A. Riggs, The Aspen Institute, One Dupont Circle NW, Suite 700, Washington, DC 20036; *Tel:* 202/736-5800; *Fax:* 202/467-0790; *Email:* jriggs@aspeninstitute.org; *Internet:* <http://www.aspeninst.org>

Business Action for Sustainable Development (BASD)

BASD is a joint project between the International Chamber of Commerce and the World Business Council for Sustainable Development. As a network of business organizations, it seeks to ensure that the global business community makes a productive contribution to the Johannesburg Summit. The organization is guided by three goals: (1) to ensure that the voice of business is heard at Johannesburg, (2) to identify and develop business solutions to sustainable development, (3) and to demonstrate how businesses around the world are already actively participating in sustainable initiatives. BASD is governed by a small international steering committee headed by Sir Mark Moody-Stuart. One of its key projects is the Virtual Exhibition Web site (www.virtualexhibit.net) in collaboration with UNDP; the site will allow all members of global society to display and share their own sustainable-development projects and programs during the Summit. The site will also highlight effective partnerships between governments, UN agencies, businesses, nongovernmental organizations, and local communities. *For more information, contact:* Eric Beynon, BASD, 38 Cours Albert 1er, 75008 Paris, France; *Tel:* 33-1-49-53-28 65; *Fax:* 33-1-49-53-28-59; *Email:* eric@basd-action.net; *Internet:* <http://www.basd-action.net>

Canadian Foundation for the Americas (FOCAL)

Founded in 1990, FOCAL aims to develop greater understanding of important hemispheric issues and help to build a stronger community of the Americas. As a policy center, FOCAL fosters informed and timely debate and dialogue among decision-makers and opinion leaders in Canada and throughout the Western Hemisphere. FOCAL studies a range of issues in five policy areas: (1) poverty and inequality, (2) economic development and trade integration, (3) governance and democratic development, (4) Inter-American relations, and (5) North American integration. FOCAL's Research Forum on Cuba focuses exclusively on fostering informed discussion and analysis on the immediate and long-term challenges facing Cuba and Canadian policy towards the island. FOCAL also maintains a specialized Web site (www.cubasource.org) with an abundance of information and resources on Cuba. Recent topics dealt with by FOCAL include: drug trafficking and human security in the Americas; the negotiations of the Free Trade Areas of the Americas; Central American integration; Canada-Brazil relations; migration and development; hemispheric security; and others. FOCAL is an independent, not-for-profit charitable organization that is guided by a Board of Directors. It receives funding from the Canadian Department of Foreign Affairs and International Trade, the Canadian International Development Agency, the Ford Foundation, the International Development Research Centre, and other public- and private-sector organizations as well as inter-American institutions. *For more information, contact:* Canadian Foundation for the Americas, One Nicholas Street, Suite 720, Ottawa, Ontario K1N 7B7, Canada; *Tel:* 613/562-0005; *Fax:* 613/562-2525; *Email:* focal@focal.ca; *Internet:* <http://www.focal.ca>

Center for Health and Gender Equity (CHANGE)

CHANGE is a nongovernmental organization founded in 1994 by Jodi L. Jacobson, former researcher and



Updates

advocate of women's issues at the World Watch Institute. Working to ensure that the health and population policies of international institutions supported by the United States government actively promote women's reproductive and sexual health, CHANGE derives its mandate from the Programme of Action of the 1994 International Conference on Population and Development (ICPD). CHANGE seeks to translate the language of the Programme and other relevant documents into practical, operational, and measurable policy changes within the areas of family planning, sexually-transmitted diseases, and gender violence. It also seeks to advocate for the inclusion of women's issues in development policy. CHANGE currently has an annual budget of nearly \$1 million and a staff of 12. *For more information, contact:* Center for Health and Gender Equity (CHANGE), 6930 Carroll Avenue, Suite 910, Takoma Park, MD 20912; *Tel:* 301/270-1182; *Fax:* 301/270-2052; *E-mail:* change@genderhealth.org; *Internet:* <http://www.genderhealth.org>

Center for International Earth Science Information Network (CIESIN)

CIESIN was established in 1989 as a non-profit, nongovernmental organization to provide information that would help scientists, decision-makers, and the public better understand their changing world. CIESIN specializes in: global and regional network development; science data management; decision support; and training, education, and technical consultation services. CIESIN is the World Data Center A (WDC-A) for Human Interactions in the Environment. One program CIESIN implemented is the US Global Change Research Information Office (GCRIO). This office provides access to data and information on global change research, adaptation/mitigation strategies and technologies, and global change-related educational resources on behalf of the U.S. Global Change Research Program (USGCRP) and its participating federal agencies and organizations. CIESIN is located on Columbia University's Lamont-Doherty Earth Observatory campus in Palisades, New York. *For more information, contact:* CIESIN, P.O. Box 1000, 61 Route 9W, Palisades, NY 10964; *Tel:* 845/365-8988; *Fax:* 845/365-8922; *Email:* ciesin.info@ciesin.columbia.edu; *Internet:* <http://www.ciesin.org>

Center for International Studies (CIS)

CIS is a private, independent, non-profit, Baku-based research and public organization founded in May 1998. The CIS Center focuses on the most challenging issues of international and regional security: oil pipeline politics, energy, environment, conflict resolution, peace, and the new geopolitics of great powers within the Caucasus and in the former Soviet Union. The CIS Research Groups work independently on research projects and analyze contemporary geopolitical and international security issues as well as energy and environmental problems from an Azeri perspective in order to give the public a better profile of the ongoing complex processes and the general situation in the region. *For more information, contact:* Center for International Studies, 528 H. Javid Avenue, Suite 36, Baku 370138, Azerbaijan Republic; *Tel:* 011-994-12-39-5357; *Email:* Enuriyev@iatp.baku.az; *Internet:* <http://cis.aznet.org/cis>

Center for Public Environmental Oversight (CPEO)

CPEO is an organization that promotes and facilitates public participation in both environmental decision-making and the management of environmental activities, including (but not limited) to the remediation of U.S. federal facilities, private "Superfund" sites, and brownfields. Formed in 1992 in response to the large number of military base closures in the San Francisco Bay Area, CPEO's current work focuses on: the management of toxic and explosive risks on military munitions ranges; resolving the tension between military-readiness activities and both environmental protection and urban development; the long-term management of contaminated sites; increasing public awareness of innovative cleanup technologies; providing a forum for community groups at brownfield sites to help those groups make public judgments about appropriate cleanup levels and redevelopment options; and protecting school children from exposure to contamination. While CPEO has its roots in community activism and provides support for public advocacy, it is not a political organization. CPEO operates two Internet listservs: the Military Environmental Forum and the Brownfields Internet Forum. It issues reports and issue briefs and publishes two newsletters: "Citizens' Report on the Military and the Environment" and "Citizens' Report on Brownfields." *For more information, contact:* Center for Public Environmental Oversight, 1101 Connecticut Avenue NW, Suite 1000, Washington, DC 20036; *Tel:* 202-452-8038; *Fax:* 202-452-8095; *Email:* cpeo@cpeo.org; *Internet:* <http://www.cpeo.org>



The Center for Security Policy

The Center for Security Policy is a non-profit organization that stimulates and informs the national and international debates about all aspects of security policy (including their strategic and environmental implications), particularly as they relate to the all-encompassing question of energy. The Center is committed to preserving the credibility of U.S. anti-proliferation efforts and bringing the message to allies and potential adversaries that the United States is serious about ensuring the safe and benign global development of nuclear energy. The Center has extensively studied the Chemical Weapons Convention and the Cienfuegos nuclear power project in Cuba and has expressed concern over the Department of Energy's Environmental Management program for cleaning up the nuclear legacy of the Cold War. In addition, the Center calls for increased attention to: (a) the strategic importance of the vast oil reserves of the Caspian Basin; and (b) to the deterioration of the sensitive ecosystems and waterways of the region (for example, Turkey's imperiled Bosphorus Straits). The Center makes a unique contribution to the debate about these and other aspects of security and environmental policies through its rapid preparation and dissemination of analyses and policy recommendations. *For more information, contact:* The Center for Security Policy, 1920 L Street NW, Suite 210, Washington, DC 20036; *Tel:* 202/835-9077; *Fax:* 202/835-9066; *Email:* info@security-policy.org; *Internet:* <http://www.security-policy.org/aboutcsp.html>

Climate Institute (CI)

CI is an international organization devoted to helping maintain the balance between climate and life on Earth. In all its efforts, including the Climate Alert newsletter, the Institute strives to be the world's foremost authority on climate-change information, science, and response; it serves as a facilitator of dialogue among scientists, policymakers, business executives, and citizens. CI has informed key policymakers and heightened international awareness of climate change, and it has also worked to identify practical ways of achieving substantive emissions reductions. Currently, the Institute has taken the role of catalyst in policy discussions on energy efficiency and renewable energy. CI provides expert advice at ministerial and heads of state briefings and at sessions with business executives and private citizens. CI's Green Energy Investment project works to mobilize investors to finance and accelerate the development of renewable and "greenhouse-benign" energy technologies. The Small Island States Greening Initiative assists the island states in adapting to climate change and transforming their energy systems to renewables. *For more information, contact:* The Climate Institute, 333 ½ Pennsylvania Avenue SE, Washington, DC 20003; *Tel:* 202/547-0104; *Fax:* 202/547-0111; *Email:* info@climate.org; *Internet:* <http://www.climate.org>

Committee on Population

The Committee on Population was established in 1983 by the National Academy of Sciences to bring the knowledge and methods of the population sciences to bear on major issues of science and public policy. The Committee's work includes both: (a) basic studies of fertility, health and mortality, and migration; and (b) applied studies aimed at improving programs for the public health and welfare in the United States and developing countries. The Committee also fosters communication among researchers in different disciplines and countries and policymakers in government and international agencies. Recent reports of the Committee include: *Forced Migration and Mortality*, *Cells and Surveys: Should Biological Measures Be Included in Social Science Research*; and *Beyond Six Billion: Forecasting the World's Population*. *For more information, contact:* National Research Council, Committee on Population, 2101 Constitution Avenue NW, HA-172, Washington, DC 20418; *Tel:* 202/334-3167; *Fax:* 202/334-3768; *Email:* cpop@nas.edu; *Internet:* <http://www4.nas.edu/cbsse/cpop.nsf/web/homepage>

Biodiversity Support Program: Africa & Madagascar, Disasters and Biodiversity Project

The objective of the Biodiversity Support Program's Disasters and Biodiversity Project in Africa and Madagascar is to investigate opportunities to mitigate the negative impacts of armed conflict on biodiversity in Africa. The Program's activities include: (a) reviewing existing knowledge of the effects of armed conflict on biodiversity in sub-Saharan Africa; (b) holding pan-African workshops to bring together key people and organizations from the conservation, relief, and development sectors in order to increase communication and collaboration



Updates

among them; (c) preparing for peace activities to examine the impacts of conflict on biodiversity in the Democratic Republic of Congo (DRC) and to help partners to best prepare for the sound management of natural resources in the DRC when peace returns; (d) hosting the REDlink listserv to increase information sharing and collaboration among individuals and organization in the relief, environment, and development sectors; and (e) conducting case studies on the Central African Republic, Congo, DRC, Ethiopia, Liberia, Mozambique, Rwanda, Sierra Leone, Sudan, and the Virunga Volcanoes as well as followup analyses of the impacts of armed conflict on biodiversity as well as mitigation opportunities. The Biodiversity Support Program is a consortium of the World Wildlife Fund, The Nature Conservancy, and World Resources Institute and is funded by the United States Agency for International Development (USAID). *For more information, contact:* Africa & Madagascar Program, Biodiversity Support Program, c/o World Wildlife Fund, 1250 24th Street NW, Washington, DC 20037; *Tel:* 202/778-9795; *Fax:* 202/861-8324; *Email:* BSPAfrica@wwfus.org.

Ecologic—Institute for International and European Environmental Policy

Founded in Berlin in 1995, Ecologic is a private non-profit institute dedicated to advancing cooperation between nations and bringing fresh ideas to environmental policies and sustainable development. Ecologic was created to influence international relations, global governance, and foreign and security policies in the interest of environmental protection, nature and wildlife conservation, and responsible resource management. Ecologic provides policy consultancy and animates and facilitates international policy processes to develop new approaches at interfaces between different policy fields and also between different policy communities. Involved in negotiating and concluding multilateral environmental agreements, Ecologic focuses on cross-cutting issues of regime design, compliance by signatories, and the application of general principles in international law. A particular concern has been global governance and various aspects of the Rio process leading to the 2002 World Summit on Sustainable Development in Johannesburg, South Africa. As part of the European Concerted Action on Trade and Environment (CAT&E) and other programs, Ecologic also concentrates on salient aspects of economic globalization. In addition, a significant part of its work focuses on analyzing and furthering the development of the environmental policy of the European Union and its member states, where transnational cooperation is most advanced. *For more information, contact:* R. Andreas Kraemer, Director, Ecologic, Pfalzburger Strasse 43/44, D-10717 Berlin, Germany; *Tel:* 49-30-86880 0; *Fax:* 49-30-86880 100; *Email:* office@ecologic.de; *Internet:* <http://www.ecologic.de>

Environmental and Energy Study Institute (EESI)

EESI is a non-profit organization dedicated to promoting environmentally sustainable societies. EESI believes meeting this goal requires transitions to social and economic patterns that sustain people, the environment, and the natural resources upon which present and future generations depend. EESI produces credible, timely information and innovative public policy initiatives that lead to these transitions. These products are developed and promoted through action-oriented briefings, workshops, analysis, publications, task forces, and working groups. *For more information, contact:* Carol Werner, Executive Director, 122 C Street NW, Suite 700, Washington, DC 20001; *Tel:* 202/628-1400; *Email:* eesi@eesi.org; *Internet:* <http://www.eeri.org>

Evidence Based Research, Inc. (EBR)

EBR is a for-profit research and analysis firm specializing in applied social science to support decision-makers in government and private industry. EBR believes that decision-making is best supported by the appropriate balance of social theory and relevant empirical evidence. In keeping with this philosophy, the company provides policymakers in business, government, and other organizations with clear and concise analyses of important issues. EBR has expertise in several program areas, including environmental security, globalization, command and control, indicators and warning, and instability analysis. EBR research on environmental security has focused on providing clients with support on relations between environmental factors and national security. EBR has provided research and technical support to the Department of Defense and participated in the NATO CCMS Pilot Study “Environment and Security in an International Context.” EBR has also supported the development of regional strategies for the US Southern and European Commands and in the Asia Pacific region. *For more information, contact:* Evidence Based Research, Inc., 1595 Spring Hill Road, Suite 250, Vienna,

VA 22182-2228; *Tel:* 703/893-6800; *Fax:* 703/821-7742; *Email:* rehayes@ebrinc.com; *Internet:* <http://www.ebrinc.com>

Federation of American Scientists (FAS)

FAS has several projects that address environment and security linkages. FAS is collaborating with Dr. Walter Parham of the South China Agricultural University on an effort to call attention to the degraded tropical lands of South China. Restoration of these lands will not only benefit Chinese economic stability and improve living conditions for the farmers, but will have the global consequence of significantly reducing the threat of climate change. FAS also sponsors the project AHEAD (Animal Health/Emerging Animal Disease) that addresses policy surrounding global security issues impacted by outbreaks of animal and zoonotic diseases; it also sponsors a related pilot program in Tanzania to monitor disease outbreak. *For more information, contact:* Federation of American Scientists, 1717 K Street NW, Suite 209, Washington, DC 20036; *Tel:* 202/546-3300; *Fax:* 202/675-1010; *Email:* fas@fas.org; *Internet:* <http://www.fas.org>

Fridtjof Nansen Institute (FNI)

Established in 1958, the independent Fridtjof Nansen Institute (FNI) conducts applied and basic social science research on international issues of energy, resource management, and the environment. Geographical areas involved in the research are the world oceans, Antarctica, the Arctic, the European Union, China, and certain developing countries. Placing a particular emphasis on an interdisciplinary approach, FNI strives to meet academic quality standards while producing user-relevant and topical results. Projects of particular relevance for environmental change and security include the International Northern Sea Route Programme and the Yearbook of International Co-operation on Environment and Development. *For more information, contact:* Professor Willy Østreg, Director, the Fridtjof Nansen Institute, Fridtjof Nansens vei 17, Postboks 324, Lysaker, Norway N-1324; *Tel:* 47-67-53-89-12; *Fax:* 47-67-12-50-47; *Email:* willy.ostreg@fni.no; *Internet:* <http://www.fni.no/>

Global Environment and Energy in the 21st Century (GEE-21)

GEE-21 is a non-profit organization that carries out research and education activities dealing with issues of environment and energy. It is incorporated in Hawaii, with an international Board of Directors. The initial program areas of GEE-21 are: water and security in South Asia; global climate change, with the emphasis on strategies for reducing emissions of greenhouse gases from energy systems; and cooperation in the transfer and diffusion of environment-friendly energy technologies. The activities undertaken by GEE-21 are carried out in collaboration with institutions in several countries and multilateral organizations, such as the Asian Development Bank, Bangladesh Unnayan Parishad, the School of Advanced International Studies of the Johns Hopkins University (United States), and the UNEP Collaborating Centre on Energy and Environment (Denmark). *For more information, contact:* GEE-21, 1765 Ala Moana Boulevard, #1189, Honolulu, HI 96815-1420; *Tel:* 808/951-5672; *Fax:* 808/394-0814; *Email:* gee.21@att.net; *Internet:* <http://www.gee21.org>

Global Green USA

Global Green USA was founded in 1994 as the United States affiliate of Green Cross International, Mikhail Gorbachev's global environmental movement. Through partnerships, public education, and targeted advocacy efforts, Global Green USA encourages collaborative approaches and crosscutting solutions to environmental challenges. Global Green's programs are focused on the safe elimination of weapons of mass destruction, stemming climate change through the development of green building and renewable energy, reducing resource use, and ensuring that populations around the world have access to clean water. *For more information, contact:* Global Green USA, 227 Broadway, Suite 302, Santa Monica, CA 90401; *Tel:* 310/394-7700; *Fax:* 310/394-7750; *Email:* ggusa@globalgreen.org; *Internet:* <http://www.globalgreen.org>

Global Green USA: Legacy Program

The goal of the Legacy Program is to build a legacy of peace and create a sustainable and secure future. It works toward this goal by facilitating communication and dialogue among stakeholders in the United States and abroad to advance the proper, accelerated cleanup of the legacy of military toxic contamination. The



Updates

Legacy Program also supports the safe and sound demilitarization of both conventional and mass destruction weapons (and thereby full implementation of arms control treaties); in addition, the Program promotes the sustainable re-use of affected facilities. Current efforts include: a Washington, DC office focused on public education and policy advocacy to strengthen military-related pollution clean-up; and CHEMTRUST, a five-year project designed to build public participation in Russian and American decision-making for chemical weapons demilitarization. *For more information, contact:* GG USA Legacy Program, 1025 Vermont Avenue NW, Suite 300, Washington, DC 20005-6303; *Tel:* 202/879-3181; *Fax:* 202/879-3182; *Email:* jleas@globalgreen.org or pwalker@globalgreen.org; *Internet:* <http://www.globalgreen.org/programs/legacy.html>

Global Health Council

The Global Health Council's mission is to promote better health around the world by assisting all who work for improvement and equity in global health to secure the information and resources they need to work effectively. To achieve our mission, the Council brings together the global actors in health around seven key issues critical to improving health and promoting equity: (1) child health and nutrition; (2) reproductive health and maternal health; (3) HIV/AIDS; (4) infectious diseases; (5) disaster and refugee health; (6) emerging global health threats; and (7) health systems. Through conferences and seminars as well as its Web site and its bimonthly publications *Global HealthLink* and *Global AIDSLink*, the Council brings individuals and nongovernmental organizations together to share hard-won knowledge. The Council is also committed to working with its member organizations and partners in public health as well as the U.S. government to improve global health by: (a) increasing assistance to developing nations with high levels of infectious disease and premature death, (b) improving children's and women's health and nutrition, (c) reducing unintended pregnancies, and (d) combating the spread of infectious diseases, particularly HIV/AIDS. The Council's Global AIDS Program advocates on Capitol Hill, at the White House, and in corporate boardrooms to unite and strengthen the domestic and worldwide response to the HIV/AIDS pandemic. *For more information, contact:* Global Health Council, 1701 K Street NW, Suite 600, Washington, DC 20006-1503; *Tel:* 202/833-5900; *Fax:* 202/833-0075; or Global Health Council, 20 Palmer Court, White River Junction, VT 05001; *Tel:* 802/649-1340; *Fax:* 802/649-1396; *Email:* ghc@globalhealth.org; *Internet:* <http://www.globalhealth.org>

Global Security and Cooperation Program

The Global Security and Cooperation Program, the successor to the International Peace and Security Program, aims to encourage new thinking about security issues through encouraging scholars and practitioners to work together, understand each other's frameworks, and mine each other's bodies of knowledge. The program is supported by the MacArthur Foundation and springs from the understanding that a practically-oriented international security studies field must be constituted by scholars and practitioners from all over the world. To fulfill this goal, the program offers 16 two-year fellowships annually to doctoral students, professors, and practitioners (such as lawyers, journalists, and activists). The program also runs a small grants program for "Research Collaboration in Conflict Zones," which is open to applicants living or working in conflict zones. *For more information, contact:* Social Science Research Council, 810 Seventh Avenue, New York, NY 10019; *Tel:* 212/377-2700; *Email:* gsc@ssrc.org; *Internet:* <http://www.ssrc.org>

Global Water Partnership (GWP)

The GWP is an international network comprising government institutions, United Nations agencies, development banks, professional associations, research institutions, NGOs, and private-sector organizations. GWP initiatives are based on the Dublin-Rio principles articulated in 1992 and are intended to support local, national, regional, and international cooperation and coordination of activities and to foster investment in water-resource activities. These initiatives include: supporting integrated water-resources management (IWRM); promoting information-sharing mechanisms; developing innovative solutions to conflicts over water resources; suggesting practical policies based on these solutions; and helping to match needs to available resources. GWP also hosts an on-line interactive venue for knowledge and networking. Visitors can explore news and views from GWP's partners in the regions and find information on GWP's activities. The Web site also hosts a calendar of global and regional events and a library of publications on strategic issues in IWRM. GWP has



developed a knowledge exchange system designed to help decision-makers and those who manage water better understand the processes and mechanisms required for implementing IWRM. This system, the *IWRM ToolBox*, is available on the GWP Web site and presents a wide variety of options related to three fundamental elements of IWRM: the enabling environment, institutional roles, and management instruments. *For more information, contact:* GWP Secretariat, c/o Sida, Sveavägen 24-26, 7th floor, SE 105 25, Stockholm, Sweden; *Tel:* 46-8-698 5000; *Fax:* 46-8-698 5627; *Email:* gwp@sida.se; *Internet:* <http://www.gwpforum.org>

The Heinrich Böll Foundation

With headquarters in Berlin, Germany, the Heinrich Böll Foundation is a political foundation for the promotion of democratic ideas, civil society, and international understanding. It is associated with the political party Alliance 90/The Greens, and its work is oriented towards ecology, democracy, solidarity, and non-violence. At present, one of the key themes of the Foundation's international work is "Ecology and Sustainable Development." The Foundation's projects, in cooperation with partner organizations, include exchanges, educational programs, and study tours. The Foundation maintains offices in eleven countries outside of Germany. *For more information, contact:* Sascha Müller-Kraenner, Heinrich Böll Foundation, Washington Office, Chelsea Gardens, 1638 R Street NW, Suite 120, Washington, DC 20009; *Tel:* 202/462-7513; *Fax:* 202/462-5230; *Email:* washington@boell.de; *Internet:* <http://www.ased.org/>, <http://www.boell.de>, or <http://www.boell.org>

Institute for Alternative Futures (IAF)

The IAF is a non-profit futures research think-tank founded by Clement Bezold, James Dator, and Alvin Toffler in 1977. IAF aims to help individuals and organizations more wisely choose and create the futures they prefer. The Institute provides clients with services to enable them to understand the accelerating pace of change and focus their energies on clarifying their highest aspirations. IAF conducts projects in a broad variety of areas, such as anticipatory democracy, environment, government, health, and pharmaceuticals. Environmental projects include sustainable future programs, while government programming has included working with the President's Council on Sustainable Development. IAF's longest running program, the Foresight Seminars (initiated in 1978), are the Institute's primary public education program. The Seminars provide Congress, federal agencies, and the public with health futures research and future-oriented public policy analysis. *For more information, contact:* Institute for Alternative Futures, 100 N. Pitt Street, Suite 235, Alexandria, VA 22314-3134; *Tel:* 703/684-5880; *Fax:* 703/684-0640; *Email:* futurist@altfutures.com; *Internet:* <http://www.altfutures.com>

Institute for Defense Analyses (IDA)

The IDA is a non-profit corporation whose purpose is to promote national security and the public interest and whose primary mission is to assist the Office of the Secretary of Defense, the Joint Staff, the unified commands, and defense agencies in addressing important national security issues—particularly those requiring scientific and technical expertise. To avoid institutional pressures, IDA does not work directly for the military departments. It also does not work for private industry or foreign governments. IDA's research focuses on defense systems, technologies, operations, strategies, and resources. The work addresses issues of both long-term and immediate concern. IDA's research program includes multi-year efforts and quick response analyses in areas of established expertise. *For more information, contact:* The Institute of Defense Analyses, 4850 Mark Center Drive, Alexandria, VA 22311; *Tel:* 703/845-2000; *Internet:* <http://www.ida.org/index.html>

Institute for Sustainable Communities (ISC)

The ISC is an independent, non-profit organization that helps communities in existing and emerging democracies solve problems while building a better future for themselves and the world. The organization gives communities—and the organizations that support them—the training, advice, and grants they need to solve their own problems and shape their own destiny long after ISC's work with them has ended. The mission of ISC is to help communities around the world address environmental, economic, and social challenges to build a better future shaped and shared by all. Since its founding in 1991 by former Vermont Governor Madeleine M. Kunin, ISC has managed more than 45 international projects in 14 countries with support from individual donors, private foundations, and the U.S. government. ISC is based in Vermont, USA, with offices



Updates

in Bulgaria, Macedonia, Russia, and Ukraine. ISC's program areas are community action, civil society, environment, education, and business development. *For more information, please contact:* Institute for Sustainable Communities, 56 College Street, Montpelier, VT 05602; *Tel:* 802-229-2900; *Fax:* 802-229-2919; *Email:* isc@iscvt.org; *Internet:* <http://www.iscvt.org>

International Chamber of Commerce (ICC)

The ICC is the world's foremost business membership and leadership organization. Founded in 1919, the ICC represents the interests and ideals of business organizations around the globe from all sectors and industries. Given its vast authority, it is responsible for making the voluntary rules that govern the conduct of business across borders. It also provides many services to its member organizations, including the ICC International Court of Arbitration. Recent initiatives include supporting the UN-sponsored Global Compact. The Commission on Environment is responsible for the ICC's environmental and sustainable-development initiatives. The Commission monitors key issues and challenges facing the global environment; promotes a world business perspective on major environmental policy and sustainable-development issues; and promotes environmental management through voluntary initiatives and self-regulatory products. Present initiatives include the Business Action for Sustainable Development, a joint program with the World Business Council for Sustainable Development; the ICC/UNEP World Summit Business Awards for Sustainable Development Partnerships; promoting the ICC Business Charter for Sustainable Development, a voluntary mechanism to improve environmental-management technique and practices; and participating in a variety of UN conferences, including the Johannesburg Summit. A number of activities are coordinated by the ICC's Taskforce on Sustainable Development. *For more information, contact:* Jack Whelan, Senior Policy Manager, ICC, 38 Cours Albert 1er, 75008 Paris, France; *Tel:* 33-1-49-53-29-16; *Fax:* 33-1-49-53-28-59; *E-mail:* jack.whelan@iccwbo.org; *Internet:* www.iccwbo.org

International Center for Research on Women (ICRW)

The ICRW is a private, non-profit organization dedicated to promoting social and economic development with women's full participation. ICRW generates quality, empirical information, and technical assistance on women's productive and reproductive roles, their status in the family, their leadership in society, and their management of environmental resources. The Center's publications include "New Directions for the Study of Women and Environmental Degradation" and "Women, Land, and Sustainable Development." ICRW advocates with governments and multilateral agencies, convenes experts in formal and informal forums, and engages in an active publications and information programs to advance women's rights and opportunities. ICRW was founded in 1976 and focuses principally on women in developing and transition countries. *For more information, contact:* International Center for Research on Women (ICRW), 1717 Massachusetts Avenue NW, Suite 302, Washington, DC 20036; *Tel:* 202/797-0007; *Fax:* 202/797-0020; *Email:* info@icrw.org; *Internet:* <http://www.icrw.org>

International Food Policy Research Institute (IFPRI)

IFPRI was established in 1975 to identify and analyze policies for sustainably meeting the food needs of the poor in developing countries and to disseminate the results of the research to policymakers and others concerned with food and agricultural policy. IFPRI research focuses on economic growth and poverty alleviation in low-income countries, improving the well-being of poor people, and sound management of the natural-resource base that supports agriculture. IFPRI is a member of the Consultative Group on International Agricultural Research (CGIAR), an association of sixteen international research centers; it receives support from a number of governments, multilateral organizations, and foundations. IFPRI supports Future Harvest, a public awareness campaign that builds understanding of the importance of agricultural issues and international agricultural research. *For more information, contact:* International Food Policy Research Institute, 2033 K Street NW, Washington, DC 20006; *Tel:* 202/862-5600; *Fax:* 202/467-4439; *Email:* ifpri@cgiar.org; *Internet:* <http://www.ifpri.cgiar.org>



International Human Dimensions Programme (IHDP) on Global Environmental Change

IHDP is an international, nongovernmental, and interdisciplinary research program that fosters high quality research to address the most pressing questions on the human dimensions of Global Environmental Change (GEC). IHDP aims at producing research results relevant to the policymaking community. Promoting, supporting, and coordinating research are key activities. In addition, IHDP facilitates research-capacity building and international scientific networking. One of the four core projects of IHDP is entitled Global Environmental Change and Human Security (GECHS). The GECHS project focuses on developing a better understanding of issues such as: food security and vulnerability to disruption in food supply as a result of GEC; the role of cooperative agreements in conflicts over water management; and effects of land degradation and global warming on human life and security. *For more information, contact:* IHDP, Walter-Flex-Strasse 3, 53113 Bonn, Germany. *Tel:* 49-228-739050; *Fax:* 49-228-789054; *Email:* ihdp@uni-bonn.de; *Internet:* <http://www.ihdp.org>

International Institute for Sustainable Development (IISD)

The mission of IISD is to champion innovation, enabling societies to live sustainably. IISD contributes new knowledge and concepts, undertakes policy research and analysis, demonstrates how to measure progress, and identifies and disseminates sustainable development information. IISD contributes to sustainable development by advancing policy recommendations on: international trade and investment; economic instruments; climate change, measurement and indicators; and natural-resource management. *For more information, contact:* International Institute for Sustainable Development, 161 Portage Avenue East, 6th Floor, Winnipeg, Manitoba R3B 0Y4, Canada; *Tel:* 204/958-7700; *Fax:* 204/958-7710; *Email:* info@iisd.ca; *Internet:* <http://www.iisd.org>

International Institute of Applied System Analysis (IIASA)

IIASA is a nongovernmental research organization located in Austria. Its international teams of experts from various disciplines conduct scientific studies on environmental, economic, technological, and social issues in the context of human dimensions of global change. Since its inception in 1972, IIASA has been the site of successful international scientific collaboration in addressing areas of concern—such as energy, environment, risk, and human settlement—for all advanced societies. The Institute is sponsored by National Member Organizations in North America, Europe, and Asia. *For more information, contact:* International Institute for Applied Systems Analysis, A-2361 Laxenburg, Austria; *Tel:* 43-2236-807-0; *Fax:* 43-2236-71313; *Email:* inf@iiasa.ac.at; *Internet:* <http://www.iiasa.ac.at/>

International Peace Research Institute, Oslo (PRIO)

PRIO was founded in 1959 as one of the world's first centers of peace research. Research at PRIO is divided into four Strategic Institute Programmes: conditions of war and peace; foreign and security policies; ethics, norms, and identities; and conflict resolution and peacebuilding. Researchers at PRIO have published significant theoretical contributions on the concept of security while also investigating the specific linkages between environment, poverty, and conflict. PRIO also makes ongoing contributions as the editorial home to both *The Journal of Peace Research* and *Security Dialogue*. *For more information, contact:* International Peace Research Institute (PRIO), Fuglehaugata 11, N-0260 Oslo, Norway; *Tel:* 47-22-54-77-00; *Fax:* 47-22-54-77-01; *Email:* info@prio.no; *Internet:* <http://www.prio.no/>

IUCN-The World Conservation Union

IUCN is an international conservation organization with a membership of over 900 bodies—including states, government agencies, and nongovernment organizations across some 140 countries as well as scientific and technical networks. The mission of IUCN is to influence, encourage, and assist societies to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable. It has been an important actor (a) in promoting effective global governance through contributions to multilateral agreements such as CITES and the Biodiversity Convention; (b) in environmental mediation (e.g. OkaVango Delta, Victoria Falls); and (c) at the regional and national levels (e.g., national conservation strategies and transboundary ecosystem management). With the World Bank, IUCN created the World Commission on Dams, which has recently released *Dams and Development—A New Framework for Decision-*



Updates

Making, a report on the future of large dams that includes their environmental and social dimensions. IUCN has also conducted an important study for the Organization for Economic Cooperation and Development (OECD) on environment and security. In October 2000, the Second IUCN World Conservation Congress was held in Amman, Jordan, at which environment and security was one of the important topics discussed. Environment and security remains an important area of IUCN's work: it translates practical lessons learned on issues drawn from its field experience into the policy arenas, and environment and security is an important function of IUCN's Commission on Environmental, Economic, and Social Policy. IUCN's chief scientist has also written a book on the relationship between war and biodiversity, *Nature in War—Biodiversity Conservation During Conflicts*. For more information, contact: Scott A. Hajost, Executive Director, IUCN-US, 1630 Connecticut Avenue NW, 3rd Floor, Washington, DC 20009; *Tel:* 202/387-4826; *Fax:* 202/387-4823; *Email:* postmaster@iucn.org; *Internet:* <http://www.iucn.org/>

Migration Policy Institute (MPI)

(Formerly the International Migration Policy Program of the Carnegie Endowment for International Peace)

MPI is an independent, nonpartisan, non-profit think-tank dedicated to the study of the movement of people worldwide. The institute provides analysis, development, and evaluation of migration and refugee policies at the local, national, and international levels. It aims to meet the rising demand for pragmatic responses to the challenges and opportunities that migration presents in an ever more integrated world. MPI also publishes the international migration data Web site called the Migration Information Source (www.migrationinformation.org). For more information, contact: Kathleen Newland and Demetrios Papademetriou, Co-Directors, Migration Policy Institute, 1400 16th Street NW, Washington, DC 20036; *Tel:* 202/266-1940; *Fax:* 202/266-1900; *Internet:* <http://www.migrationpolicy.org>

The National Council for Science and the Environment (NCSE)

NCSE is a non-profit organization that works to improve the scientific basis for environmental decision-making. Guided by the needs of stakeholders, NCSE educates society about the importance of comprehensive scientific programs that integrate crosscutting research with knowledge assessments, education, information dissemination, and training. The objectives of NCSE are: (a) bringing about the full implementation of the recommendations of the National Science Foundation's (NSF's) report, *Environmental Science and Engineering for the 21st Century: The Role of the National Science Foundation*; (b) facilitating stakeholder actions to develop a shared understanding of science, science needs, and priorities; (c) working to link science with decision-making; and (d) providing and creating an on-line information dissemination system that allows all users to find understandable, science-based information about the environment. For more information, contact: National Council for Science and the Environment, 1725 K Street NW, Suite 212, Washington, DC 20006-1401; *Tel:* 202/530-5810; *Fax:* 202/628-4311; *Email:* info@NCSEonline.org; *Internet:* <http://www.cnie.org>

The Natural Resources Defense Council (NRDC)

NRDC is a U.S. non-profit environmental protection organization with over 500,000 members and a staff of attorneys, scientists, and specialists addressing the full range of pressing environmental problems. The NRDC has had a long and active program related to environment and security. NRDC has engaged in extensive advocacy with the U.S. government and international institutions on climate change and other global common problems and on environmental challenges in developing countries. Since the 1992 Earth Summit, NRDC has worked on the creation and approach of new mechanisms to hold governments accountable to commitments they have made to move toward "sustainable development." NRDC has a new initiative in China on energy efficiency and renewables. NRDC continues to undertake research, analysis, and advocacy related to nuclear weapons production and dismantlement, nuclear materials, and proliferation, and nuclear energy. For more information, contact: Natural Resources Defense Council, 40 West 20th Street, New York, NY 10011; *Tel:* 212/727-2700; *Fax:* 212/727-1773; *Email:* nrdcinfo@nrdc.org; *Internet:* <http://www.nrdc.org>



The Nautilus Institute for Security and Sustainable Development

The Nautilus Institute is a policy-oriented research and consulting organization. Nautilus promotes international cooperation for security and ecologically sustainable development. Programs embrace both global and regional issues, with a focus on the Asia-Pacific region. Nautilus has produced a number of policy-oriented studies on these topics, which are available on the Internet and in hard copy. Current projects include: the Energy, Security, and Environment Program, which studies the intersection of these three issues in Northeast Asia, especially Japan, and seeks sustainable policy alternatives; and the Global Peace and Security Program, which identifies ways to avoid and resolve conflict without force, especially in Northeast Asia. The Northeast Asia Peace and Security Network (NAPSNet) and the South Asia Nuclear Dialogue Network (SANDNet) are among the information services the Institute offers to subscribers free of charge via email. *For more information, contact:* The Nautilus Institute, 125 University Avenue, Berkeley, CA 94710; *Tel:* 510/295-6100; *Fax:* 510/295-6130; *Email:* nautilus@nautilus.org; *Internet:* <http://www.nautilus.org>

The Pacific Institute

The Pacific Institute for Studies in Development, Environment and Security is dedicated to protecting our natural world, encouraging sustainable development, and improving global security by providing independent research to policymakers, researchers, nongovernmental organizations, and the public. Founded in 1987 and based in Oakland, California, the Pacific Institute focuses on issues at the intersection of development, environment, and security. Though best known for our pioneering research on water and sustainability, the Pacific Institute is also working to ensure that critical watersheds are protected, that international standards are fair and equitable, that communities have a voice in important environmental decisions, and that nations and states share resources peacefully. *For more information, contact:* The Pacific Institute for Studies in Development, Environment, and Security, 654 13th Street, Preservation Park, Oakland, CA 94612; *Tel:* 510/251-1600; *Fax:* 510/251-2203; *Email:* pistaff@pacinst.org; *Internet:* <http://www.pacinst.org>

Pew Center on Global Climate Change

Diverse sectors of society are now coming together under the Pew Center on Global Climate Change to steer our nation and the world toward reasonable, responsible, and equitable solutions to our global climate change problems. The Center brings a new cooperative approach and critical scientific, economic, and technological expertise to the global debate on climate change. Established in 1998 by the Pew Charitable Trusts, the Center is directed by Eileen Claussen, former U.S. Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs. Major companies and other organizations are working together through the Center to educate the public on the risks, challenges, and solutions to climate change. These efforts at cooperation and education are spearheaded by the Center's Business Environmental Leadership Council. The Pew Center is committed to the development of a wide range of reports and policy analyses that will add new facts and perspectives to the climate-change debate in key areas such as economic and environmental impacts and equity issues. *For more information, contact:* Pew Center on Global Climate Change, 2101 Wilson Boulevard, Suite 550, Arlington, VA 22201; *Tel:* 703/516-4146; *Fax:* 703/841-1422; *Internet:* <http://www.pewclimate.org>

Population Action International (PAI)

PAI promotes the early stabilization of world population through policies that enable all women and couples to decide for themselves, safely and in good health, whether and when to have children. The organization advocates for voluntary family-planning programs, other reproductive-health services, and education and economic opportunities for girls and women. PAI works to foster the development of U.S. and international population policy through policy research, public education, and political advocacy. PAI has conducted research and published on the relationship of population dynamics to the sustainability of natural resources critical to human well-being. The program also considers interactions between population dynamics and economic change, public health, and security. Most recently, the program has begun an initiative related to community-based population and environment activities, defined as provision of services linking natural-resources management and reproductive health at the request of communities. In 1998 PAI published *Plan and Conserve: A Source Book on Linking Population and Environmental Services in Communities*. Other departments within PAI



Updates

explore issues related to population policy and funding, provision of reproductive health services, the education of girls, and legislative initiatives related to international population issues. *For more information, contact:* Population Action International, 1300 19th Street NW, 2nd floor, Washington, DC 20036; *Tel:* 202/557-3400; *Fax:* 202/728-4177; *Email:* pai@popact.org; *Internet:* <http://www.populationaction.org>

Population and Environment Linkages Service

The Population and Environment Linkages Service brings comprehensive and reliable information to researchers, students, policymakers, government officials, and others around the world who are working on or concerned about the linkage between population growth and the environment. It was begun in response to calls for such a service in the 1994 International Conference on Population and Development (Cairo) Programme of Action. This project's innovative and rational approach to information (as well as its commitment to the involvement of stakeholders in the process) seeks to facilitate greater access to material on population-environment relationships and promote more coordinated exchanges among researchers and others. The Service links to books, reports, journal articles, newspaper articles, news analysis, maps, conference papers, data sets, slide shows, organizations, regional overviews, laws, bills, and court decisions from around the world. Different topics can be explored on this Web site, including such issues as biodiversity, climate, conflict, demographics, development, fisheries, food, forests, fresh water, health, migration, policies, urbanization, and women. *For more information, contact:* Dr. Peter Saundry, National Council for Science and the Environment, 1725 K Street NW, Suite 212, Washington, DC 20006-1401; *Tel:* 202/530-5810; *Fax:* 202/628-4311; *Email:* cnie@cnie.org

Population and Environment Program, National Wildlife Federation

The Population and Environment Program is an effort to educate the public about the link between population growth and its effect on wildlife habitat and the global environment. The program maintains a list of activists known as the Fast Action Network; the Network receives newsletters as well as legislative updates about the funding status of beneficial international family planning (IFP) programs. IFP reduces population growth and aids in improving the quality of life for impoverished women, children, and men. The Federation's Population and Environment Program works with similar organizations, such as Population Connection (formerly Zero Population Growth), Audubon's Population and Habitat Program, and Population Action International. Several free educational materials are available, including fact-sheets and an informational video. *For more information, contact:* Population & Environment Program, National Wildlife Federation (NWF), 1400 16th Street NW, Suite 501, Washington, DC 20036; *Tel:* 202/797-6800; *Fax:* 202/797-5486; *Email:* population@nwf.org; *Internet:* <http://www.nwf.org/population/>

Population and Habitat Program

National Audubon Society has launched a major new initiative to build a public mandate for population and family planning and to connect the issues of population growth with habitat. Through this program, Audubon will draw upon its chapters and other community leadership to educate and mobilize citizens from around the country to confront population and environment problems and to communicate with policymakers. Utilizing its expertise in grassroots activism, the National Audubon Society has embarked on a broad-based effort to strengthen U.S. leadership on population. The Population & Habitat Program focuses on: (1) restoration of international population funding, and (2) connecting population issues to state and local habitat issues. To these ends, the Population Program has already put three state coordinators in place in Colorado, Pennsylvania, and New York, with plans for additional coordinators in California, Florida, Ohio, and Texas. These coordinators will design a three-year plan identifying local population issues and their impacts on birds, wildlife, and habitat. They will conduct training for activists and provide chapters and the public with ways to become involved in the Program. The Program produced a publication in 1998 called *Population & Habitat in the New Millennium* (by Ken Strom) that helps activists make the connections among population growth, consumption, and environmental issues, and includes provocative discussions and possible solutions. *For more information, contact:* Population & Habitat Program, National Audubon Society, 1901 Pennsylvania Avenue NW, Suite 1100, Washington, DC 20006; *Tel:* 202/861-2242; *Email:* population@audubon.org; *Internet:* <http://www.audubonpopulation.org>



Population Council

The Population Council, an international, non-profit, nongovernmental organization established in 1952, seeks to improve the well-being and reproductive health of current and future generations around the world and to help achieve a humane, equitable, and sustainable balance between people and resources. The Council (a) conducts fundamental biomedical research in reproduction; (b) develops contraceptives and other products for improvement of reproductive health; (c) does studies to improve the quality and outreach of services related to family planning, HIV/AIDS, and reproductive health; (d) conducts research on reproductive health and behavior, family structure and function, and causes and consequences of population growth; (e) strengthens professional resources in developing countries through collaborative research, awards, fellowships, and training; and (f) publishes innovative research in peer-reviewed journals, books, and working papers and communicates research results to key audiences around the world. Research and programs are carried out by the Center for Biomedical Research, the International Programmes Division, and the Policy Research Division. The Council publishes the journals *Population and Development Review* and *Studies in Family Planning*. Council headquarters and the Center for Biomedical Research are located in New York City; the Council also maintains an office in Washington, DC and an international presence through its five regional and 13 country offices. Council staff members conduct research and programs in over 70 countries. The Council's expenditures for 2001 were \$70.2 million. *For more information, contact:* Melissa May, Director of Public Information, Population Council, 1 Dag Hammarskjold Plaza, New York, NY 10017; *Tel:* 212/339-0525; *Fax:* 212/755-6052; *Email:* pubinfo@popcouncil.org; *Internet:* <http://www.popcouncil.org>

The Population-Environment Research Network

The Population-Environment Research Network, a non-profit, Web-based information source, aims to further academic research on population and environment by promoting on-line scientific exchange among researchers from social- and natural-science disciplines worldwide. The Network provides: (1) an on-line research database that offers bibliographies, project descriptions, and reviews of research on population-environment dynamics; (2) a cyber seminar series featuring on-line discussions of selected research papers; and (3) a "what's new?" page on its Web site. The project is sponsored by the International Union for the Scientific Study of Population (IUSSP) and the International Human Dimensions Program (IHDP) on Global Environmental Change. Technical support is provided by the Socioeconomic Data and Applications Center (SEDAC) at the Center for International Earth Science Information Network (CIESIN) at Columbia University. The Network is funded by the MacArthur Foundation. *For more information, contact:* www.populationenvironmentresearch.org

The Population Institute

The Population Institute is a private, non-profit organization working for a more equitable balance among the world's population, environment, and resources. The Institute was founded in 1969. Since 1980, it has dedicated its efforts exclusively to creating awareness of international population issues among policymakers, the media, and the public. In pursuing its goals, the Institute works in three specific programmatic areas: the development of the largest grassroots network in the international population field; providing the media with timely and accurate information on global population issues; and the tracking of public policy and legislation affecting population. The Institute's Future Leaders Program recruits college students and recent graduates as fellows for a one-year period in its community leaders, information and education, and public-policy divisions. The Institute annually presents Global Media Awards for Excellence in Population Reporting to journalists in 15 media categories and the Global Statesman Award to world leaders. It is also the official sponsor of World Population Awareness Week (WPAW), a week of awareness-raising activities cosponsored by organizations worldwide. The Institute publishes: the bimonthly newspaper, *POPLINE*, the most widely circulated newspaper devoted exclusively to population issues; the 21st Century monologue series, exploring the interrelationships between population and other major issues; educational materials; and books. Regional representatives of the Population Institute are located in Bogota, Columbia; Colombo, Sri Lanka; and Brussels, Belgium. *For more information, contact:* Werner Fornos, President, The Population Institute, 107 Second Street NE, Washington, DC 20002; *Tel:* 202/544-3300; *Fax:* 202/544-0068; *Email:* web@populationinstitute.org; *Internet:* <http://www.populationinstitute.org>



Updates

Population Matters

In 1996, RAND launched Population Matters, a program for research communication that uses different means, methods, and formats for reaching audiences that influence the making of population policy in the United States and abroad. With support from a consortium of donors led by the William and Flora Hewlett Foundation and including the David and Lucile Packard Foundation and the Rockefeller Foundation, the program is addressing the concern that empirical population research is missing opportunities to inform policymaking and public awareness. RAND's involvement is also intended to fill the need for an objective "information broker" who does not espouse a political or ideological point of view on population issues. The program has two principal goals: (1) to raise awareness of and highlight the importance of population policy issues, and (2) to provide a more scientific basis for public debate over population policy questions. To date, the project has examined 12 topics: the record of family planning programs in developing countries; population growth in Egypt; congressional views of population and family planning issues; American public opinion on population issues; Russia's demographic crisis; immigration in California; the national security implications of demographic factors; interrelations between population and the environment; global shifts in population and their implications; U.S. demographic changes; policy, health, and development in Asia; and the value of U.S. support for international demographic research. *For more information, contact:* Dr. Julie DaVanzo, RAND, 1700 Main Street, P.O. Box 2138, Santa Monica, CA 90407-2138; *Tel:* 310/393-0411-7516; *Fax:* 310/260-8035; *Email:* Julie_DaVanzo@rand.org; *Internet:* <http://www.rand.org/popmatters>

The Population Reference Bureau (PRB)

PRB provides information to policymakers, educators, the media, opinion leaders, and the public around the world about U.S. and international population trends. PRB examines the links among population, environment, and security and conducts a number of projects that deal with these linkages. Under the Southern Population and Environment Initiative, PRB works to enhance the quality and impact the work of developing-country policy research institutions that study the relationship between population variables, health impacts, and the environment. Other PRB projects include: MEASURE Communication, a USAID-funded program to help institutions in developing countries improve their communication of research findings; World Population and the Media; Japan's International Population Assistance, a study of Japan's foreign population assistance; and U.S. in the World, which helps Americans relate population-environment interactions in the U.S. to those in developing nations. *For more information, contact:* Population Reference Bureau, 1875 Connecticut Avenue NW, Suite 520, Washington, DC 20009-5728; *Tel:* 202/483-1100; *Fax:* 202/328-3937; *Email:* popref@prb.org; *Internet:* <http://www.prb.org>

Population Resource Center

The Population Resource Center seeks to improve public policymaking by keeping policymakers informed on the latest demographic data and trends. The Center publishes numerous reports on domestic and international demographic trends and issues and brings experts and policymakers together through educational programs ranging from small discussion groups and policy briefings to large symposia. The educational programs respond to policymakers' questions on issues such as immigration, teen pregnancy, child care, aging, and international population growth. The Center's Web site provides demographic profiles for a number of countries as well as several regions of the world; it also offers links to a number of governmental and nongovernmental organizations focused on international population issues. The Center's most recent international programming covered such topics as AIDS and infectious diseases, the status of women, and family planning. *For more information, contact:* in New Jersey: Population Resource Center, 15 Roszel Road, Princeton, NJ 08540; *Tel:* 609/452-2822; *Fax:* 609/452-0010; *Email:* prc@prcnj.org; *Internet:* <http://www.prcnj.org>; or in Washington, DC: Population Resource Center, 1725 K Street NW, Suite 1102, Washington, DC 20006; *Tel:* 202/467-5030; *Fax:* 202/467-5034; *Email:* prc@prcdc.org; *Internet:* <http://www.prcdc.org>

Resources Conflict Institute (RECONCILE)

The phenomenal population growth in Kenya since its independence has exerted immense pressure on the country's natural-resource base, leading to an escalation in both the intensity and the scope of natural-resource



conflicts. In order to address these conflicts, it is necessary to recognize and utilize existing capacities within resource-dependent communities as well as to build new capacities in response to new forms and manifestations of conflict over natural resources. This is the challenge that RECONCILE seeks to meet. RECONCILE works for the reconciliation of competing resource needs to promote the sustainable management of natural resources and the promotion of sustainable development. In this work, it is guided by a commitment to achieve the following objectives: (a) to understand, articulate, and promote the use of traditional natural-resource management systems, institutions, concepts, and practices in addressing existing and emerging natural-resource conflicts; (b) to use natural-resource conflicts as an entry point for understanding and addressing the resource needs, opportunities, and constraints of resource-dependent communities and for devising and promoting policy options for equitable access to and control of natural resources by these communities; and (c) to engage and use the legal system and the legal process in Kenya in addressing conflicts over access to and control of natural resources by resource-dependent communities. *For more information, contact:* Executive Director, Resources Conflict Institute (RECONCILE), Printing House Road, P.O. Box 7150, Nakuru, Kenya; *Tel:* 254-37-44940; *Fax:* 254-37-212865; *Email:* Reconcile@net2000ke.com

Resources for the Future (RFF)

RFF is an independent, non-profit research organization that aims to help people make better decisions about the environment. RFF is committed to elevating public debate about natural resources and the environment by providing accurate, objective information to policymakers, legislators, public opinion leaders, and environmentalists. RFF has four main research areas: environment; natural resources; intersections; and methods, tools, and techniques. Currently, RFF has several programs that address environment and security linkages, including a program on nuclear weapons cleanup and the International Institutional Development and Environmental Assistance Program (IIDEA). IIDEA is aimed at helping countries and institutions become more effective environmental actors by focusing on implementation and management of environmental law and policy. IIDEA's mission is to reduce environmental risk and enhance environmental security by working to bridge the gap between formal commitment and actual practice. *For more information, contact:* Resources for the Future, 1616 P Street NW, Washington, DC 20036; *Tel:* 202/328-5000; *Fax:* 202/939-3460; *Internet:* <http://www.rff.org>

The Royal Institute of International Affairs: Energy and Environmental Programme

The Energy and Environmental Programme is the largest of the research programs based at the Royal Institute of International Affairs (Chatham House). The Programme works with business, government, academic, and NGO experts to carry out and publish research and stimulate debate on key energy and environmental issues with international implications, particularly those just emerging into the consciousness of policymakers. *For more information, contact:* Energy and Environmental Programme, Royal Institute of International Affairs, Chatham House, 10 St. James's Square, London SW1Y 4LE, England; *Tel:* 44-(0)20 7957-5711; *Fax:* 44-(0)20 7957-5710; *Email:* eep-admin@riia.org; *Internet:* <http://www.riia.org/eep.html>

Stockholm Environment Institute (SEI)

Established in 1989, SEI is an independent, international research institute specializing in sustainable-development and environment issues. It works at local, national, regional, and global policy levels. The SEI research program aims to clarify the requirements, strategies, and policies for a transition to sustainability. These goals are linked to the principles advocated in Agenda 21 and Conventions such as Climate Change, Ozone Layer Protection, and Biological Diversity. SEI examines the policy connections and implications of scientific and technical analysis. The Institute carries out its mission through five main program areas: sustainable development studies, atmospheric environment, water resources, climate and energy resources, and risk and vulnerability. The results of SEI research are made available to a wide range of audiences through publications, electronic communication, software packages, conferences, training workshops, specialist courses, and roundtable policy dialogues. The Institute has its headquarters in Stockholm with a network structure of permanent and associated staff worldwide and centers in Boston (USA), York (UK), and Tallinn (Estonia). The collaborative network consists of scientists, research institutes, project advisors, and field staff located in over 20 countries.



Updates

For more information, contact: Roger Kasperson, Executive Director, Stockholm Environment Institute, Lilla Nygatan 1, Box 2142, S-103 14 Stockholm, Sweden; *Tel:* 46-8-412-1400; *Fax:* 46-8-723-0348; *Email:* postmaster@sei.se; *Internet:* <http://www.sei.se>

Tata Energy and Resources Institute (TERI)

TERI is an independent, not-for-profit research institute in New Delhi, India with a focus on multidisciplinary, applied, and integrated research. Its mission is to develop and promote technologies, policies, and institutions for the efficient and sustainable use of natural resources. TERI focuses on all aspects of natural-resource protection and management—energy, environment, biotechnology, forestry, infrastructure, and various facets of sustainable development. The Institute also focuses on information dissemination across India and to a select international audience, including the training of professionals from India and abroad. Topics covered in these training activities include energy, environment, and development. TERI was formed as part of an Indian national effort to identify and tackle some of the long-term challenges facing the energy sector; it includes a Centre on Environmental Studies. It was established in 1974 with generous funding from the Tata group of companies. *For more information, contact:* TERI, Darbari Seth Block, Habitat Place, Lodhi Road, New Delhi 110 003, India; *Tel:* 91-11-462-2246 or 460-1550; *Fax:* 91-11-462-1770 or 463-2609; *Email:* mailbox@teri.res.in; *Internet:* <http://www.teriin.org>. *TERI also has a North America office at:* 1600 Wilson Boulevard, Suite 710, Arlington, VA 22209; *Tel:* 703/841-1136; *Fax:* 703/243-1865; *Email:* teri@igc.org

Television Trust for the Environment (TVE)

TVE is an independent, non-profit organization that acts as a catalyst for the production and distribution of films on environment, development, health, and human rights issues. Using broadcast television and other audio-visual resources—including the Internet and radio—TVE works with United Nations agencies, international nongovernmental organizations, and the global television industry to address complex issues such as child development, primary health, poverty, and desertification and to translate these issues into mainstream TV programs that focus on the human stories involved in sustainable human development. Its three flagship broadcast projects are *Earth Report*, *Hands On* and *Life*, which were first broadcast on BBC World. *For more information, contact:* TVE, Prince Albert Road, London NW1 4RZ, United Kingdom; *Tel:* 44 20 7586 5526; *Fax:* 44 20 7586 4866; *E-mail:* tve-uk@tve.org.uk; *Internet:* <http://www.tve.org>

Water Research Commission

The WRC is a South African-government funded commission designed to: promote coordination, communication, and cooperation in the field of water research; establish water-research needs and priorities; fund research on a priority basis; and promote the effective transfer of information and technology. Created in 1971, the commission decided early on to directly fund outside research on a variety of water-resources issues affecting South Africa. Universities, technical colleges, statutory research agencies, government departments, local authorities, nongovernmental organizations, water boards, consultants, and industries all partake in WRC research contracts. With its involvement in the New Partnership for Africa's Development (NEPAD), the WRC strategically reorganized with the goal to be a globally recognized leader in providing innovative solutions for sustainable water management to meet the needs of society and of the environment. In this endeavor, the WRC has developed five research portfolios around the issues of water-resource management, water-linked resources, water use and waste management, water utilization in agriculture, and the dissemination of water-centered information and knowledge. *For more information, contact:* Dr. Rivka Kfir, CEO, P.O. Box 824, Pretoria 001, South Africa; *Tel:* 27-12-330-0340; *Fax:* 27-12-331-2565; *E-mail:* rkfir@wrc.org.za; *Internet:* <http://www.wrc.org.za>

Wild Aid

Wild Aid, formerly the Global Security Network, is a non-profit organization that provides direct protection to wildlife in danger by strengthening the field protection for animals, combating illegal wildlife trafficking, and working to convince wildlife consumers to change their habits. Wild Aid combines investigations, public media campaigns, direct action programs, and global networking to identify, expose, and address flagrant



violations of environmental and human rights. Some of their accomplishments include establishing a successful, world-renowned wildlife recovery program in the Russian Far East, reducing the consumption of endangered species through their international multimedia Asian Conservation Awareness Program (ACAP), and addressing human trafficking and associated human rights abuses. *For more information, contact:* Wild Aid, 450 Pacific Avenue, Suite 201, San Francisco, CA 94133; *Tel:* 415/834-3174; *Fax:* 415/834-1759; *Email:* info@wildaid.org; *Internet:* <http://www.wildaid.org>

The World Business Council for Sustainable Development (WBCSD)

The WBCSD is a membership organization comprised of 150 international companies drawn from more than 30 countries and 20 major industrial sectors, driven by a shared commitment to sustainable development through the three pillars of economic growth, ecological balance, and social progress. Its mission is to provide business leadership on sustainable-development issues and promote eco-efficiency, innovation, and corporate social responsibility. It seeks to be a catalyst for global outreach on sustainable-development issues through the dissemination of sustainable-business best practices and policy development to allow businesses to contribute to sustainability. The WBCSD is governed by a council composed of the CEOs of its member companies, which meets annually to determine the organization's priorities and to discuss strategic issues related to sustainable development. Day-to-day activities lie with a president and a secretariat, while the executive committee oversees the organization's management. *For more information, contact:* Chairman Phillip Watts, WBCSD, 4 chemin de Conches, 1231 Conches-Geneva, Switzerland; *Tel:* 41-22-839-3100; *Fax:* 41-22-839-3131; *Email:* info@wbcsd.org; *Internet:* <http://www.wbcsd.org>

World Resources Institute (WRI)

Established in 1982, the mission of the World Resources Institute (WRI) is to move human society to live in ways that protect the Earth's environment and its capacity to provide for the needs and aspirations of current and future generations. Because people are inspired by ideas, empowered by knowledge, and moved to change by greater understanding, WRI provides—and helps other institutions provide—objective information and practical proposals for policy and institutional change that will foster environmentally sound, socially equitable development. To further its mission, WRI conducts policy research, publicizes policy options, encourages adoption of innovative approaches, and provides strong technical support to governments, corporations, international institutions, and environmental NGOs. WRI's current areas of work include: biological resources; climate, energy and pollution; economics; information; and institutions and governance. *For more information, contact:* World Resources Institute, 10 G Street NE, Suite 800, Washington, DC 20002; *Tel:* 202/729-7600; *Fax:* 202/729-7610; *Email:* front@wri.org; *Internet:* <http://www.wri.org/wri/>

Worldwatch Institute

Worldwatch Institute is dedicated to informing policymakers and the public about emerging global problems and trends and the complex links between the world's economy and its environmental support systems. The Institute aims to foster the evolution of an environmentally sustainable society through interdisciplinary, non-partisan research on emerging global environmental concerns (including population and security issues). The Institute recently published Paper 155, "Still Waiting for the Jubilee: Pragmatic Solutions for the Third World Debt Crisis," and a book entitled *Vanishing Borders: Protecting the Planet in the Age of Globalization* by Hilary French. Worldwatch researcher Michael Renner published in late 1997 Paper 137 (on the destructive effects of small-arms proliferation) entitled *Small Arms, Big Impact: The Next Challenge of Disarmament*. Mr. Renner's 1996 publication *Fighting for Survival: Environmental Decline, Social Conflict, and the New Age of Insecurity* deals with international security and environment/sustainable development. Lester Brown's 1995 book, *Who Will Feed China? Wake-up Call for a Small Planet*, examines the challenges associated with sustainably meeting the needs of a rapidly expanding population. The Institute's annual publications, *State of the World* and *Vital Signs*, provide a comprehensive review and analysis of the state of the environment and trends that are shaping its future. The Institute's bimonthly magazine, *World Watch*, complements these reports with updates and in-depth articles on a host of environmental issues. Other Worldwatch publications discuss redefining security in the context of global environmental and social issues, the impact of population growth on the earth's resources, and other



Updates

major environmental issues. *For more information, contact:* Worldwatch Institute, 1776 Massachusetts Avenue NW, Washington, DC 20036; *Tel:* 202/452-1999; *Fax:* 202/296-7365; *Email:* worldwatch@worldwatch.org; *Internet:* <http://www.worldwatch.org>

U.S. GOVERNMENTAL ACTIVITIES

Editor's Note: Please consult the Web sites of these departments and activities for the latest mission, staffing, or contact information.

The Cooperative Monitoring Center (CMC)

CMC, a multiprogram laboratory located at the Sandia National Laboratories, develops technical and operational capabilities to support international cooperation on nonproliferation, arms control, and other strategic issues. CMC also assists in building international technical capabilities to enable global participation in international treaties and other strategic cooperative activities. Representatives from over 80 countries have participated in CMC-sponsored activities such as workshops, seminars, and visiting scholars' programs. Focused efforts have addressed particular security issues for the Middle East, South Asia, Northeast Asia, Central Asia, Russia, and China. CMC is a specially designated facility for hosting unclassified international interactions. The conference facilities, technology training and demonstration areas, and visiting scholar programs create a one-of-a-kind environment for promoting technical collaborations in support of U.S. and international security objectives. Technical capabilities demonstrated at CMC include chemical and biological weapons monitoring and environmental monitoring and assessment; other candidate applications include natural resources, pollution, energy, commerce and trade, and emergency planning and response. *For more information, contact:* Cooperative Monitoring Center, Sandia National Laboratories, P.O. Box 5800, Albuquerque, NM 87185-1371; *Tel:* 505/284-5000; *Fax:* 505/284-5005; *Internet:* <http://www.cmc.sandia.gov>

NASA Center for Health Applications of Aerospace Related Technologies (CHAART)

Located at the Ames Research Center, CHAART was established in 1995 to promote the use of remote sensing (RS), Geographic Information Systems (GIS), and other related aerospace technologies to address issues of human health through education, training, and technology transfer. The primary focus of CHAART in 2000 was to support existing and develop new collaborations in the application of RS/GIS in the surveillance of infectious disease and the study of human health. Training programs are focused on equipping human-health investigators with RS/GIS technology and training to assist their research efforts. CHAART maintains collaborative relationships with a number of U.S. agencies and universities and is involved with the joint NIH/NASA Tropical Medicine Research Centers, the Global Disaster Information Network (GDIN), and NASA's new Environment and Health Initiative. *For more information, contact:* Louisa Beck, MS 242-4, NASA Ames Research Center, Moffett Field, CA 94035; *Tel:* 650/604-5896; *Email:* lrbeck@arc.nasa.gov; *Internet:* <http://geo.arc.nasa.gov/esdstaff/health/chaart.html>

USAID: Global Health

The U.S. Agency for International Development's programs in global health represent the commitment and determination of the U.S. government to prevent suffering, save lives, and create a brighter future for families in the developing world. USAID is confronting global health challenges through improving the quality, availability, and use of essential health and family-planning services. The combination of on-the-ground experience in developing countries and global research on innovative technologies and approaches has given USAID a unique advantage in designing effective programs. USAID's strategy on global health seeks to stabilize world population and protect human health through programs in maternal and child health, HIV/AIDS, family planning and reproductive health, infectious diseases, environmental health, nutrition, and other life-saving areas. Under the Bureau of Global Health, the Office of Population facilitates population, environment, and security policy dialogue by supporting the Woodrow Wilson International Center for Scholars' Environmental Change and Security Project through a cooperative agreement with the University of Michigan

Population Fellows Programs. *For more information, contact:* Tom Outlaw, Senior Technical Advisor, Population and Environment, U.S. Agency for International Development, RRB 3.06-192, 1300 Pennsylvania Avenue NW, Washington, DC 20523-3601; *Tel:* 202/712-0876; *Fax:* 202/216-3404; *Email:* toutlaw@usaid.gov; *Internet:* http://www.usaid.gov/pop_health/

USAID: Environment

USAID programs tackle major environmental problems abroad before they pose more serious threats to the United States. Its programs promote economic growth, global health, technology transfer, and conflict prevention; they also help people manage their activities in ways that enable the natural environment to continue to produce—now and in the future—the goods and services necessary for survival. The programs focus on long-standing and harmful national and global environmental challenges that are far beyond the reach of any single donor and that comprise six interwoven focus areas: (1) protecting the world's environment for long-term sustainability; (2) improving conservation of biologically significant habitats; (3) reducing the threat of global climate change; (4) improving the urban population's access to adequate environmental services; (5) increasing the provision of environmentally sound energy services; and (6) promoting sustainable natural-resource management. *For more information, contact:* U.S. Agency for International Development Information Center, Ronald Reagan Building, 1300 Pennsylvania Avenue NW, Washington, DC 20523-1000; *Tel:* 202/712-4810; *Fax:* 202-216-3524; *Internet:* <http://www.usaid.gov/environment>

U.S. Army Environmental Policy Institute (AEPI)

Established in 1989, AEPI reports to the Assistant Secretary of the Army for Installations and Environment. The AEPI mission is to assist the Army Secretariat in developing proactive policies and strategies to address both current and future Army environmental challenges. Study topics include: Army implementation of the National Environmental Policy Act (NEPA), environmental health, international issues, preserving land for combat training, energy efficiency, environmental justice, sustainable acquisition, sustainable military construction, and training awareness for DoD regarding Native Americans. AEPI activities include: analyzing future environmental challenges and opportunities; conducting research to serve as the basis for policymaking; assessing costs and benefits to the Army of its policies; partnering with research institutions and universities; offering fellowships to military environmental specialists; and hosting conferences that allow interaction between the Army, academia, industry, and others. The Institute has published more than twenty policy papers on pertinent environmental issues. Recent titles include: "Installations and Watersheds: An Examination of Changes in Water Management on Army Installations"; "Defining Environmental Security: Implications for the U.S. Army"; "Interagency Cooperation on Environmental Security"; and "Mending the Seams in Force Protection: From the Pentagon to the Foxhole." These publications and others may be ordered from AEPI. *For more information, contact:* Director, AEPI, 101 Marietta Street, Suite 3120, Atlanta, GA 30303; *Tel:* 404/524-9364; *Fax:* 404/524-9368; *Email:* mlulofs@aepi.army.mil; *Internet:* <http://www.aepi.army.mil/>

U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID)

USAMRIID leads the Department of Defense's medical research for defenses against biological warfare. USAMRIID studies naturally-occurring infectious diseases—such as anthrax, plague, and hemorrhagic fevers—that require special containment. Its scientists develop vaccines, drugs, and diagnostics for laboratory and field use, as well as generating strategies, information, procedures, and training programs for medical defense against biological threats. The Institute is the only DoD laboratory capable of handling highly dangerous viruses at Biosafety Level 4. Although USAMRIID mainly focuses on protecting military personnel and preserving fighting strength, its research also contributes to overall scientific knowledge and global health. The Institute works with the U.S. Centers for Disease Control and Prevention, the World Health Organization, and academic research centers worldwide. In addition, USAMRIID operates a world-renowned reference laboratory for definitive identification of biological threat agents and diagnosis of the diseases they produce. *For more information, contact:* Commander, USAMRIID, Attn: MCMR-UIZ-R, 1425 Porter Street, Fort Detrick, Frederick, MD 21702-5011; *Email:* USAMRIIDweb@amedd.army.mil; *Internet:* <http://www.usamriid.army.mil/>



Updates

U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of Global Programs, International Research Institute for Climate Prediction (IRI)

The concept of IRI was first presented by the United States (in the first Bush Administration) at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, 1992. It was further advanced by the Clinton Administration at a 1995 Washington, DC conference entitled “International Forum on Forecasting El Niño: Launching an International Research Institute.” It was agreed that the IRI would (a) embody an “end-to-end” capability for producing experimental climate forecasts based on predicting ENSO (the oscillation of El Niño and La Niña) phenomena, and (b) generate information that could be incorporated by decision-makers worldwide to mitigate climate-related impacts in sectors such as agriculture, water management, disaster relief, human health, and energy. The first real world test of this initiative occurred during the 1997-98 El Niño event, which cost an estimated 22,000 lives and \$34 billion in damages worldwide. Because of ongoing efforts, IRI and NOAA were well-positioned to rapidly organize climate research and application activities with international and regional partners in Latin America, the Caribbean, Southern Africa, Southeast Asia, South Asia, and the United States. *For more information, contact:* Jim Buizer, Assistant Director for Climate and Societal Interactions, Office of Global Programs (NOAA/OGP), 1100 Wayne Avenue, Suite 1225, Silver Spring, MD 20910; *Tel:* 301/427-2089-115; *Fax:* 301/427-2082; *Email:* buizer@ogp.noaa.gov; *Internet:* <http://www.ogp.noaa.gov>; *or contact* Kelly Sponberg, Manager, Climate Information Project; *Tel:* 301/427-2089-194; *Fax:* 301/427-2082; *Email:* sponberg@ogp.noaa.gov; *Internet:* <http://www.cip.ogp.noaa.gov/>; *IRI Web site:* <http://iri.ldeo.columbia.edu/>

U.S. Department of Defense/Environment

The Office of the Deputy Under Secretary of Defense for Installations and Environment (DUSD I&E) oversees Department of Defense environmental security initiatives. DUSD I&E environmental priorities include: installation cleanup and restoration; compliance with environmental laws; conservation; education and training for DoD personnel; environmental quality; international military-military cooperation that incorporates environmental compliance, awareness, and stewardship; pollution prevention; and pest management and disease-vector control activities. The Office of the Assistant Secretary of the Army for Installations and Environment oversees the Defense Environmental Network and Information Exchange (DENIX), which serves as a platform for the dissemination of environment, safety, and occupational health news, policy, and guidance for the DoD. *For more information, contact:* U.S. Department of Defense, 3400 Defense Pentagon (Room 3E792), Washington, DC, 20301-3400; *Internet:* <https://www.denix.osd.mil/>

U.S. Department of Energy (DoE)

Office of Defense Nuclear Nonproliferation

Located within DoE’s National Nuclear Security Administration, the Office of Defense Nuclear Nonproliferation (a) promotes nuclear nonproliferation, (b) attempts to reduce global dangers from weapons of mass destruction, (c) advances international nuclear safeguards, and (d) supports the elimination of inventories of surplus fissile materials that can be used in nuclear weapons. The Office directs development and coordination of DoE positions, policies, and procedures relating to international treaties and agreements. It also provides technical expertise and leadership to an international program for global nuclear safety and conducts research and development for treaty monitoring. *For more information, contact:* Sarah Lennon, Office of Defense Nuclear Nonproliferation; *Email:* Sarah.Lennon@hq.doe.gov; *Internet:* <http://www.dp.doe.gov/index.html>

Office of Policy and International Affairs (PI)

The Office of Policy and International Affairs (PI) advises the Secretary of Energy on domestic and international energy-related policy and represents the DoE at interagency discussions on energy. PI has primary responsibility for the DoE’s international energy activities, including international emergency management, national security, and international cooperation in science and technology. The Office also develops and leads DoE’s bilateral and multilateral science cooperation and investment and trade activities with other countries and international agencies. PI considers the global and local environmental impacts of energy production and use. *For more*

information, contact: <http://www.pi.energy.gov>

U.S. Director of Central Intelligence/DCI Environment and Societal Issues Center

The DCI Environmental and Societal Issues Center is the new name for the DCI Environment Center (DEC), which was established in 1997 as a focal point for all intelligence community activities on environmental matters. Housed in the Directorate of Intelligence, the Center produces, integrates, and coordinates assessments of the political, economic, and scientific aspects of environmental and societal issues as they pertain to U.S. interests. The Center also provides data to the environmental community. Specific Center programs include: assessing transboundary environmental crime; supporting environmental treaty negotiations and assessing foreign environmental policies; assessing the role played by the environment in country and regional instability and conflict; supporting the international environmental efforts of other U.S. government agencies; and providing environmental data to civil agencies. Check the ECSP Web site at <http://ecsp.si.edu> for updates on the expanded activities of the Center relating to societal issues.

U.S. Environmental Protection Agency (EPA): Office of International Affairs

Through its Office of International Affairs (OIA), the EPA works with other countries on the entire range of international environmental issues such as climate change, protection of marine environments, lead phase-out, and international transport of hazardous waste. Among other functions, OIA provides leadership, analysis, and coordination of Agency positions on major international issues such as marine pollution, the environment, and trade; it also coordinates with international policy bodies, including the North American Commission for Environmental Cooperation and the World Trade Organization. OIA also develops and implements international technical assistance and designs innovative programs on global environmental challenges such as transboundary pollution and marine pollution. The OIA consists of four offices, addressing: (1) international environmental policy, (2) technology cooperation and assistance, (3) Western hemisphere and bilateral affairs, and (4) management operations. *For more information, contact:* Environmental Protection Agency, Office of International Affairs, Mail Code 2610R, 1200 Pennsylvania Avenue NW, Washington, DC 20460; *Tel:* 202/564-6613; *Fax:* 202/565-2411 or 202/565-2408; *Email:* oiainternet-comment@epa.gov; *Internet:* <http://www.epa.gov/oia/>

U.S. Institute of Peace

The U.S. Institute of Peace is an independent, nonpartisan institution created and funded by Congress that provides grants and fellowships, conferences and workshops, intensive teaching seminars, research resources, and curriculum materials to educators, students, scholars, international affairs practitioners, and members of the public who want to understand the complexities of international conflicts and approaches to peace. The Institute also runs a training program to help government officials, military and police personnel, international organization representatives, and employees of nongovernmental organizations—both American and international—improve their conflict management skills. It also offers financial support for research, education, and training, and the dissemination of information on international peace and conflict resolution. *For more information, contact:* United States Institute of Peace, Grant Program, 1200 17th Street NW, Suite 200, Washington, DC 20036-3011; *Tel:* 202/429-3842; *Fax:* 202/429-6063; *Email:* grant_program@usip.org; *Internet:* <http://www.usip.org/>

White House Office of Science and Technology Policy (OSTP)/National Security and International Affairs

OSTP (a) advises the President on science and technology priorities that support national needs; (b) leads interagency coordination of the federal government's science and technology enterprise; and (c) fosters partnerships with state and local governments, industry, academe, nongovernmental organizations, and the governments of other nations. The National Security and International Affairs (NSIA) division of OTSP focuses on strengthening the contribution of science and technology to national security, global stability, and economic prosperity. OSTP's national security priorities include: nuclear materials security, nuclear arms reduction, nonproliferation of weapons of mass destruction, critical infrastructure protection, and counterterrorism. Commerce security priorities range from international technology transfer to information security. NSIA



Updates

supports U.S. goals through international engagement, and focuses on science capacity building, economic growth and competitiveness, and global threats. *For more information, contact:* Office of Science and Technology Policy, Executive Office of the President, Washington, DC 20502; *Tel:* 202/395-7347; *Email:* ostpinfo@ostp.eop.gov; *Internet:* <http://www.ostp.gov>

INTERGOVERNMENTAL ACTIVITIES

Food and Agriculture Organization of the United Nations (FAO)

Founded in 1945, FAO was set up with a mandate to: (a) raise levels of nutrition and standards of living, (b) improve agricultural productivity, and (c) better the condition of rural populations. The main goal of FAO is to alleviate poverty and hunger by promoting agricultural development, improved nutrition, and the pursuit of food security—defined as the access of all people at all times to the food they need for an active and healthy life. FAO provides independent advice on agricultural policy and planning as well as on the administrative and legal structures needed for development. The organization also advises developing countries on strategies for rural development, food security, and the alleviation of poverty. In addition, it gives practical help to developing countries through a wide range of technical assistance projects. FAO collects, analyzes, interprets, and disseminates information relating to nutrition, food, agriculture, forestry, and fisheries; it also provides a neutral forum where all nations can meet to discuss and formulate policy on major food and agriculture issues. *For more information, contact:* The Food and Agricultural Organization of the United Nations, Viale delle Terme di Caracalla, 00100 Rome, Italy; *Tel:* 39-06-5705-1; *Fax:* 39-06-5705-3152; *Email:* FAO-HQ@fao.org; *Internet:* <http://www.fao.org/>

Global Monitoring for Environment and Security (GMES)

GMES is part of the European Space Agency (ESA) and European Commission (EC) joint document on the European strategy for space. Launched in 1998 by the EC and a group of national space agencies, GMES links Europe's political needs related to environment and safety issues to the advanced technical capacities of observation satellites. Europe seeks global, independent, reliable, and ongoing access to information on environmental monitoring and management, risk monitoring, and civil safety (with regard to global change, environmental stress, and disasters); this access will allow European decision-makers to craft and implement informed and effective environmental management and security policies. GMES undertakes three main types of activities: (1) delivery of information and services to users; (2) ongoing assessment of needs and production processes and facilitation of dialogue between providers and users; and (3) infrastructure development and service improvement. GMES partners and stakeholders include: the EC, ESA, European Environment Agency, industry, national space agencies, Eumetsat, EU-wide and national research organizations, science, and civil society. Example products (which include survey maps, information systems, and risk assessments) address environmental stress, population pressure, humanitarian aid, risks and hazards, and the Kyoto Protocol. *For more information, contact:* <http://gmes.jrc.it>

Joint United Nations Programme on HIV/AIDS (UNAIDS)

UNAIDS is a leading advocate for worldwide action against HIV/AIDS. The global mission of UNAIDS is to lead, strengthen, and support an expanded response to the epidemic that will prevent the spread of HIV, provide care and support for those infected and affected by the disease, reduce the vulnerability of individuals and communities to HIV/AIDS, and alleviate the socioeconomic and human impact of the epidemic. With an annual budget of \$60 million and a staff of 129, the UNAIDS Secretariat (based in Geneva, Switzerland) operates as a catalyst and coordinator of action on AIDS rather than as a directly funding or implementing agency. UNAIDS is cosponsored by the UN Children's Fund (UNICEF); UN Development Program (UNDP); UN Population Fund (UNFPA); UN Educational, Scientific, and Cultural Organization (UNESCO); World Health Organization (WHO); World Bank; UN International Drug Control Programme (UNDCP); and International Labor Organization (ILO). UNAIDS coordinates its cosponsors expertise, resources, and networks

of influence in the fight against HIV/AIDS. The Secretariat's current priority areas are: young people, highly vulnerable populations, prevention of mother-child transmission, development and implementation of common standards of AIDS care, vaccine development, and special initiatives for hard-hit regions. *For more information, contact:* UNAIDS, 20 avenue Appia, CH-1211 Geneva 27, Switzerland; *Tel:* 4122 791 3666; *Fax:* 4122 791 4187; *Email:* unaids@unaids.org; *Internet:* <http://www.unaids.org/>

NATO Science Programme

The NATO Science Programme offers support for international collaboration between scientists from countries of the Euro-Atlantic Partnership Council (EAPC). The mission of the NATO Science Programme is dedicated to support collaboration between scientists in partner countries or Mediterranean Dialogue countries and scientists in NATO countries. The Science Programme is divided into four broad categories: (1) providing science fellowships for scientists from NATO countries to study in partner countries and vice versa; (2) establishing personal links between scientists of the NATO and partner or Mediterranean Dialogue countries; (3) supporting partner countries in structuring the organization of their research programs; and (4) researching applications for industrial purposes and addressing environmental concerns in partner countries. The Committee on the Challenges of Modern Society (CCMS), established in 1969, aims to attack practical problems already under study at the national level and, by combining the expertise and technology available in member countries, arrive fairly rapidly at valid conclusions and to make recommendations for action to benefit all. Areas covered by CCMS include environmental security, public health, quality of life, sustainable development, and defense-related aspects of environmental problems. The CCMS has established an electronic bulletin board—the Environmental Clearing House System—at <http://www.nato.int/ccms> to serve as a forum for environmental information. *For more information, contact:* NATO, Scientific and Environmental Affairs Division, Boulevard Leopold III, 1110 Brussels, Belgium; *Tel:* 32-0-2-707-41-11; *Fax:* 32-0-2-707-42-32; *Email:* science@hq.nato.int; *Internet:* <http://www.nato.int/science/index.html>

United Nations Development Programme (UNDP)

Through a unique network of 131 country offices, UNDP seeks to help 174 countries and territories meet the Millennium Development Goal of cutting poverty in half by 2015. UNDP's overarching mission is to help countries build national capacity to achieve sustainable human development by: (a) providing funds and knowledge-based consulting services; and (b) building national, regional, and global coalitions for change. UNDP focuses on democratic governance, poverty reduction, energy and environment, peace-building and disaster mitigation, HIV/AIDS, information and communications technology, South-South cooperation, and women's empowerment. Headquartered in New York, UNDP is governed by a thirty-six member Executive Board, representing both developing and developed countries. The 1999 UNDP Human Development Report outlined a detailed definition of human security and proposed measures to address insecurities. *For more information, contact:* UNDP, One United Nations Plaza, New York, NY, 10017; *Tel:* 212/906-5558; *Fax:* 212/906-5364; *Email:* hq@undp.org; *Internet:* <http://www.undp.org>

United Nations Educational, Scientific, and Cultural Organization (UNESCO)

Founded in 1945, the main objective of UNESCO is to contribute to peace and security in the world by promoting collaboration among nations through education, science, culture, and communication. In order to fulfill its mandate, UNESCO performs five principle functions: (1) conducting prospective studies; (2) promoting the advancement, transfer and sharing of knowledge; (3) assisting with the preparation and adoption of international instruments and statutory recommendations; (4) providing expertise to member states for their development policies and projects; and (5) exchanging specialized information. Under its Natural Sciences Program, UNESCO both (a) acts as a clearinghouse for information, scientific studies, and policy assistance on sustainable development, and (b) is involved in a variety of intergovernmental activities—including the World Water Assessment Programme (WWAP), the International Hydrological Programme (IHP), the Man and the Biosphere (MAB) Programme, Intergovernmental Oceanographic Commission (IOC), the Coasts and Small Island Programme (CSI), and its World Heritage List. *For more information, contact:* United Nations Educational,



Updates

Scientific, and Cultural Organization, 7 place de Fontenoy, 75352 Paris 07 SP, France; *Tel:* 33-1-45-68-10 00; *Fax:* 33-1-45-67-16-90; *Email:* environment@unesco.org; *Internet:* <http://www.unesco.org>

United Nations Environment Programme (UNEP)

The mission of UNEP is to provide leadership and encourage partnerships in caring for the environment by inspiring, informing, and enabling nations and people to improve their quality of life without compromising that of future generations. Established in 1972, UNEP encourages sustainable development through sound environmental practices everywhere. UNEP's current priorities include: environmental information, assessment, and research (including strengthening emergency response capacities and early warning and assessment functions); enhanced coordination of environmental conventions and the development of policy instruments; fresh water; technology transfer and industry; and support to Africa. UNEP houses ten multilateral environmental convention secretariats and coordinates the Global Environmental Facility (GEF). Its latest report is *Global Environment Outlook 2000*. Dr. Klaus Toepfer is the director of UNEP. *For more information, contact:* Mr. Tore J. Brevik, Chief, Information and Public Affairs, UNEP, United Nations Avenue, Gigiri, P.O. Box 30552, Nairobi, Kenya; *Tel:* 254-2-62-1234; *Fax:* 254-2-62-4489/90; *Email:* ipainfo@unep.org; *Internet:* <http://www.unep.org>

United Nations International Fund for Agricultural Development (IFAD)

IFAD, a specialized agency of the United Nations, was established as an international financial institution in 1977 as one of the major outcomes of the 1974 World Food Conference. The Conference was organized in response to the food crises of the early 1970s that primarily affected the Sahelian countries of Africa. IFAD was created to mobilize resources on concessional terms for programs that alleviate rural poverty and improve nutrition. Unlike other international financial institutions, which have a broad range of objectives, IFAD focuses on combating hunger and rural poverty in developing countries. Under its 2002-2006 Strategic Framework, the Fund will continue to work to enable the rural poor to overcome poverty by fostering social development, gender equity, income generation, improved nutritional status, environmental sustainability, and good governance. *For more information, contact:* The International Fund for Agricultural Development, Via del Serafico, 107-00142 Rome, Italy; *Tel:* 39-0654591; *Fax:* 39-065043463; *Email:* ifad@ifad.org; *Internet:* <http://www.ifad.org/>

United Nations Population Fund (UNFPA)

UNFPA is the lead UN body in the field of population. UNFPA extends assistance to developing countries, countries with economies in transition, and other countries at their request to help them address reproductive health and population issues. The organization also raises awareness of these issues in all countries, as it has since its inception. UNFPA's three main areas of work are (1) to help ensure universal access to reproductive health, including family planning and sexual health, to all couples and individuals on or before the year 2015; (2) to support population and development strategies that enable capacity building in population programming; and (3) to promote awareness of population and development issues and advocate for the mobilization of the resources and political will necessary to accomplish its areas of work. The Executive Director of UNFPA is Dr. Thoraya Ahmed Obaid. Ongoing projects of note include both a project to empower women and goodwill ambassadors for promoting women's reproductive health issues. *For more information, contact:* United Nations Population Fund, 220 East 42nd Street, New York, NY 10017; *Tel:* 212/297-5020; *Fax:* 212/557-6416; *Internet:* <http://www.unfpa.org>

World Food Programme (WFP)

WFP is the frontline United Nations organization whose mission is to fight world hunger. WFP has emergency and development projects in 83 countries worldwide and a staff of more than 8,000, over half of whom are employed on a temporary basis. WFP's budget is voluntary and based on performance, linked to the tonnage of food it moves. Contributions—either in cash, commodities, or services—to WFP come from donor nations, intergovernmental bodies such as the European Union, corporations, and individuals. WFP also buys more goods and services from developing countries (in an effort to spur their economies) than any other UN agency. WFP operates three types of food aid programs: (1) *food-for-life*, which provides fast relief to victims of



natural or man-made disasters; (2) *food-for-growth*, which targets needy people at critical stages in life, including babies, school children, pregnant and breast-feeding women, and the elderly; and (3) *food-for-work*, in which people in chronically hungry areas are paid to work on development projects. *For more information, contact:* World Food Programme, Via Cesare Giulio Viola, 68 Parco de' Medici, Rome 00148, Italy; *Tel:* 39-06-65131; *Fax:* 39-06-6513-2840; *Email:* wfpinfo@wfp.org; *Internet:* <http://www.wfp.org/>

World Health Organization (WHO)

WHO's mission is the attainment by all peoples of the highest possible level of health. Health, as defined in the WHO constitution, is a state of complete physical, mental, social well-being—not merely the absence of disease or infirmity. In support of its main objective, the organization has a wide range of functions, including: to act as the directing and coordinating authority for international health; to promote technical cooperation; to assist governments, upon request, in strengthening health services; and to promote and coordinate biomedical and health services research. Dr. Gro Harlem Brundtland, WHO Director-General, has been a key figure in the integration of environment, population, health, and security issues. *For more information, contact:* WHO, Avenue Appia 20, 1211 Geneva 27, Switzerland; *Tel:* 41-22-791-2111; *Fax:* 41-22-791-3111; *Email:* info@who.int; *Internet:* <http://www.who.int>

REPORT ON THE FUTURE OF THE U.S.-MEXICO BORDER: POPULATION, DEVELOPMENT, AND WATER

The current situation along the U.S.-Mexico border illustrates the effect that rapid population growth can have on efforts to achieve sustainable development. Current migration trends in this region coupled with the natural rate of population increase as well as intensified trade are putting intense pressures on the border's environment, water supply, and health and sanitation infrastructure. Policymakers and practitioners must consider the relationship between population and environmental dynamics in order to develop appropriate interventions.

In May 2001, ECSP and the University of Michigan Population Fellows Program hosted a workshop in Tijuana, Mexico entitled "The Future of the U.S.-Mexico Border: Population, Development, and Water." The workshop provided a valuable forum for interdisciplinary and binational communication—a necessary prerequisite for progress toward a sustainable future for this important international setting. Participants discussed the opportunities and constraints facing border citizens and decision-makers over the next 25 years with regard to transboundary water, health, and demographic issues.

Visit <http://ecsp.si.edu/tijuana.htm> for a summary of the workshop's proceedings, conclusions, and recommendations as well as for two papers presented during the workshop.



BIBLIOGRAPHIC GUIDE TO LITERATURE

This guide lists literature that has come to the attention of ECSP in the past year on population, environmental change, and security issues. A comprehensive environment and security bibliography is now available on the ECSP Web site at <http://ecsp.si.edu>. To suggest recently articles or books not listed below, please contact us at 202/691-4182 or at ecspwwic@wwic.si.edu.

Categories:

A. Environment and Security	p.309
B. Environment and Well-being	p.311
C. Environment, Conflict, and Cooperation	p.312
D. Security Institutions and the Environment	p.315
E. Population Dynamics, Environment, and Security	p.318

A. ENVIRONMENT AND SECURITY

- Barnett, Jon. (1997). "Reclaiming security." *Peace Review* 9(3), 405-410.
- Barnett, Jon. (1998). "In defense of the nation-state: Securing the environment." *Sustainable Development* 6(1), 8-17.
- Barnett, Jon. (2001). "Climate change and nuclear power." *New Zealand International Review* 26(3), 17-18.
- Barnett, Jon. (2001). "Environmental security and climate change in Pacific island countries." In Ecologic (Ed.), *Environmental security: Crisis prevention through cooperation* (pages 82-85). Berlin: German Foreign Office.
- Barnett, Jon. (2001). "Global warming and the security of atoll-countries." *La Revue Juridique Polynesienne* (special edition on "Contemporary challenges in the Pacific") (pages 191-216).
- Barnett, Jon. (2001). *Security and climate change* (Working paper No. 7). Tyndall Centre for Climate Change Research. [On-line]. Available: <http://www.tyndall.ac.uk/>
- Barnett, Jon. (Forthcoming). "Environmental change and human security in the Pacific Islands." *Development Bulletin*.
- Barnett, Jon & Adger, N. (2001). *Climate dangers and atoll countries* (Working paper No. 9). Tyndall Centre for Climate Change Research. [On-line]. Available: <http://www.tyndall.ac.uk/>
- Bowes, Richard L. (2001). "Sacrifice and the categorical imperative of human security." *International Journal* 56(4), 649-664.
- Busumtwi-Sam, James. (2002). "Development and human security: Whose security, and from what?" *International Journal* 57(2), 253-272.
- Carius, Alexander & Lietzmann, Kurt M. (with support by Eileen Petzold-Bradley and Kerstin Imbusch) (Eds.). (1999). *Environmental change and security: A European perspective*. Heidelberg: Springer.

Bibliography

- Carius, Alexander; Bähler, Güther; Pfahl, Stefanie; & March, Andreas. (1999, March). *Umwelt und sicherheit: Forschungserfordernisse und forschungsprioritäten* ("Environment and security: Research needs and research priorities.") Berlin: German Federal Ministry for Education and Science.
- Dalby, Simon. (2000, April). "Geopolitical change and contemporary security studies: Contextualizing the human security agenda" (Working Paper No. 30). British Columbia: Institute of International Relations, University of British Columbia.
- Dalby, Simon. (2002). *Environmental security*. Minneapolis: University of Minnesota Press.
- German Federal Foreign Office. (Ed.). (2000). *Environment and security: Crisis prevention through co-operation*. International workshop within the framework of the "Forum Globale Fragen," Berlin, 15-16 June 2000. Berlin: German Federal Foreign Office.
- Harris, Paul G. (Ed.). (2000). *Climate change and American foreign policy*. New York: St. Martin's Press.
- Harris, Paul G. (Ed.). (2001). *The environment, international relations, and U.S. foreign policy*. Washington, DC: Georgetown University Press.
- Joffe, Alex. (2001). "Beyond sand and water: Middle Eastern environmental security in the 21st century." *Journal of International Security Affairs* 1, 87-96.
- Joffe, Alex. (2001). "Environmental security and the consequences of WMD production: An emerging international issue." *Disarmament Diplomacy* 54, 16-19.
- Joffe, Alex. (2001) "Want not, waste not: The environmental impact of two generations of WMD proliferation and the implications for Asia." *Crime, Law and Social Change* 35(4), 333-356.
- Litfin, Karen T. (Ed.). (1998). *The greening of sovereignty in world politics*. Cambridge, MA: MIT Press.
- Luterbacher, Urs & Sprinz, Detlef F. (Eds.). (2001). *International relations and global climate change*. Cambridge, MA: MIT Press.
- Mabogunje, Akin L. (2002). "Poverty and environmental degradation: Challenges within the global economy." *Environment* 44(1), 8-18.
- Makim, Abigail. (2002). "Resources for security and stability? The politics of regional cooperation on the Mekong, 1957-2001." *The Journal of Environment and Development* 11(1), 5-52.
- Newman, Edward. (2001). "Human security and constructivism." *International Studies Perspectives* 2(3), 239-251.
- Petzold-Bradley, Eileen; Carius, Alexander; March, Andreas; & Wilkens, Cornelia. (2001). *Environment and security: Crisis prevention through co-operation*. International Workshop within the framework of the "Forum Globale Fragen." Berlin, June 15-16, 2000. Berlin: German Federal Foreign Office.
- Pfahl, Stefanie; Carius, Alexander et al. (2000). *The use of global monitoring in support of environment and security*. Study report for the Joint Research Centre, European Commission. Berlin: Authors.
- Price-Smith, Andrew. (2002). *The health of nations: Infectious disease, environmental change, and their effects on national security and development*. Cambridge, MA: MIT Press.



- Sills, Joe B; Glenn, Jerome C.; Gordon, Theodore J.; & Perelet, Renat. (2000). *Environmental security: United Nations doctrine for managing environmental issues in military actions*, (Volume 1). Atlanta, GA: Army Environmental Policy Institute.
- Sills, Joe B; Glenn, Jerome C.; Gordon, Theodore J.; & Perelet, Renat. (2000). *Environmental security: United Nations doctrine for managing environmental issues in military actions* (Volume II: Selected international treaties, conventions and protocols that address environment-related issues; selected international organizations relevant to environmental security). Atlanta, GA: Army Environmental Policy Institute.
- Smith, Heather S. (2000). "Human (in)security and Canadian climate change." *Environment & Security* (4), 89-100.
- Steinbruner, John D. (2000). *Principles of global security*. Washington, DC: Brookings Institution Press.
- Stoett, Peter. (2000). "Canadian foreign policy and environmental security: An introduction." *Environment & Security* (4), 31-40.
- Strong, Maurice. (2001). "Where on earth are we going?" *International Review for Environmental Strategies* 2(1), 239-247.
- Thomas, Caroline. (2000). *Global governance, development and human security: The challenge of poverty and inequality*. London: Pluto Press.
- Turton, Anthony R. (2002). "Water and state sovereignty: The hydropolitical challenge for states in arid regions." In Aaron T. Wolf (Ed.), *Conflict prevention and resolution in water systems* (pp. 516-533). Northampton, Massachusetts: Edward Elgar Publishing, Inc.
- Wapner, Paul. "The sovereignty of nature? Environmental protection in a postmodern age." *International Studies Quarterly* 46(2), 167-188.

B. ENVIRONMENT AND WELL-BEING

- "Food security and sustainable livelihoods: the policy challenge." (2001). *Development* 44(4), 24-28.
- Chandler, William. (2000). *Energy and environment in the transition economies: Between cold war and global warming*. Boulder, CO: Westview Press.
- Cosgrove, William J. & Rijsberman, Frank R. (for the World Water Council). (2000). *World water vision: Making water everybody's vision*. London: Earthscan Publications Ltd.
- Krist, William K. (2001). "The WTO and MEAs: Time for a good neighbor policy." A policy brief from the Woodrow Wilson Center's Trade and Environment Forum. Washington, DC: Environmental Change and Security Project/Woodrow Wilson International Center for Scholars.
- Last, Ohn M. & Chiotti, Quentin P. (2001). "Climate change and health." *ISUMA: Canadian Journal of Policy Research* 2(4), 62-69.
- Lofdahl, Corey L. (2002). *Environmental impacts of globalization and trade: A systems study*. Cambridge, MA: MIT Press.

Bibliography

- McMurray, Christine & Smith, Roy. (2001). *Diseases of globalization: Socioeconomic transitions and health*. London: Earthscan Publications.
- Natsios, Andrew. (2002). *The great North Korean famine: Famine, politics, and foreign policy*. Washington, DC: United States Institute of Peace Press.
- Panisset, Ulysses B. (2000). *International health statecraft: Foreign policy and public health in Peru's cholera epidemic*. Lanham, MD: University Press of America.
- Prescott-Allen, Robert. (2001). *The wellbeing of nations: A country-by-country index of quality of life and the environment*. Washington, DC: Island Press.
- Simmons, P.J & de Jonge Oudraat, Chantal. (2001). *Managing global issues: Lessons learned*. Washington, DC: Carnegie Endowment for International Peace.
- Social Learning Group. (2001). *Learning to manage global environmental risks*. (Volume 1: A comparative history of social responses to climate change, ozone depletion, and acid rain). Cambridge, MA: MIT Press.
- Social Learning Group. (2001). *Learning to manage global environmental risks*. (Volume 2: A functional analysis of social responses to climate change, ozone depletion, and acid rain). Cambridge, MA: MIT Press.
- Thomas, Caroline. (2001). "Environmental and health research: Overlapping agendas." *Global Environmental Politics* 1(4), 10-17.
- Twigg, John & Bhatt, Mihir. (Eds.). (1998). *Understanding vulnerability: South Asian perspectives*. London: Intermediate Technology Publications.
- Weiss, Edith Brown & Jackson, John H. (Eds.). (2001). *Reconciling environment and trade*. New York: Transnational Publishers.

C. ENVIRONMENT, CONFLICT, AND COOPERATION

- Barnett, Jon. (2000). "Destabilising the environment-conflict thesis." *Review of International Studies* 26(2), 271-288.
- Beach, Health L; Hamner, Jesse; Hewitt, J. Joseph; Kaufman, Edy; Kurki, Anja; Oppenheimer, Joe A.; & Wolf, Aaron T. (2000). *Transboundary freshwater dispute resolution: Theory, practice, and annotated references*. Tokyo: United Nations University Press.
- Blom, Esther (Ed.) (2000). *Biodiversity during conflict*. Cambridge, UK: IUCN-The World Conservation Union.
- Boelaert-Suominen, Sonja Ann Jozef. (2000). *International environmental law and naval war: The effect of marine safety and pollution conventions during international armed conflict*. Newport, RI: Naval War College.
- Bruns, Bryan Randolph & Meinzen-Dick, Ruth S. (Eds.). (2000). *Negotiating water rights*. London: ITDG Publishing.
- Cahill, Kevin M. (Ed.). (2000). *Preventive diplomacy: Stopping wars before they start*. London: Routledge.



- Carius, Alexander; Petzold-Bradley, Eileen; & Pfahl, Stefanie. (2001). "Umweltpolitik und nachhaltige friedenspolitik" ("Environmental policy and sustainable peace"). *Aus Politik und Zeitgeschichte. Beilage zur Wöchenzeitung Das Parlament*, B12/2001, 6-13.
- Chalecki, Elizabeth L. (2002). "A new vigilance: Identifying and reducing the risks of environmental terrorism." *Global Environmental Politics* 2(1), 46-64.
- Chasek, Pamela S. (Ed.). (2000). *The global environment in the twenty-first century: Prospects for international cooperation*. Tokyo: United Nations University Press.
- Chasek, Pamela S. (2001) *Earth negotiations: Analyzing thirty years of environmental diplomacy*. Tokyo, New York, Paris: United Nations University Press.
- Cillufo, Frank J.; Cardash, Sharon L. & Lederman, Gordon N. (2001). *Combating chemical, biological, radiological, and nuclear terrorism: A comprehensive strategy* (A report of the CSIS Homeland Defense Project). Washington, DC: CSIS.
- Clark, Edwin H. II; Bingham, Gail; & Orenstein, Suzanne Goulet. (2002). "Resolving water disputes: Obstacles and opportunities." In Aaron T. Wolf (Ed.), *Conflict prevention and resolution in water systems* (pages 231-236). Northhampton, Massachusetts: Edward Elgar Publishing, Inc.
- Conca, Ken & Dabelko, Geoffrey D. (Eds.) (2002). *Environmental peacemaking*. Baltimore and Washington, DC: Johns Hopkins University Press and The Woodrow Wilson Center Press.
- Crocker, Chester A.; Hampson, Fen Osler; & Aall, Pamela. (Eds.). (2001). *Turbulent peace: The challenges of managing international conflict*. Washington, DC: U.S. Institute of Peace.
- Darst, Robert G. (2001). *Smokestack diplomacy: Cooperation and conflict in East-West environmental politics*. Cambridge, MA: MIT Press.
- Dobkowski, Michael N.; Wallimann, Isidor; & Roth, John K. (Eds.) (2002) *On the edge of scarcity: Environment, resources, population, sustainability, and conflict*. Syracuse: Syracuse University Press.
- Ebel, Robert & Menon, Rajan. (Eds.). (2000). *Energy and conflict in Central Asia and the Caucasus*. Lanham, MD: Rowman & Littlefield Publishers.
- Environmental Change and Security Project, (2002). "Contagion and stability: Implications for U.S. foreign policy: A special report" [On-line]. Available: <http://ecsp.si.edu/simulation.htm>
- Gore, Christopher. (2000). "Resource security and the Canadian-US pacific salmon dispute." *Environment & Security* (4), 57-72.
- Haas, Peter M. (2002). "Constructing environmental conflicts from resource scarcity." *Global Environmental Politics* 2(1), 1-11.
- Haddadin, Munther J. (2002). *Diplomacy on the Jordan: International conflict and negotiated resolution*. Dordrecht: Kluwer Academic Publishers.
- Klare, Michael T. (2001). *Resource wars: The new landscape of global conflict*. New York: Henry Holt and Company.

Bibliography

- Lancaster, Charles L. (2002). "Dispute resolution experiences: The engineer's role." In Aaron T. Wolf (Ed.), *Conflict prevention and resolution in water systems* (pages 625-638). Northhampton, Massachusetts: Edward Elgar Publishing, Inc.
- López, Alexander. (2001). *Environmental change, social conflicts and security in the Brazilian Amazon: Exploring the links*. Oslo: Department of Political Science, University of Oslo.
- Meinzen-Dick, Ruth & Appasamy, Paul. (2002). "Urbanization and intersectoral competition for water." In Geoffrey D. Dabelko (Ed.), *Finding the source: The linkages between population and water* (pages 27-51). Washington, DC: Environmental Change and Security Project/Woodrow Wilson International Center for Scholars.
- Mustafa, I. (2002). "The Arab-Israeli conflict over water resources." In Aaron T. Wolf (Ed.), *Conflict prevention and resolution in water systems* (pages 320-330). Northhampton, Massachusetts: Edward Elgar Publishing, Inc.
- Oberthür Sebastian. (1999). "Preventing environmentally-induced conflicts through development policy and international environmental policy." In Alexander Carius & Kurt M. Lietzmann (Eds.), *Environmental change and security: A European perspective* (pages 249-268). Heidelberg: Springer.
- O'Brien, Karen L. (1998). *Sacrificing the forest: Environmental and social struggles in Chiapas*. Boulder, CO: Westview Press.
- Painter, An. (2002). "Resolving environmental conflicts through mediation." In Aaron T. Wolf (Ed.), *Conflict prevention and resolution in water systems* (pages 222-230). Northhampton, Massachusetts: Edward Elgar Publishing, Inc.
- Peluso, Nancy Lee & Watts, Michael. (Eds.). (2001). *Violent environments*. Ithaca, NY: Cornell University Press.
- Petzold-Bradley, Eileen; Carius, Alexander; & Vincze, Arpad (Eds.). (2001). *Responding to environmental conflicts: Implications for theory and practice*. Dordrecht: Kluwer Academic Publishers.
- Postel, Sandra. (2002). "Water wars I: Farms versus cities and nature." In Aaron T. Wolf (Ed.), *Conflict prevention and resolution in water systems* (pages 87-113). Northhampton, Massachusetts: Edward Elgar Publishing, Inc.
- Reuveny, Rafael. (2002). "Economic growth, environmental scarcity, and conflict." *Global Environmental Politics* 2(1), 83-110.
- Ricketts, Peter J. (2000). "The Canada-Spain fishing dispute: Lessons for cooperation in marine management between NAFTA and the European Union." *Environment & Security* (4), 73-88.
- Rothfeder, Jeffrey. (2001). *Every drop for sale: Our desperate battle over water in a world about to run out*. New York: Tarcher/Putnam.
- Siddiqi, Toufiq A. (2000). "India-Pakistan cooperation in energy and environment: Confidence-building measures for the 21st century." In Dpankar Banerjee (Ed.), *CBMs in South Asia: Potential and possibilities*. Colombo: Regional Centre for Strategic studies.



- Skjelsbaek, Inger & Smith, Dan. (Eds.). (2001). *Gender, peace and conflict*. London: Sage.
- Spector, Bertram. (2002). "Transboundary disputes: Keeping backyards clean." In Aaron T. Wolf (Ed.), *Conflict prevention and resolution in water systems* (pages 200-221). Northhampton, Massachusetts: Edward Elgar Publishing, Inc.
- Trolldalen, Jon Martin. (2002). "International river systems." In Aaron T. Wolf (Ed.), *Conflict prevention and resolution in water systems* (pages 114-147). Northhampton, Massachusetts: Edward Elgar Publishing, Inc.
- Turner, Jennifer L. & Wu, Fengshi. (2001). "Green NGO and environmental journalist forum: A meeting of environmental from mainland China, Taiwan, and Hong Kong." Washington, DC: ECSP China Environment Forum/Woodrow Wilson International Center for Scholars.
- Turton, Anthony R. & Warner, Jeroen F. (2002). "Exploring the population/water resources nexus in the developing world." In Geoffrey D. Dabelko (Ed.), *Finding the source: The linkages between population and water* (pages 52-81). Washington, DC: Environmental Change and Security Project/Woodrow Wilson International Center for Scholars.
- Uvin, Peter. (1998). *Aiding violence: The development enterprise in Rwanda*. West Hartford, CT: Kumarian Press.
- White, Gilbert F. (2002). "The role of scientific information in anticipation and prevention of environmental disputes." In Aaron T. Wolf (Ed.), *Conflict prevention and resolution in water systems* (pages 679-694). Northhampton, Massachusetts: Edward Elgar Publishing, Inc.
- Wolf, Aaron T. (Ed.). *Conflict prevention and resolution in water systems*. Northhampton, Massachusetts: Edward Elgar Publishing, Inc.
- Wolf, Aaron T. (2002). "Conflict and cooperation along international waterways." In Aaron T. Wolf (Ed.), *Conflict prevention and resolution in water systems* (pages 185-199). Northhampton, Massachusetts: Edward Elgar Publishing, Inc.

D. SECURITY INSTITUTIONS AND THE ENVIRONMENT

- Austin, Jay E. & Bruch, Carl E. (Eds.) (2000) *The environmental consequences of war: Legal, economic, and scientific perspectives*. New York: Cambridge University Press.
- Barnett, Jon. (1996, May/June). "Defense and environment: Converging paths?" *Australian Defense Force Journal* (188), 25-31.
- Biswas, Asit K. (2000). "Assessing long-term environmental consequences of war." In Jay Austin & Carl Bruch (Eds.), *The environmental consequences of war: Legal, economic and scientific perspectives* (Chapter 15). Cambridge, UK: Cambridge University Press.
- Blom, Esther (Ed.) (2000). *Biodiversity during conflict*. Cambridge, UK: IUCN-The World Conservation Union.
- Boelaert-Suominen, Sonja Ann Jozef. (2000). *International environmental law and naval war: The effect of marine safety and pollution conventions during international armed conflict*. Newport, RI: Naval War College.

Bibliography

- Choffnes, Eileen H. (2001). "The environmental legacy of biological weapons testing." In Lakshman D. Guruswamy & Suzette R. Grillot (Eds.), *Arms and the environment: Addressing the perils of arms control*. Ardsley, NY: Transnational Publishers.
- Craft, Cassady B. & Grillot, Suzette R. (2001). "The fourth rationale: Conventional arms control and the reclamation of the environment." In Lakshman D. Guruswamy & Suzette R. Grillot (Eds.), *Arms and the environment: Addressing the perils of arms control*. Ardsley, NY: Transnational Publishers.
- Dhanapala, Jayantha. (2001). "Arms & the environment: The road to sustainable development." In Lakshman D. Guruswamy & Suzette R. Grillot (Eds.), *Arms and the environment: Addressing the perils of arms control*. Ardsley, NY: Transnational Publishers.
- Falk, Richard. (2000). "The inadequacy of the existing legal approach to environmental protection in wartime." In Jay Austin & Carl Bruch (Eds.), *The environmental consequences of war: Legal, economic and scientific perspectives* (Chapter 6). Cambridge, UK: Cambridge University Press.
- Guruswamy, Lakshman D. (2001). "Conclusion: Strategies for controlling arms & protecting the environment." In Lakshman D. Guruswamy & Suzette R. Grillot (Eds.), *Arms and the environment: Addressing the perils of arms control*. Ardsley, NY: Transnational Publishers.
- Guruswamy, Lakshman D. & Aamodt, Jason H. (2001). "Nuclear arms control: The environmental dimension." In Lakshman D. Guruswamy & Suzette R. Grillot (Eds.), *Arms and the environment: Addressing the perils of arms control*. Ardsley, NY: Transnational Publishers.
- Guruswamy, Lakshman D. & Grillot, Suzette R. (Eds.). (2001). *Arms and the environment: Addressing the perils of arms control*. Ardsley, NY: Transnational Publishers.
- Guruswamy, Lakshman D. & Grillot, Suzette R. (2001). "Introduction." In Lakshman D. Guruswamy & Suzette R. Grillot (Eds.), *Arms and the environment: Addressing the perils of arms control*. Ardsley, NY: Transnational Publishers.
- Guruswamy, Lakshman & Grillot, Suzette R. (Eds.). (2002). *Arms control and the environment*. Ardsley, NY: Transnational Publishers.
- Johnson, Loch K. (2000). "The greening of intelligence." In *Bombs, bugs, drugs, and thugs* (pages 50-71). New York: New York University Press.
- Johnson, Loch K. (2000). "Spies versus germs: A worldwide resurgence of bugs." In *Bombs, bugs, drugs, and thugs* (pages 72-91). New York: New York University Press.
- Koplow, David A. (2001). "Green chemistry: Dismantling chemical weapons while protecting the environment." In Lakshman D. Guruswamy & Suzette R. Grillot (Eds.), *Arms and the environment: Addressing the perils of arms control*. Ardsley, NY: Transnational Publishers.
- Kirk, Elizabeth J. (2001). "The environmental implications of arms control agreements." In Lakshman D. Guruswamy & Suzette R. Grillot (Eds.), *Arms and the environment: Addressing the perils of arms control*. Ardsley, NY: Transnational Publishers.
- Leaning, Jennifer. (2000). "Tracking the four horsemen: The public health approach to the impact of war and war-induced environmental destruction in the twentieth century." In Jay Austin & Carl Bruch



(Eds.), *The environmental consequences of war: Legal, economic and scientific perspectives* (Chapter 20). Cambridge, UK: Cambridge University Press.

McNeely, Jeffrey A. (2000). "War and biodiversity: An assessment of impacts." In Jay Austin & Carl Bruch (Eds.), *The environmental consequences of war: Legal, economic and scientific perspectives* (Chapter 18). Cambridge, UK: Cambridge University Press.

McNeely, Jeffrey A. (2001). "Environmental impacts of arms & war." In Lakshman D. Guruswamy & Suzette R. Grillot (Eds.), *Arms and the environment: Addressing the perils of arms control*. Ardsley, NY: Transnational Publishers.

Miller, Judith; Engelberg, Stephen; & Broad, William. (2001). *Germs: Biological weapons and America's secret war*. New York: Simon & Schuster.

Organization for Economic Co-operation and Development (OECD). (2002). *The DAC guidelines: Helping prevent violent conflict*. Paris: OECD.

Pugh, Michael. (2001). "The challenge of civil-military relations in international peace operations." *Disasters* 25(4), 345-357.

Quinn, John P.; Evans, Richard T.; & Boock, Michael J. (2000). "United States Navy development of operational-environmental doctrine." In Jay Austin & Carl Bruch (Eds.), *The environmental consequences of war: Legal, economic and scientific perspectives* (Chapter 7). Cambridge, UK: Cambridge University Press.

Roberts, Adam. (2000). "The laws of war and environmental damage." In Jay Austin & Carl Bruch (Eds.), *The environmental consequences of war: Legal, economic and scientific perspectives* (Chapter 4). Cambridge, UK: Cambridge University Press.

Rostow, Nicholas. (2001). "Environmental impact assessment in manufacture and procurement, employment and control of arms." In Lakshman D. Guruswamy & Suzette R. Grillot (Eds.), *Arms and the environment: Addressing the perils of arms control*. Ardsley, NY: Transnational Publishers.

Schmitt, Michael N. (2000). "War and the environment: Fault lines in the prescriptive landscape." In Jay Austin & Carl Bruch (Eds.), *The environmental consequences of war: Legal, economic and scientific perspectives* (Chapter 5). Cambridge, UK: Cambridge University Press.

Sidel, Victor W. (2000). "The impact of military preparedness and militarism on health and the environment." In Jay Austin & Carl Bruch (Eds.), *The environmental consequences of war: Legal, economic and scientific perspectives* (Chapter 22). Cambridge, UK: Cambridge University Press.

Stone, Christopher. (2000). "The environment in wartime: An overview." In Jay Austin & Carl Bruch (Eds.), *The environmental consequences of war: Legal, economic and scientific perspectives* (Chapter 2). Cambridge, UK: Cambridge University Press.

Tarasofsky, Richard. (2000). "Protecting specially important areas during international armed conflict: A critique of the IUCN draft convention on the prohibition of hostile military activities in protected areas." In Jay Austin & Carl Bruch (Eds.), *The environmental consequences of war: Legal, economic and scientific perspectives* (Chapter 29). Cambridge, UK: Cambridge University Press.

Bibliography

- Vest, Gary. (2001). "Arms, the environment and the United States military." In Lakshman D. Guruswamy & Suzette R. Grillot (Eds.), *Arms and the environment: Addressing the perils of arms control*. Ardsley, NY: Transnational Publishers.
- Waller, David B. (2001). "Nuclear disarmament & the environment: The IAEA perspective." In Lakshman D. Guruswamy & Suzette R. Grillot (Eds.), *Arms and the environment: Addressing the perils of arms control*. Ardsley, NY: Transnational Publishers.
- Westing, Arthur H. (2000). "In furtherance of environmental guidelines for armed forces during peace and war." In Jay Austin & Carl Bruch (Eds.), *The environmental consequences of war: Legal, economic and scientific perspectives* (Chapter 8). Cambridge, UK: Cambridge University Press.

E. POPULATION DYNAMICS, ENVIRONMENT, AND SECURITY

- "The Future of the U.S.-Mexico border: Population, development, and water." (2001). Report from a workshop held May 7-9, 2001, co-sponsored by El Colegio de la Frontera Norte; The Woodrow Wilson International Center for Scholars; The University of Michigan Population Fellows Programs; The Center for Latin American and Caribbean Studies at Michigan State University; and the Southwestern Center for Environmental Research and Policy (SCERP). [On-line]. Available: <http://ecsp.si.edu/tijuana.htm>
- Bilsborrow, Richard E. (2002). *Migration, population change, and the rural environment* (Working Paper No. 2). Ann Arbor: Population, Environmental Change, and Security Working Paper Series; Washington, DC: Woodrow Wilson International Center for Scholars. [On-line]. Available: <http://www.sph.umich.edu/pfps/pepapers.html>
- Birdsall, Nancy; Kelley, Allen C.; & Sinding, Steven W. (Eds.). (2001). *Population matters: Demographic change, economic growth, and poverty in the developing world*. Oxford: Oxford University Press.
- Clark, Robert P. (2000). *Global life systems: Population, food, and disease in the process of globalization*. Lanham, MD: Rowman & Littlefield Publishers.
- Cohen, Desmond. (2001). "Joint epidemics: Poverty and AIDS in sub-Saharan Africa." *Harvard International Review* 23(3), 54-58.
- Connelly, Matthew. (2002). *A power beyond measure: How fear of population growth has changed the way people think about the world* (Working Paper No. 1). Ann Arbor: Population, Environmental Change, and Security Initiative Working Paper Series; Washington, DC: Woodrow Wilson International Center for Scholars. [On-line]. Available: <http://www.sph.umich.edu/pfps/pepapers.html>
- Dabelko, Geoffrey D. (Ed.). *Finding the source: The linkages between population and water*. (2002). Washington, DC: Environmental Change and Security Project/Woodrow Wilson International Center for Scholars.
- Graham, David T. & Poku, Nana K. (Eds.). (2000). *Migration, globalisation and human security*. London: Routledge.
- Harrison, Paul; Pearce, Fred; & American Association for the Advancement of Science. (2000). *AAAS atlas of population and environment*. Berkeley, CA: University of California Press, 2000.



- Hinrichsen, Don & Tacio, Henrylito. (2002). "The coming freshwater crisis is already here." In Geoffrey D. Dabelko (Ed.), *Finding the source: The linkages between population and water* (pages 1-26). Washington, DC: Environmental Change and Security Project/Woodrow Wilson International Center for Scholars.
- Hirichsen, Don; Krchnak, Karin; & Mogelgaard, Katie. (2002) *Population, water, and wildlife: Finding a balance*. Washington, DC: National Wildlife Federation.
- Hunter, Lori M. (2000). *The environmental implications of population dynamics*. Santa Monica, CA: RAND.
- Jones, R. & Barnett, Jon. (2002). "Forced migration: The influences of environmental security." *Global Change* 7(4), 3.
- McCarthy, Kevin F. (2001). *World population shifts: Boom or doom* (Documented Briefing). Santa Monica, CA: RAND.
- Rischar, Jean-François. (2002). *High noon: 20 global problems, 20 years to solve them*. New York: Perseus Books.
- Sastry, Narayan. (2001). *The importance of international demographic research for the United States*. Santa Monica, CA: RAND.
- Schettler, Ted, M.D.; Solomon, Gina, M.D.; Valenti, Maria; and Huddle, Annette. (2000). *Generations at risk: Reproductive health and the environment*. Cambridge, MA: MIT Press.
- Spiedel, Joseph. (2001). "Environment and health: Population, consumption, and human health." *Canadian Medical Association Journal* 163(5), 551-6.
- UNFPA. (2001). *Footprints and milestones: Population and environmental change—The state of world population 2001*. New York: UNFPA.
- U.S. National Intelligence Council. (2001). *Growing global migration and its implications for the United States*. Washington, DC: National Intelligence Council.



NEW INITIATIVE FROM ECSP

Navigating Peace: Forging New Water Partnerships

The Problems

Water has an intimate relationship with global human insecurity. More than one billion people lack access to safe water supplies, and 2.4 billion do not have access to adequate sanitation. Over three million people—mostly children—die each year from water-related diseases. About forty percent of the world’s population depends on river basins that are shared among two or more countries, raising the possibility of conflict over water access and quality. And by 2050, between four and seven billion people will likely live under conditions of water scarcity or stress.

Needed: New Synergies

Twentieth-century policies designed to provide universal water equity, access, and quality have clearly failed. Policymakers, practitioners, and researchers now have a critical window of opportunity to advance a global agenda on water issues. For that effort to be effective, however, it needs new tools and new paradigms. Widening the water community and facilitating dialogue among its disparate parts is necessary to infuse fresh and synergistic thinking into the drive for sustainable water practices.

Navigating Peace

Funded by the Carnegie Corporation of New York, “Navigating Peace: Forging New Water Partnerships” will facilitate over the next two years a sustained dialogue on critical water issues among a diverse set of individuals and organizations.

Three working groups—on balancing the social and economic values of water; on water’s potential to spur both conflict and cooperation; and on lessons learned from dialogue on water conflict resolution between the United States and China—will generate policy alternatives on their issue areas. The initiative aims to create networks that reframe stale debates about water and contribute new thinking to the critical human security questions of the new century.

*For more information and to view products of the Navigating Peace Initiative,
visit our Web site at <http://ecsp.si.edu>*



EXPLORING LINKAGES BETWEEN ENVIRONMENT, DEVELOPMENT AND SUSTAINABLE PEACE

By Ariel Méndez

In December 2001, ECSP joined the Costa Rican NGO FUNPADEM (The Foreign Service Foundation for Peace and Democracy) and Adelphi Research of Berlin to form the Environment, Development and Sustainable Peace (EDSP) Initiative. The EDSP Initiative is a new effort towards overcoming the divide that splits Northern and Southern intellectuals and policymakers on environmental security issues. The partnership is designed to help develop a global agenda—formulated by and acceptable to both North and the South—that is truly capable of addressing current environmental conflicts.

The Need for Southern Input

According to both FUNPADEM Director Alexander Lopez and Alexander Carius, director of Adelphi Research, scholars in the North have dominated the environmental security thinking that links environmental and resource issues to violent conflict. But Carius and Lopez, EDSP co-directors, say that these scholars developed such conceptual linkages without sufficient foundation in Southern realities.

As a consequence, they argue, environmental security researchers have not been able to provide more than limited policy recommendations that do not encompass the full scope of the problem. Furthermore, because these researchers have not sufficiently consulted and integrated developing-country perspectives, many government officials and NGOs in developing countries have rejected environmental security initiatives altogether. Developing countries, for example, have repeatedly stymied efforts in the UN to constitute a “green helmets” force to respond to environmental disasters.

Lopez says that environmental security is doomed to marginalization if its debates and principles fail to include Southern input. Many of the Northern discussions of environmental security, he says, have focused on how to incorporate environmental factors into existing traditional security institutions such as NATO. Lopez argues that this stress will not work in the South, where the traditional security regimes themselves are sometimes repressive and are involved in activities such as illegal logging.

“You cannot [incorporate environmental factors into existing institutions] in the same way in the South,” he says, “because those traditional institutions that are formally responsible for providing security have been the ones providing *insecurity* instead.”

Carius adds that the problem is less one of ignorance than of misunderstanding. According to Carius, while many Northern academic and policymaking institutions are quite aware of Southern problems, they have failed to produce a working strategy to prevent conflict related to environmental stress. He, too, blames the academic community for going too far in emphasizing worst-case scenarios without incorporating a Southern perspective. Carius says the policymaking community seized on the worst-case scenarios and built policies focusing mostly on the potential for conflict while neglecting, for example, the potential for cooperation around environmental issues.

“This is [an area],” says Carius, “where the academic community worldwide failed because they have not been really aware, at least I can say this for some European countries, how influential they’ve been with their debate.”

continued on page 322

continued from page 322

EDSP: Inclusion, Communication, and Development

So how can Northern institutions become aware of the



Alexander Carius

best methods to deal with Southern environmental insecurity? The solution, Carius and Lopez say, is to move away from a theoretical examination of the role the environment plays in violent conflict and towards developing a global agenda that is driven by a Southern perspective. Such an agenda must incorporate the knowledge of people who deal with issues of environmental insecurity on a regular—in some cases even daily—basis. “Most of the [environmental security] debate,” says Carius, “is focusing on government-[to]-government initiatives, neglecting...the role of NGOs in the local communities.”

Originating from discussions held at the Bellagio Forum on Sustainable Development, the EDSP Initiative will tackle the development of this agenda head-on. “Communication is a very strong aspect of our project,” says Carius. “We created a group of concerned people from the South and we expect them to send out a very clear message to the

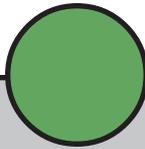
worldwide community.” The EDSP Initiative plans to hold regional policy-briefing sessions in the capitals of its host countries as well as in Johannesburg, South Africa during the upcoming World Summit on Sustainable Development.

Carius and Lopez say that the EDSP Initiative differs from other initiatives in its focus on not just conflict but development issues as well—what Lopez calls the “positive side of the environmental conflict equation.”

“That means creating the opportunity to avoid conflict in a constructive way,” says Lopez. Carius adds that EDSP’s inclusion of development is also necessary to alleviate Southern fears of a “militarization of the environmental debate or of a dominance of environmental issues against development issues.”

The EDSP Initiative hopes to succeed where the environmental security debate has failed in the past. “We will succeed,” says Lopez, “if in fact we are able to facilitate the dialogue between Northern and Southern communities. Not only between the scholars that has been traditional, but also between policymakers and journalists and people from the civil society.”

Ariel Méndez is an ECSP project assistant. For more information about the EDSP Initiative, visit www.sustainable-peace.org.



NEW WEB SITES

The Joint IISD/IUCN Environment and Security Project

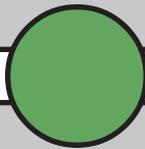
Hosted at the International Institute for Sustainable Development in collaboration with the World Conservation Union (IUCN), the Environment and Security Project explores the relationships between development, sustainable environmental management, poverty alleviation, and conflict and natural disaster risk. The Project is divided into four main sub-categories: (1) environment, security, and development cooperation; (2) natural resources, livelihoods, and security; (3) climate change, vulnerable communities, and adaptation; and (4) environment, business, and conflict. The Project examines new evidence that is emerging on the roles of natural-resource scarcity and inequitable access and benefit sharing as driving forces in many conflicts around the world. The Project also seeks to develop natural-resource management tools help prevent and alleviate these conditions. Its Web site contains a list of the Project's current publications and links to its partners, donors, team, and mailing list.

For more information, please visit the new Environment and Security Web site at <http://www.iisd.org/natres/security/>.

Environment, Development & Conflict News—EDC News

Edited by Leif Ohlsson and commissioned by the Environmental Policy Division at the Swedish International Development Cooperation Agency (SIDA), EDC News is dedicated to disseminating and discussing the links between the environment, development, and conflict on multiple levels of analysis. Its basic goal is to combine the latest international research with contemporary cases to provide an in-depth review on issues surrounding the development problematic.

For more information or to subscribe to the free e-mail newsletter, please visit the EDC News Web site at <http://www.padrigu.gu.se/EDCNews/>.



POPULATION, RESOURCES, ENVIRONMENT AND DEVELOPMENT DATABANK

The UN Population Division has released version 3.0 of the Population, Resources, Environment and Development Databank (PRED) on CD-ROM. PRED brings together 131 variables at the regional, sub-regional, and national level for 228 countries and regions on various aspects of population, labor force, education, economic and social development, land, water, and energy use. It also provides the texts of selected international treaties and conventions related to major environment and development issues.

The UN Population Division, as part of its technical cooperation program, will provide one copy of the CD-ROM free of charge to interested institutions in developing countries, upon request on the institution's letterhead paper. PRED is also available for sale for \$75. *For more information, contact: Joseph Chamie, Director, Population Division, Room DC2-1950, United Nations, New York, NY 10017, USA; Fax: 212/963-2147.*



PAI DEBUTS NEW INTERACTIVE DATABASE ON NATURAL RESOURCES AND POPULATION

Population Action International is pleased to debut its new interactive on-line database of key natural-resource and population indicators, updated from PAI's popular publication, *People in the Balance: Population and Natural Resources at the Turn of the Millennium*.

PAI invites you to explore this new database, which includes a clickable map to retrieve data by country and also allows you to search by specific natural resource indicators—including population, arable land, renewable fresh water, carbon dioxide emissions, and forest cover.

First published in 2000, *People in the Balance* is the tenth in PAI's series of natural resource studies. It provides a clear picture of the relationship between people and critical natural resources and is intended as a concise resource for environmentalists, scientists, teachers, advocates, and policymakers.

View the new data at: http://www.populationaction.org/resources/publications/peopleinthebalance/pb_data.php

WOODROW WILSON CENTER 2003-2004 FELLOWSHIPS

The Woodrow Wilson International Center for Scholars is accepting applications for its 2003-2004 Fellowship competition.

The Center awards academic-year residential fellowships to individuals from any country with outstanding project proposals on national and/or international issues. Projects should have relevance to the world of public policy or should provide the historical and/or cultural framework to illumine policy issues of contemporary importance. Fellows are provided stipends that include round-trip travel, private offices, access to the Library of Congress, Windows-based personal computers, and research assistants.

The application deadline is October 1, 2002. For more information call 202/691-4170 or email fellowships@wwic.si.edu. The application can also be downloaded from the Wilson Center's Web site at <http://www.wilsoncenter.org>



AVISO: AN INFORMATION BULLETIN ON GLOBAL ENVIRONMENTAL CHANGE AND HUMAN SECURITY



A VISO is a series of information bulletins and policy briefings on various issues related to environment and human security. Issues 1-10 have looked at topics as diverse as human security, population displacement, water scarcity, food security, southern visions of sustainable development, and population and infectious disease. AVISO is available in English, Spanish, and French.

The series is produced by GECHS (The Global Environmental Change and Human Security Project), a core project of the International Human Dimensions Programme on Global Environmental Change (IHDP). The main goal of the GECHS project is to advance interdisciplinary, international research and policy efforts in the area of human security and environmental change. The GECHS project promotes collaborative and participatory research and encourages new methodological approaches.

Other AVISO partners are the Woodrow Wilson International Center for Scholars, the U.S. Agency for International Development through a cooperative agreement with the University of Michigan, the Canadian International Development Agency, and the University of Victoria.

To see or download past issues in PDF format, please visit the GECHS Web site at <http://www.gechs.org>.



GLOBAL ENVIRONMENTAL POLITICS

Global Environmental Politics is a journal that focuses on international and comparative environmental politics. The journal covers the relationship between global political forces and environmental change. Topics include the role of states; multilateral institutions and agreements; trade; international finance; corporations; science and technology; and grassroots movements. Particular attention is given to the implications of local-global interactions for environmental management as well as the implications of environmental change for world politics.

Global Environmental Politics seeks submissions are sought across the disciplines, including political science and technology studies, environmental ethics, law, economics, and environmental science. Articles must make a theoretical or empirical contribution to understanding environmental or political change. *For more information, contact:* Peter Dauvergne, Editor of *Global Environmental Politics*, University of Sydney, Faculty of Economics and Business, Merewether Building, H04, NSW, 2006, Australia; *E-mail:* gep@econ.usyd.edu.au; *Internet:* <http://mitpress.mit.edu/GLEP>.





**Woodrow Wilson
International
Center
for Scholars**

Environmental Change and Security Project

DATABASE INFORMATION FORM

In an effort to update the Environmental Change and Security Project database and facilitate communication within the environment, population, and security communities, we would be grateful if you would take a few minutes to complete the following questionnaire on your areas of interest and expertise. Please feel free to attach comments and suggestions for ECSP activities. We are eager to receive feedback that will help us further develop the Project. Thank you.

Upon completion, please fax to (202) 691-4184 or leave with ECSP Staff

What are your areas of interest in the fields of environment, population, and security? Please list those areas that you would like more information on or announcements for meetings and publications.

- | | |
|-----------------------------|---|
| ◆ Environment | ◆ Health |
| ◆ Security | ◆ HIV/AIDS |
| ◆ Environmental Security | ◆ Technology |
| ◆ Food/Agriculture | ◆ Governance/Institutions |
| ◆ Water | ◆ Economics/Trade |
| ◆ Forestry | ◆ World Summit on Sustainable Development |
| ◆ Biodiversity/Conservation | ◆ Climate |
| ◆ Population | ◆ Energy |
| ◆ Migration/Refugees | ◆ Other |

Please list regions or states of particular interest:

Title _____ First _____ MI _____ Last _____

Job Title _____

Affiliation (full name) _____

Complete Mailing Address _____

Daytime Phone _____ Daytime Fax _____

Email Address _____

Would you like to receive ECSP publications? *(please check)*

- ◆ *Environmental Change and Security Project Report* (annual ECSP journal)
- ◆ *China Environment Series* (annual journal of the China-Environment Forum)
- ◆ *Subscribe to ECSP-FORUM, an ECSP email listserv on environment, population, and security*
(Please be sure to include your email address above.)

Would you like to receive meeting invitations and summaries?

Invitations ◆ Fax ◆ E-mail ◆ Both ◆ Do not send me meeting invitations

Meeting Summaries (via e-mail, approximately twice a month) ◆ Yes ◆ No





The Woodrow Wilson International Center for Scholars, located in the Ronald Reagan Building in the heart of Washington D.C., was founded in 1968 by Congress as the nation's memorial to President Woodrow Wilson. Through its renowned fellows program and a range of regional and functional programmatic activities, the non-partisan center fosters scholarship and dialogue in the humanities and the social sciences. As such, The Wilson Center serves as an ideal meeting place for scholars and practitioners of widely divergent ideological and professional backgrounds. Meetings are

marked by free intellectual exchange, reflecting a tradition of bringing together people who differ in discipline, profession, and nationality, but who share an interest in a subject and in having their views challenged in lively debate. The Wilson Center is directed by The Honorable Lee H. Hamilton and its Board of Directors is chaired by Joseph B. Gildenhorn. Prior to becoming Director, Lee Hamilton served for thirty-four years as a United States Congressman from Indiana. He served as a member of the Committee on Foreign Affairs, now the Committee on International Relations, for his entire tenure.

Director's Forums

The Director's Forums are series of public lectures hosted by Lee H. Hamilton. Aimed at business executives and policymakers, these forums focus on the work of pre-eminent scholars, business, and government leaders with speeches on such universal human questions as community, globalization, governance, efficiency, and democratic decisionmaking. Recent speakers have included South African Ambassador to U.S. Makate Sheila Sisulu; former Secretary of Defense Bill Cohen; former Puerto Rican Governor Pedro Rossello; former Korean Minister of Finance Hun-Jai Lee; and several former National Security Advisers.

"The Director's Forums provide a unique opportunity for Wilson Center friends, scholars, and staff to hear leading public officials discuss current policy issues and to engage in a dialogue with them. These discussions and interactions between the speaker and audience are lively and informative and a key part of the legacy left to us by President Wilson."

- Lee H. Hamilton



The Woodrow Wilson International Center for Scholars at 1300 Pennsylvania Avenue in the Ronald Reagan Building



Woodrow Wilson International Center for Scholars

Lee H. Hamilton, *Director*

BOARD OF TRUSTEES

Joseph B. Gildenhorn, *Chairman*
Steven Alan Bennett, *Vice Chairman*

EX OFFICIO MEMBERS:

The Secretary of State Colin L. Powell, *The Librarian of Congress* James H. Billington, *The Archivist of the United States* John W. Carlin, *The Chairman of the National Endowment for the Humanities* Bruce Cole, *The Secretary of the Smithsonian Institution* Lawrence M. Small, *The Secretary of Education* Roderick R. Paige, *The Secretary of Health & Human Services* Tommy G. Thompson.

PRIVATE CITIZEN MEMBERS:

Joseph A. Cari, Jr., Carol Cartwright, John H. Foster, Jean L. Hennessey, Daniel L. Lamaute, Doris O. Matsui, Thomas R. Reedy, Nancy M. Zirkin

THE WILSON COUNCIL

Diane Abouafia-D'Jaen, Charles S. Ackerman, B. B. Andersen, Cyrus A. Ansary, Charles F. Barber, Lawrence E. Bathgate II, Joseph C. Bell, Esq., A. Oakley Brooks, Charles W. Burson, Conrad Cafritz, Nicola L. Caiola, Raoul L. Carroll, Scott Carter, Albert V. Casey, Peter B. Clark, William T. Coleman, Michael D. DiGiacomo, F. Samuel Eberts III, J. David Eller, Sim Farar, Susan R. Farber, Barbara Hackman Franklin, Morton Fungar, Gregory Gallo, Chris G. Gardiner, Eric Garfinkel, Bruce S. Gelb, Gordon D. Giffin, Stephen J. Gilbert, Alma Gildenhorn, David F. Girard-diCarlo, Michael B. Goldberg, William E. Grayson, Raymond A. Guenter, Gerland T. Halpin, Edward L. Hardin, Jr., Carla A. Hills, Eric Hotung, Frances Humphrey Howard, John L. Howard, Darrell E. Issa, Jerry Jasinowski, Brenda LaGrange Johnson, Shelly Kamins, Edward W. Kelley, Jr., Anastasia D. Kelly, Christopher J. Kennan, Michael V. Kostiw, Steven Kotler, Paul Kranhold, William H. Kremer, Denny LeVet, Harold O. Levy, David Link, David S. Mandel, John P. Manning, Edwin S. Marks, Jay Mazur, Robert McCarthy, Stephen G. McConahey, Donlad F. McLellan, J. Kenneth Menges, Jr., Philip Merrill, Jeremiah L. Murphy, Martha T. Muse, Della M. Newman, John E. Osborn, Paul Hae Park, Gerald L. Parsky, Michael J. Polenske, Donald Robert Quartel, Jr., John L. Richardson, Margaret Milner Richardson, Larry Richman, Edwin Robbins, Jr., Robert G. Rogers, Otto Ruesch, B. Francis Saul, III, Timothy R. Scully, Alan M. Schwartz, J. Michael Shepherd, George P. Shultz, Raja W. Sidawi, Deborah Siebert, Thomas L. Siebert, Kenneth Siegel, Ron Silver, William A. Slaughter, Jame Small, Thomas F. Stephenson, Wilmer Thomas, Norma Kline Tiefel, Mark C. Treanor, Christine M. Warnke, Dr. Ruth Westheimer, Pete Wilson, Deborah Wince-Smith, Herbert S. Winokur, Jr., Paul Martin Wolff, Joseph Zappala, Richard S. Ziman



This publication is made possible through support provided by the Office of Population, U.S. Agency for International Development, and the University of Michigan, under the terms of Grant No. HRN-A-00-00-00001-00. The opinions expressed herein are those of the authors and do not necessarily reflect the views of the U.S. Agency for International Development, the University of Michigan, or the Woodrow Wilson Center.

