Migration and the environment

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Migration (SOCI 647)

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Outline

- Future demographic change, migration, climate change
  - Hugo 2011
- Migration and climate change (background)
  - Laczko, Aghazarm 2009 (chapter 1)
- Migration and the environment (examples)
  - Bremner, Hunter 2014

Future demographic change

- Analysis of global demographic change as a driver of migration within the context of anticipated climate change

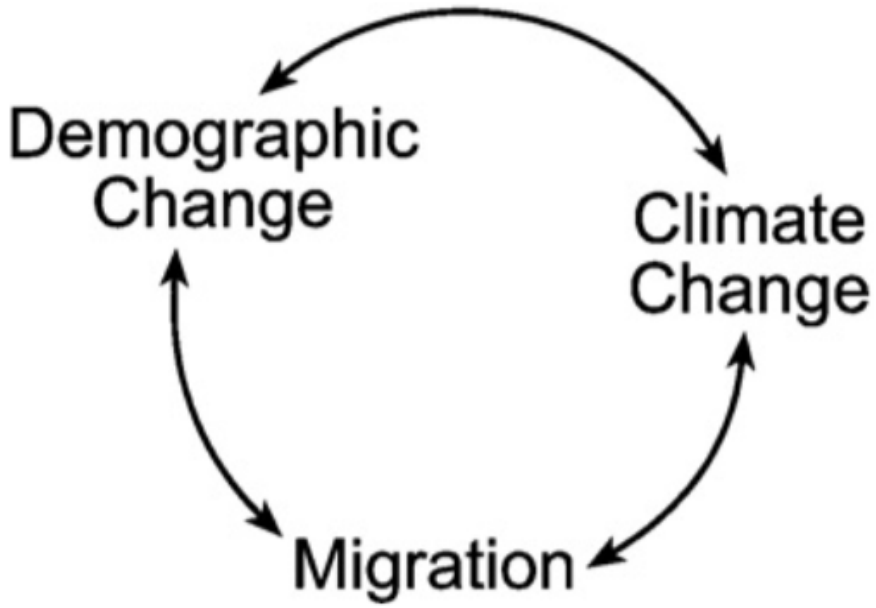


Fig. 1. The relationship between demographic change, migration and climate change.

Source: Hugo 2011.

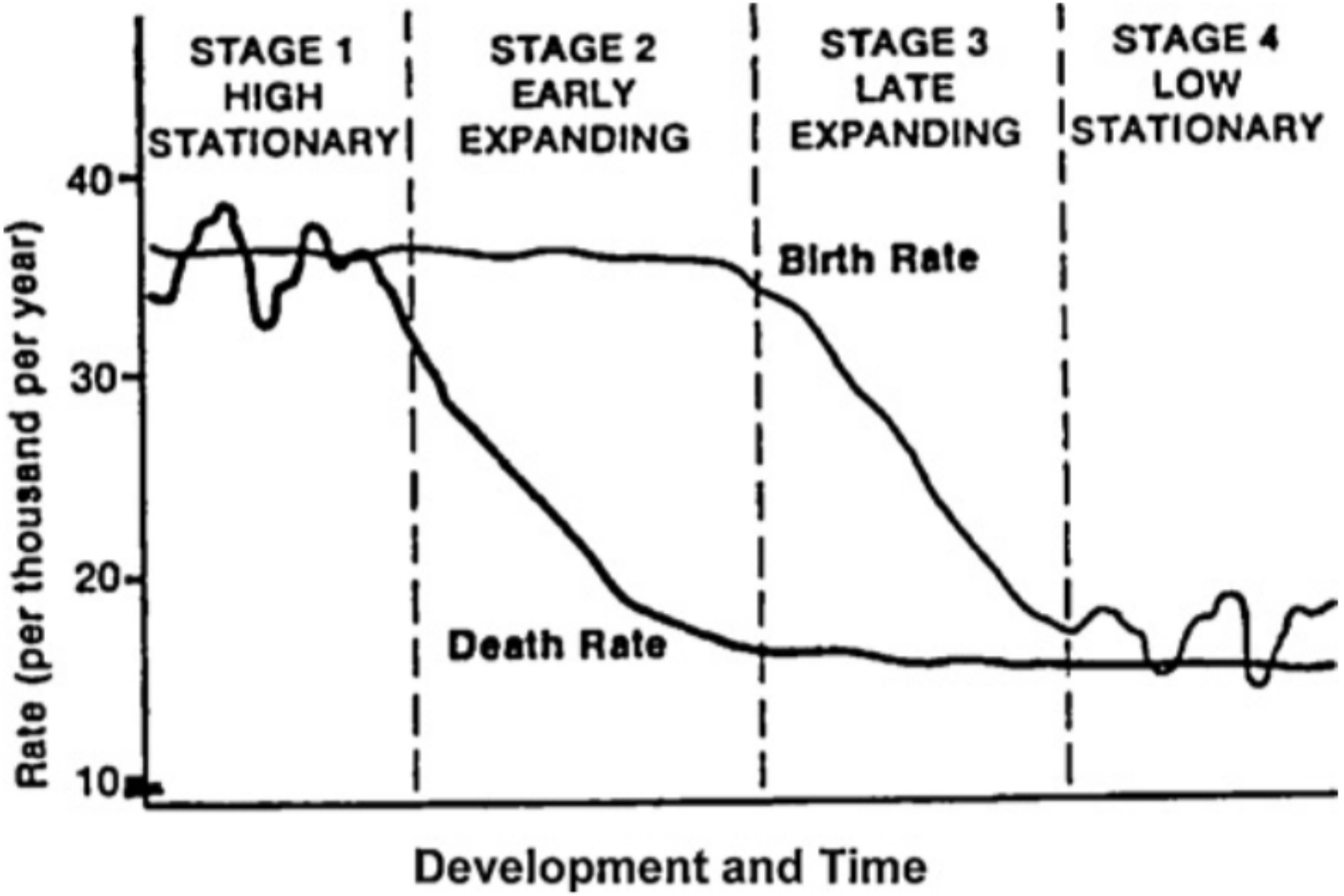
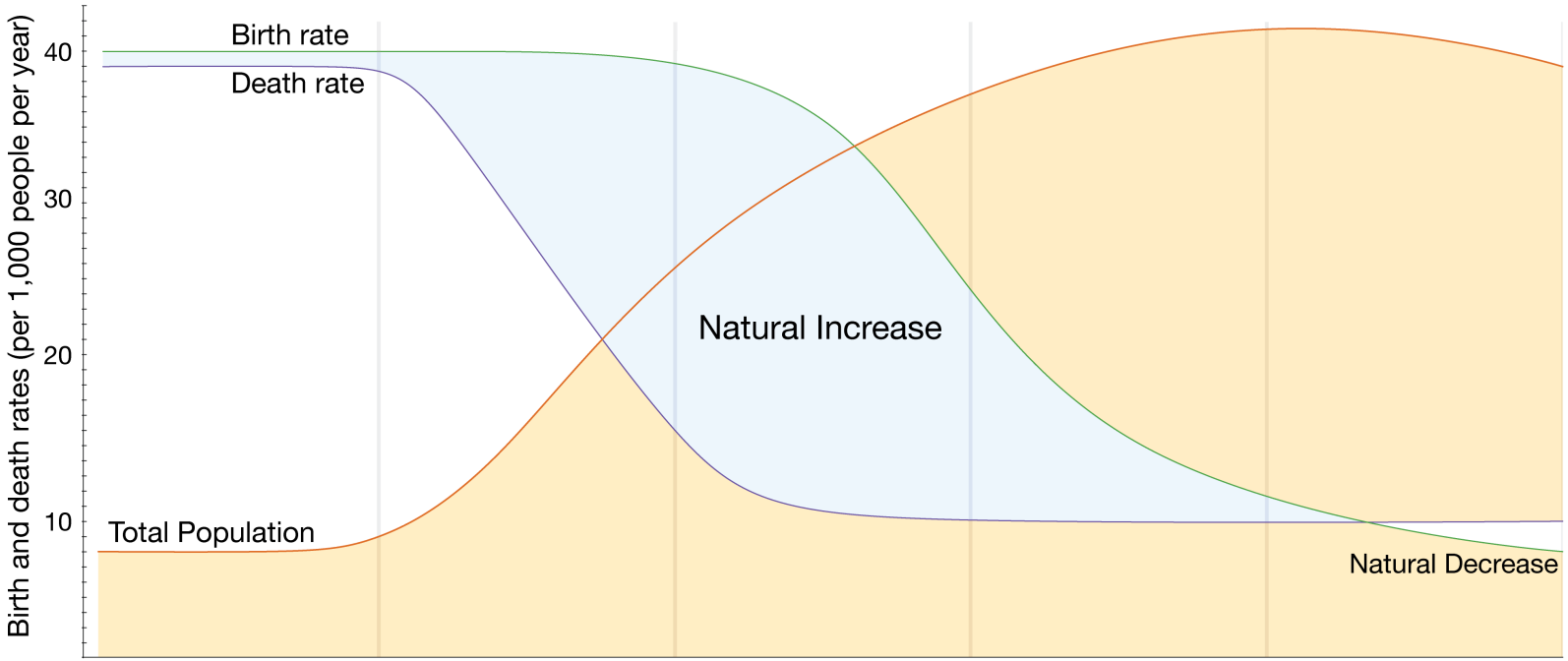


Fig. 2. Simplified model of the demographic transition.

Source: Hugo 2011.

Our World in Data



	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Birth rate	*High*	*High*	*Falling*	*Low*	*Very low*
Death rate	*High*	*Falls rapidly*	*Falls more slowly*	*Low*	*Low*
Natural increase	*Stable or slow increase*	*Very rapid increase*	*Increase slows down*	*Stable or slow increase*	*Stable or slow decrease*

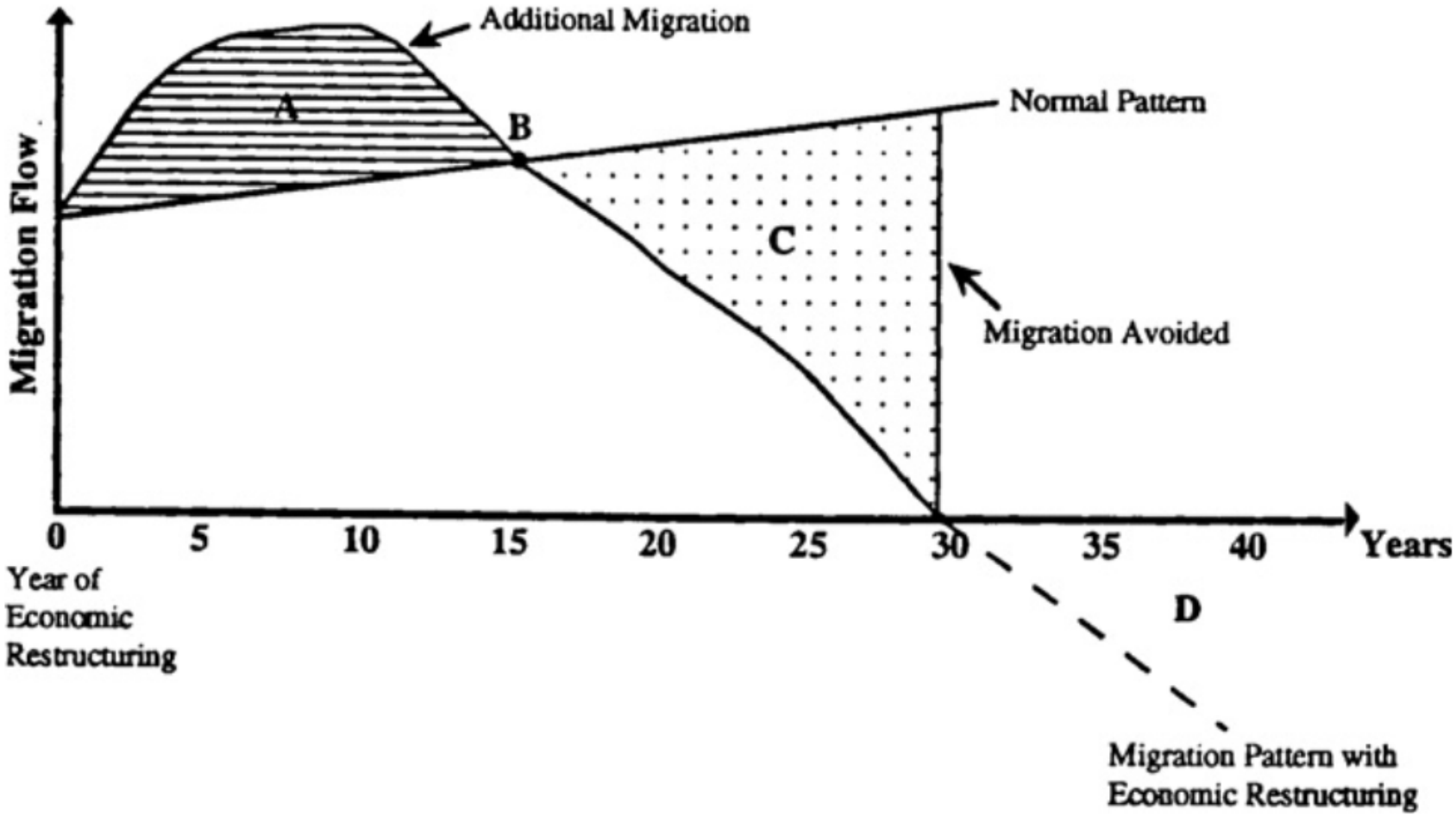


Fig. 3. Model of the international migration transition.
Source: Martin (1993).

Source: Hugo 2011.

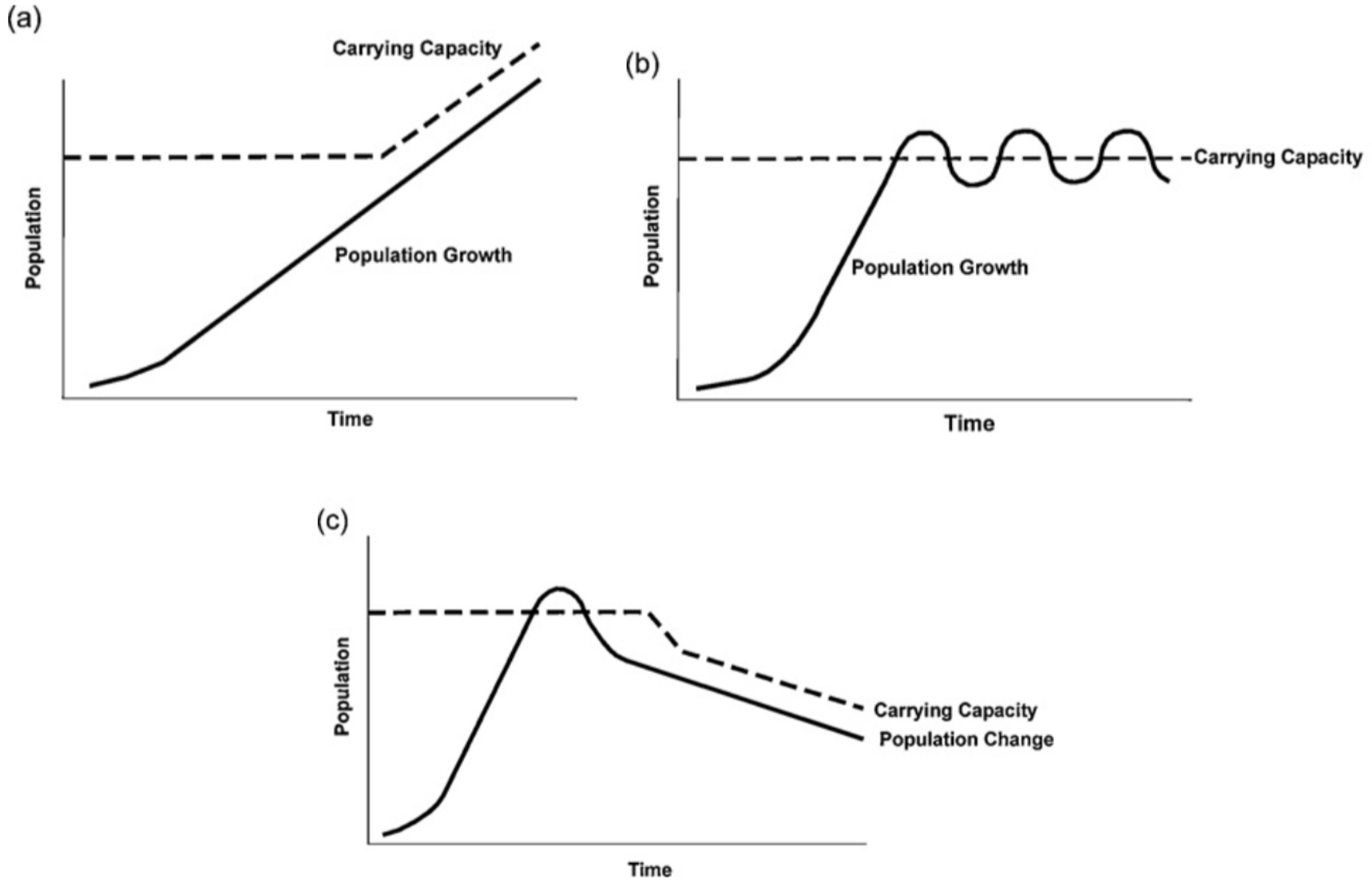


Fig. 4. The carrying capacity model.
Source: Newman and Matzke (1984), 198.

Source: Hugo 2011.

Population size in billions

Continent	2013	2050	2100
America	1	1	1
Europe	1	1	1
Africa	1	2	4
Asia	4	5	5
Total	**7**	**9**	**11**

Source: Don't Panic: Hans Rosling Showing The Facts About Population (https://vimeo.com/79878808)

Population size in billions

Age group	2013	2024	2050	2100
75+				1
60–74	1	1	1	2
45–59	1	1	2	2
30–44	1	2	2	2
15–29	2	2	2	2
0–14	2	2	2	2
Total	**7**	**8**	**9**	**11**

Source: Don't Panic: Hans Rosling Showing The Facts About Population (https://vimeo.com/79878808)

Table 1
World projected urban and rural population change, 2007–2050.

Growth, 2007–2050 (billions)	More developed countries	Less developed countries
Total	+.03	+2.5
Urban	+.16	+2.95
Rural	−.14	−.44

Source: United Nations (2008).

Table 2
World regions: population aged 15–34, 2005–2030.

World region	2005		2010		2020		2030		% Growth per annum		
	Number '000	%	Number '000	%	Number '000	%	Number '000	%	2005–2010	2010–2020	2020–2030
Africa	320,874	14.77	363505	16.04	448685	18.74	540024	22.08	2.53	2.13	1.87
Asia	137,4741	63.27	1368520	60.38	1359438	56.77	1324100	54.14	−0.09	−0.07	−0.26
Middle East	76,859	3.54	83080	3.67	92162	3.85	99350	4.06	1.57	1.04	0.75
Europe	205,676	9.47	196711	8.68	170354	7.11	154115	6.30	−0.89	−1.43	−1.00
Latin America & the Caribbean	193,485	8.90	201458	8.89	210398	8.79	211554	8.65	0.81	0.44	0.05
North America	92,017	4.24	97018	4.28	102360	4.27	104778	4.28	1.06	0.54	0.23
Oceania	9,934	0.46	10394	0.46	11433	0.48	11868	0.49	0.91	0.96	0.37
World	2,172,772	100.00	2266644	100.00	2394830	100.00	2445790	100.00	0.85	0.55	0.21

Source: United Nations (2007).

Table 3
World population: percent living in urban areas.

	1950	2005	2030
World	29.1	48.6	59.7
More Developed Regions	52.5	74.0	80.6
Less Developed Regions	18.0	42.7	56.0

Source: United Nations (2008).

Source: Hugo 2011.

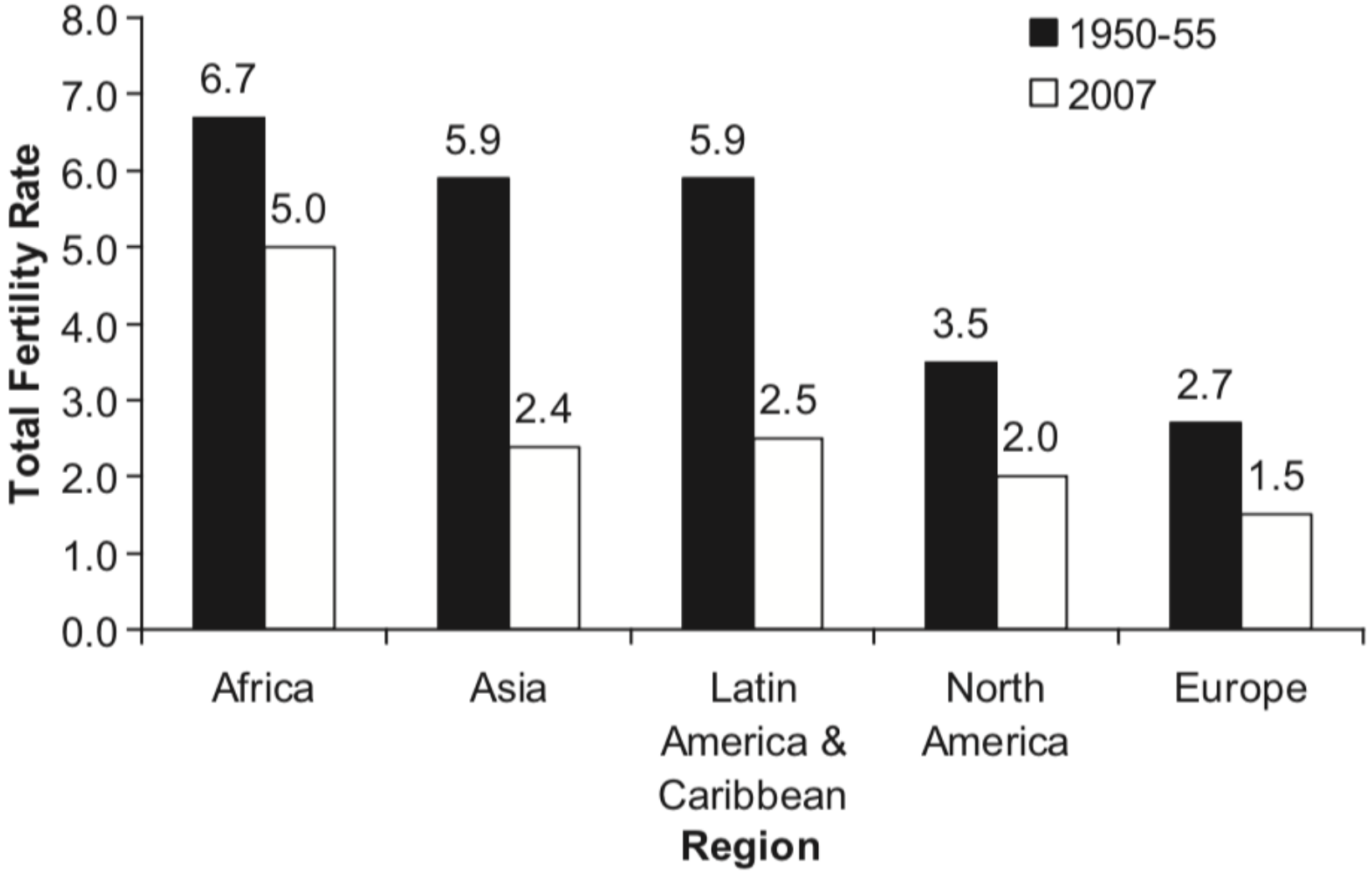


Fig. 5. Fertility levels in major world regions, 1950–1955 and 2007.
Source: United Nations (2003); Population Reference Bureau (2007).

Source: Hugo 2011.

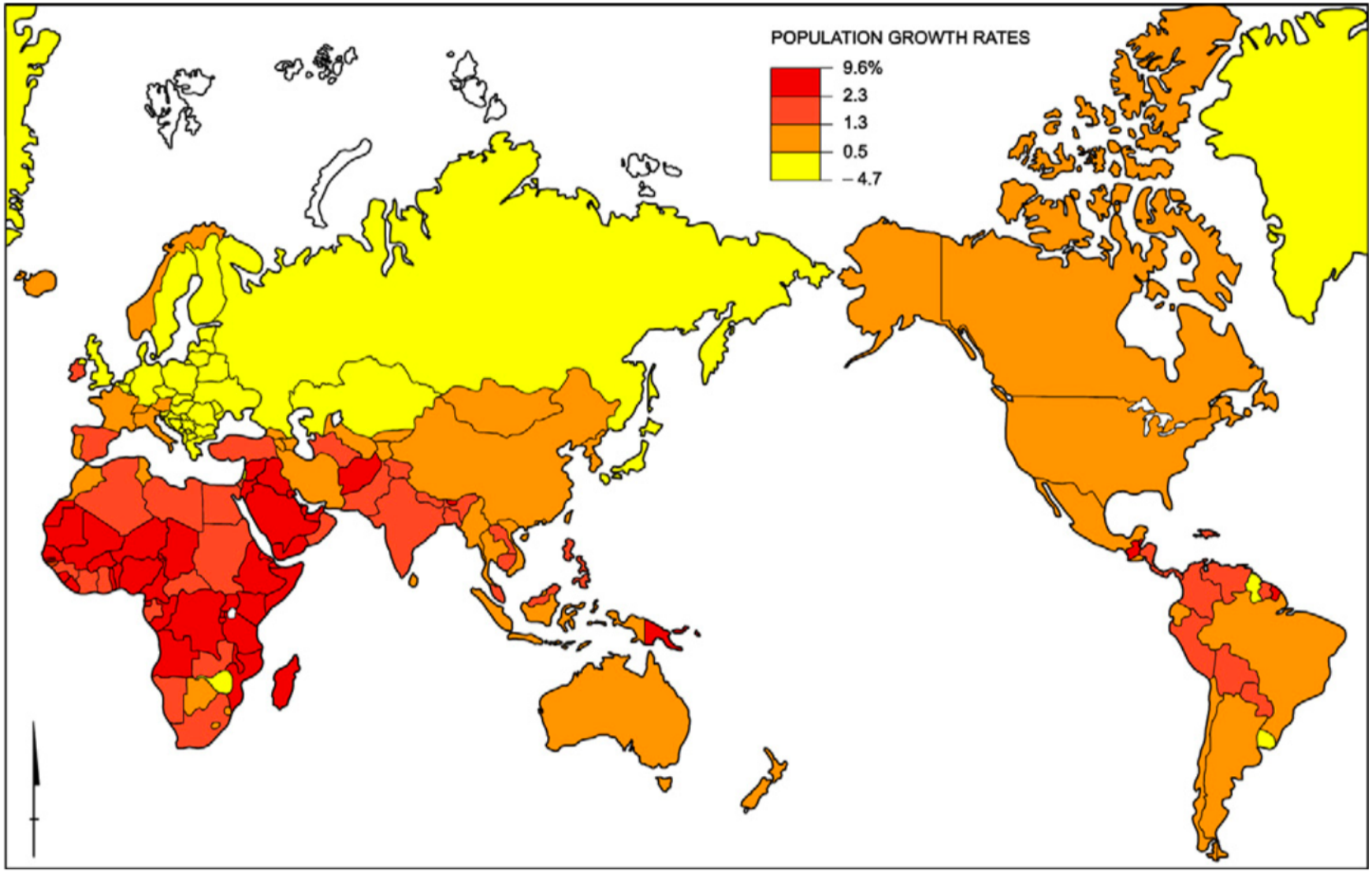


Fig. 6. National annual population growth rate, 2009.
Source: United Nations.

Source: Hugo 2011.

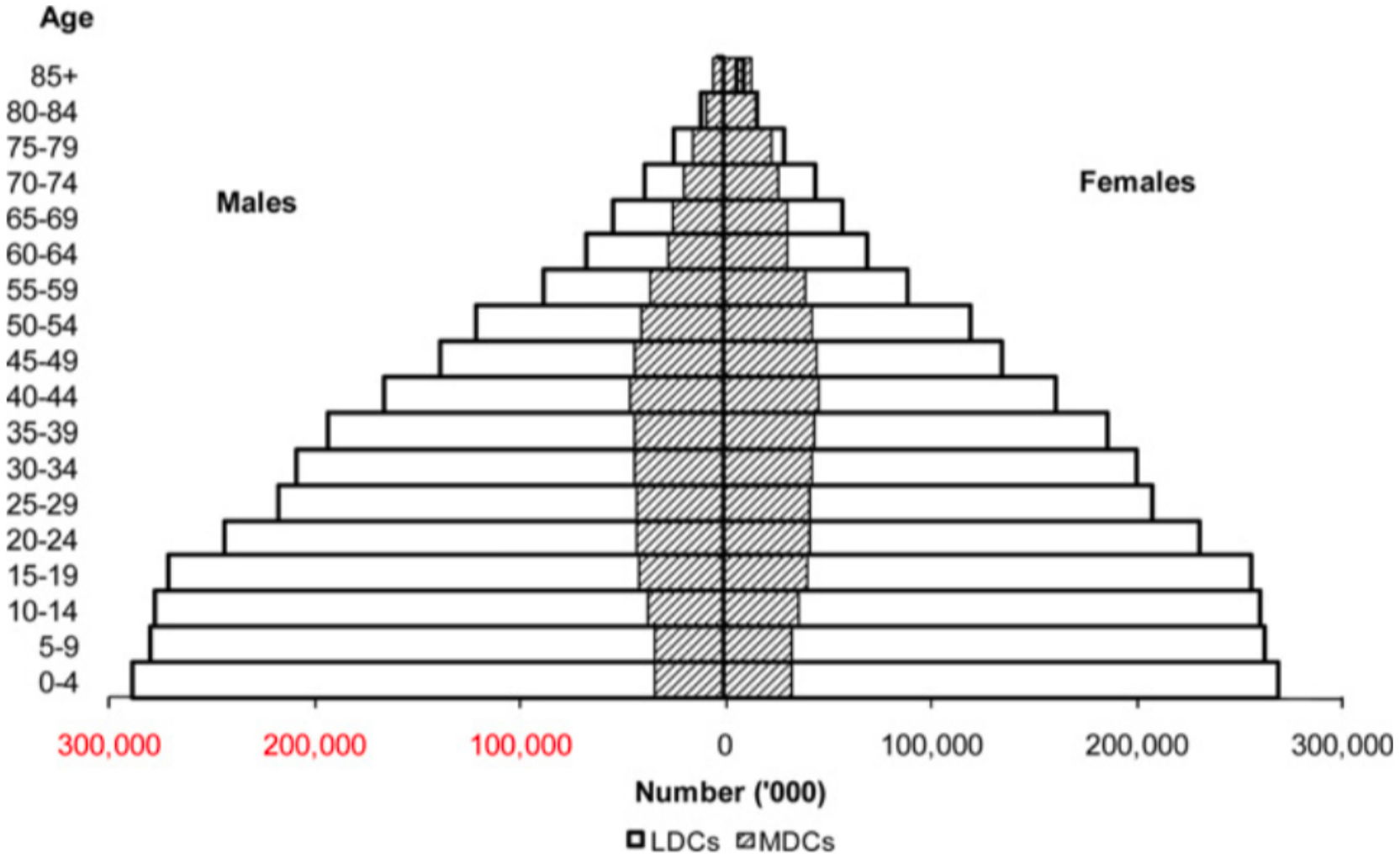


Fig. 7. More developed and less developed countries: age and sex distribution of the population, 2005.
Source: United Nations (2007).

Source: Hugo 2011.

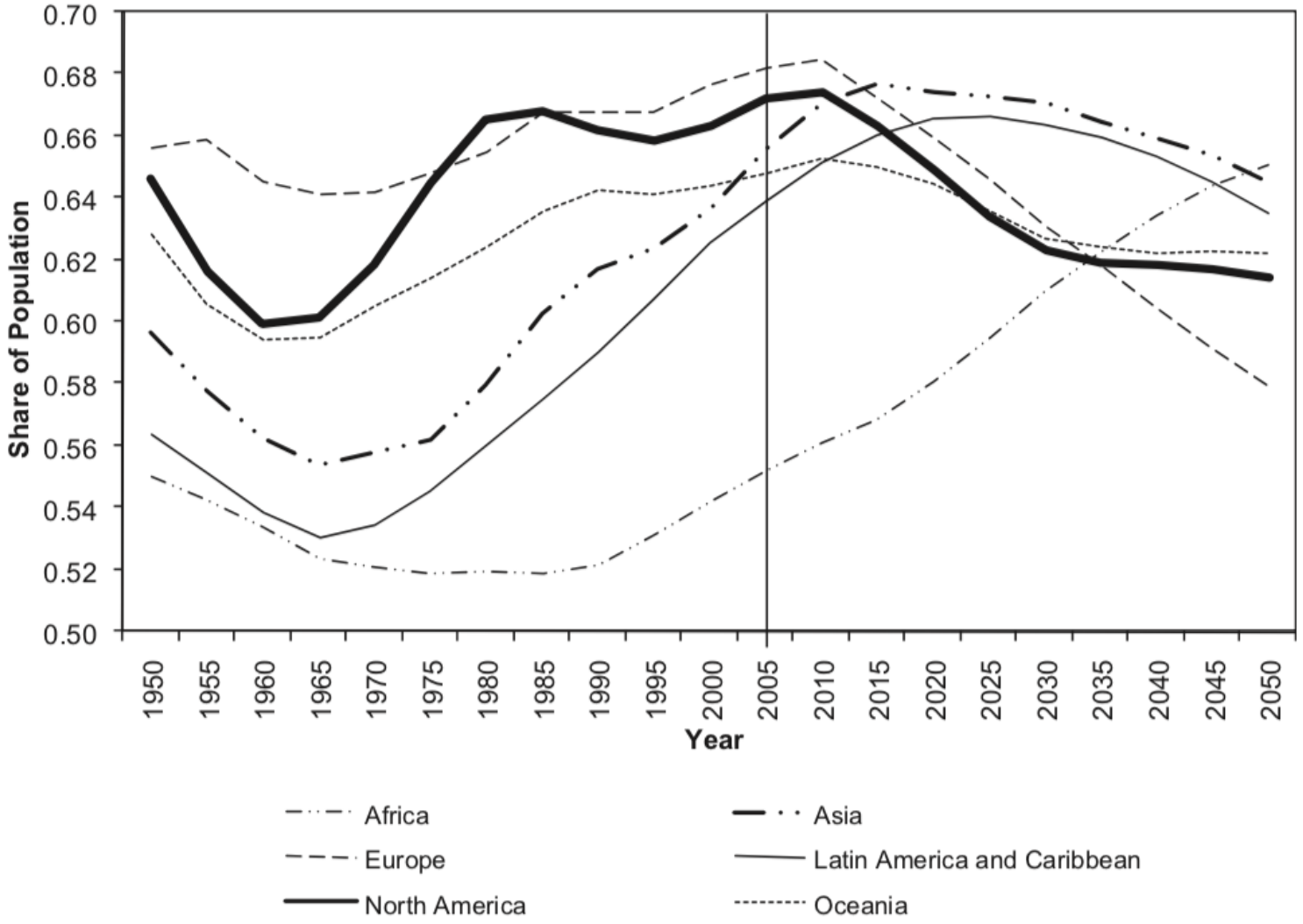


Fig. 8. World regions: share of population in working ages, actual, 1950–2005 and projected, 2010–2050.
Source: United Nations (2007).

Source: Hugo 2011.

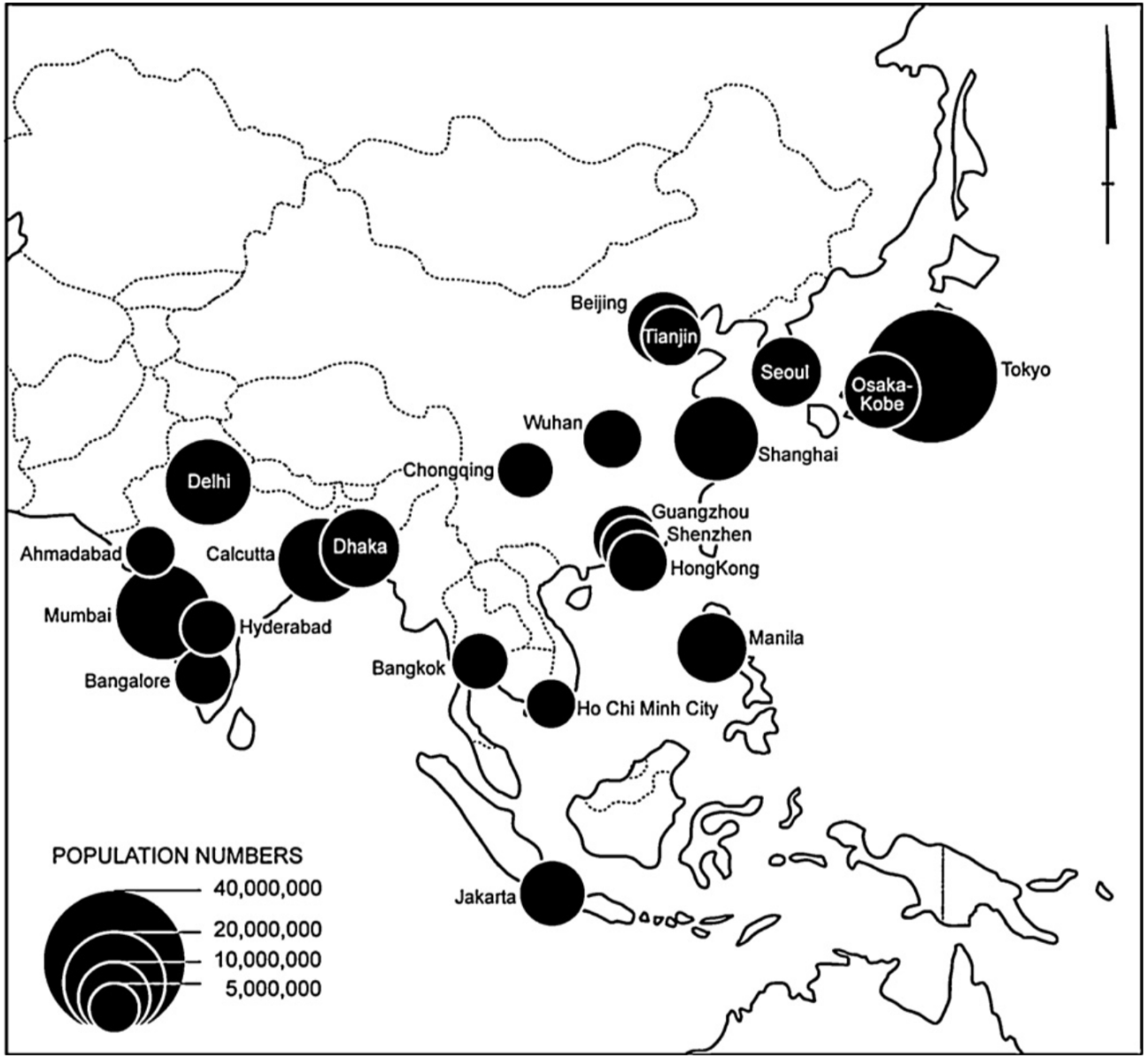


Fig. 9. Asia and the Pacific: location of cities with a population of 5 million and over, 2005.
Source: United Nations (2008).

Source: Hugo 2011.

Fig. 10. Environment as a cause of migration.

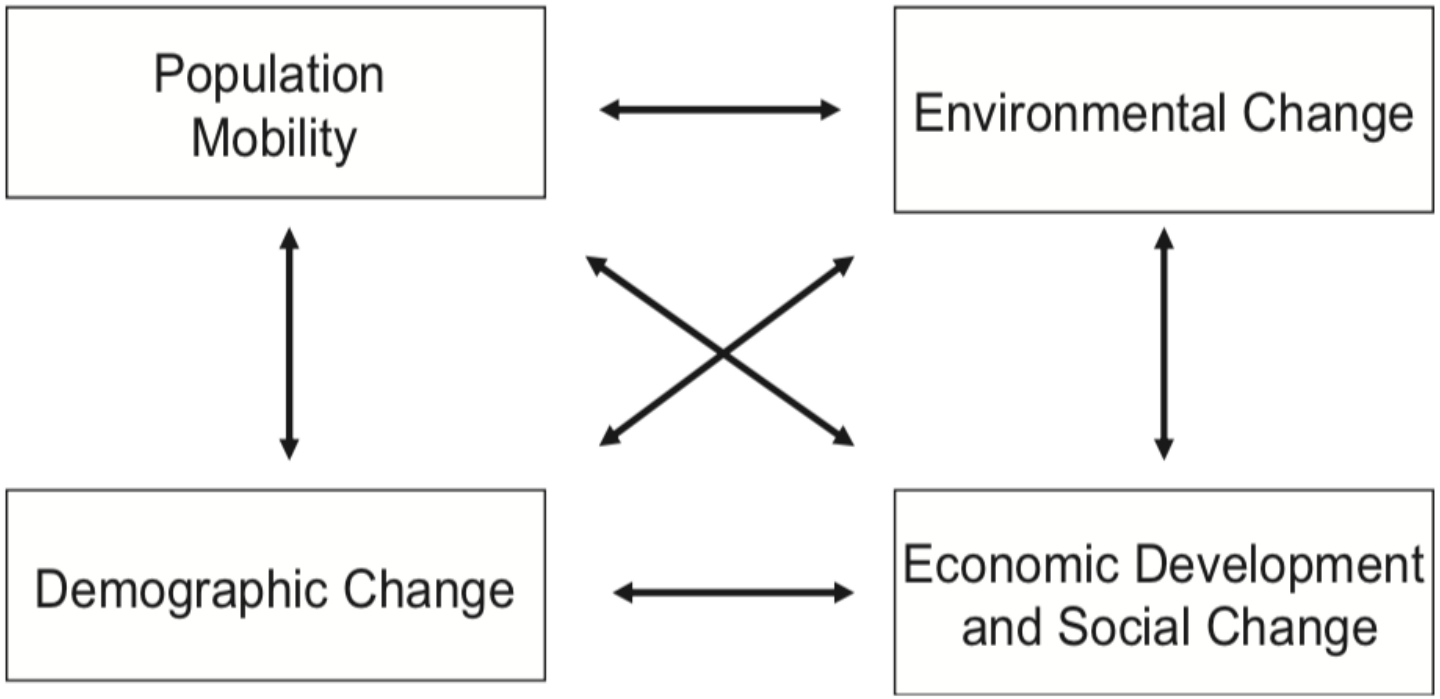


Fig. 11. A complex interrelationship: migration, environment, resources and development.

Source: Hugo 2011.

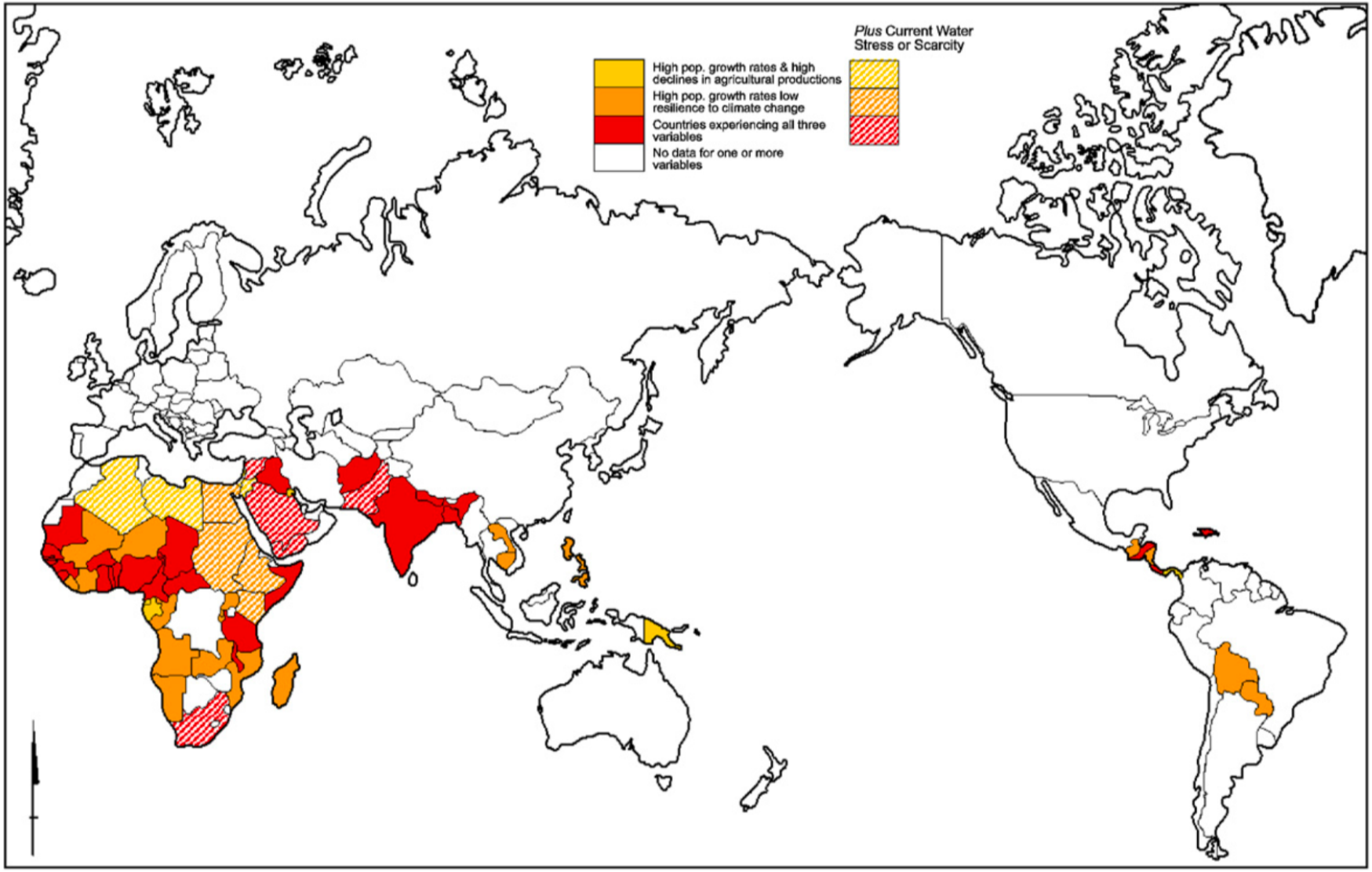


Fig. 12. Population and climate change hotspots.
Source: www.populationaction.org/Publications.

Source: Hugo 2011.

Table 4
Correlation coefficients between population growth and development and environment variables for countries.

Independent variable	Annual population growth rate 2010	Total fertility rate 2010	Number of countries (n)
GNI per capita	−.345[a]	−.528[a]	167
GDP per capita	−.342[a]	−.446[a]	159
Incidence of corruption	.322[a]	.403[a]	125
Population affected by disasters	.148	.163[b]	160
Percent population on degraded land	.237[a]	.289[a]	150
Percent urban	−.466[a]	−.627	167

Source: UNDP (2010).

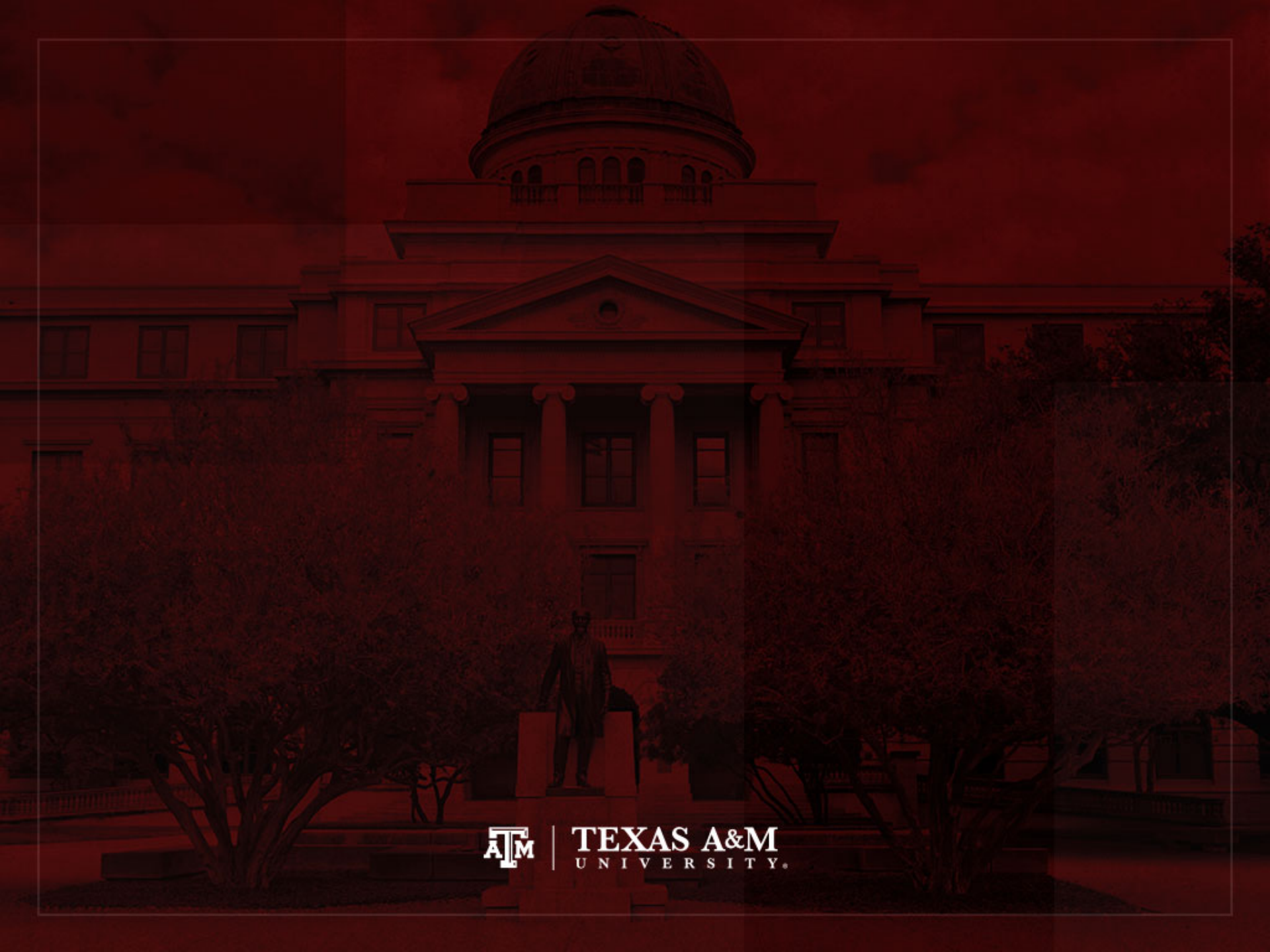
[a] 99% level of confidence.
[b] 95% level of confidence.

Source: Hugo 2011.

Considerations

- Impacts of climate change will add to increasing levels and complexity of population mobility
- To ensure that migration reduces poverty and improves socioeconomic development
  - Establish more effective migration management
  - Strengthening governance
  - Develop appropriate funding mechanisms to facilitate adaption to climate change
  - Enhance international cooperation on climate change issues
  - Expand and improve development assistance mechanisms
  - Accommodate effects of climate change on mobility

Source: Hugo 2011.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Migration and climate change

- Over the last few years there has been an upsurge of interest in the likely impact of climate change on population movements

- Estimates have suggested that between 25 million to 1 billion people could be displaced by climate change over the next 40 years
  - This is the number of people exposed to the risk of climate change in certain parts of the world
  - It does not take into account measures that could be taken to adapt to these changes

- These estimates helped to focus policymakers' attention on the likely implications of climate change on migration

Source: Laczko, Aghazarm 2009.

Background

- Despite the wide range (25 million to 1 billion)...
- Little doubt that parts of the earth are becoming less habitable
  - Climate change, deterioration of agricultural lands, desertification, water pollution
- Number of natural disasters has more than doubled over the last two decades
- More than 20 million people were displaced by sudden-onset climate-related natural disasters in 2008
- Global temperatures are expected to rise between 2 and 5 degrees Celsius by the end of this century

Source: Laczko, Aghazarm 2009.

Need more research

- There is a call for better data to answer questions...
- How many will migrate due to climate change?
- Who will migrate?
- When and where will they migrate? New destinations?
- Will migration be temporary or permanent, internal or international?
- What will be the consequences for people who move, for those left behind and for places of destination?
- How is environmental change affecting migration today?
- Can we already identify vulnerable populations/regions?

Source: Laczko, Aghazarm 2009.

Questions on policy responses

- How policymakers should address these challenges in countries of origin and destination?
  - Partly the response will depend on how we frame issue
- Policy challenges are framed in negative way
  - People will be forced to seek protection in Europe and North America
  - There is focus on inadequacy of policies and legal frameworks to assist those displaced due to extreme environmental events
  - Less discussion of how migration could help some countries adapt to climate change

Source: Laczko, Aghazarm 2009.

Need to understand migration

- Tendency to focus on negative consequences of migration for the environment

- Fewer studies exploring how migration can be an adaptation strategy or how migration can relieve pressure on environmentally degraded areas

Source: Laczko, Aghazarm 2009.

Risks of negative approach

- There are risks in presenting policy challenges linked to environmental migration in too negative terms
  - This can foster policies that seek to reduce and control migration
  - Do little to address needs of those who migrate, when migration may be the only option for those affected by climate hazards
  - Policies to restrict migration rarely succeed, are self-defeating, increase costs to migrants and to areas of origin and destination

Source: Laczko, Aghazarm 2009.

Climate change effects on migration

- Laczko and Aghazarm (2009) focus on the impact of environmental/climate change on migration
  - They do not focus on the impact of migration and refugee movements on the environment

- They examine types of policy responses and protection gaps which potentially exist

- They offer an overview of innovative approaches to measuring and collecting data on migration and environment nexus

Source: Laczko, Aghazarm 2009.

Contextualization

- People have been moving in response to changes in their environment for centuries
  - It is only in the last 20 years or so that the international community has begun to slowly recognize the wider linkages and implications that a changing climate and environment has on human mobility

- Research literature
  - Minimalists suggest that the environment is only a contextual factor in migration decisions
  - Maximalists claim that the environment directly causes people to be forced to move

Source: Laczko, Aghazarm 2009.

Impacts on human mobility

- Climate change does not directly displace people or cause them to move
  - But it produces environmental effects and exacerbates current vulnerabilities that make it difficult for people to survive where they are

- Climate change is expected to make the world hotter, rainfall more intense, and result in more extreme weather events such as droughts, storms and floods
  - These changes result in population movements

Source: Laczko, Aghazarm 2009.

Extreme and gradual changes

- Extreme environmental events tend to capture media headlines
  - E.g., cyclones, hurricanes, tsunamis, tornadoes
- Gradual changes tend to affect a larger number of people and will continue in the long term
  - Intensification of natural disasters
  - Increased warming and drought that affects agricultural production and access to clean water
  - Rising sea levels make coastal areas uninhabitable and increase the number of sinking island states: 44% of world's population lives within 150km of the coast
  - Competition over natural resources may lead to conflict and in turn displacement

Source: Laczko, Aghazarm 2009.

Key findings

1. Conceptualizing the relationship between climate change, the environment and migration

2. Data and methodological challenges and approaches

3. Current migration trends in response to sudden and slow-onset disasters

4. Policy responses and legal frameworks

Source: Laczko, Aghazarm 2009.

1. Conceptualizing relationship

- Environmental degradation and climate change can impact on the decision to migrate
  - Conceptualization of these factors as a primary cause of migration/forced displacement has been questioned
- Migration is a multi-causal event
  - Combination of various “push” and “pull” factors
  - Economic, social, political, demographic aspects
- Establishing a direct causal link is a challenge
  - When environmental change is gradual, movement is more likely to be voluntary and linked to other economic, social and political factors

Source: Laczko, Aghazarm 2009.

Definition

- Most environmental migration tends to occur within countries rather than between countries
- It makes more sense to talk of “internally displaced persons”
- Instead of “environmental refugees”

Source: Laczko, Aghazarm 2009.

IOM definition

- International Organization for Migration
  - "Environmental migrants are persons or groups of persons who, for compelling reasons of sudden or progressive change in the environment that adversely affects their lives or living conditions, are obliged to leave their habitual homes, or choose to do so, either temporarily or permanently, and who move either within their country or abroad."

Source: Laczko, Aghazarm 2009.

2. Methodological challenges

- A persistent lack of data is one of the primary challenges to measuring the migration and environment nexus
- Data collection on migration and environment represents a challenge in itself, especially in developing countries
- Lack of migration question on censuses and surveys

Source: Laczko, Aghazarm 2009.

Modelling climate change impact

- It is difficult to predict the impact of climate change

- Climate modelling techniques have not yet begun to account adequately for
  - Impact of individual choice (agent-based modelling)
  - Remote sensing data (satellite images)
  - Potential for international action
  - Variability of future emissions and meteorological scenarios

Source: Laczko, Aghazarm 2009.

3. Current migration trends

- Migration that happens in response to both sudden and slow-onset environmental events exhibits varied characteristics
  - Voluntary – forced (unclear in slow-onset events)
  - Temporary – permanent (most is short distance and temporary)
  - Internal – international (predominantly internal)
  - Vulnerability – resilience (most vulnerable lacks means to migrate)

Source: Laczko, Aghazarm 2009.

Vulnerability, adaptive capacity

- Vulnerability and adaptive capacity are further influenced by several factors, such as through intersections among gender, age and ethnic background

- These factors may inform decisions to migrate at the societal, household and/or individual level

Source: Laczko, Aghazarm 2009.

4. Policy responses

- It is necessary to manage future movements of people linked to environmental and climate change
- More efforts are needed to identify, test and implement new programs, policies, and frameworks
  - Capacities of governments to implement existing policies need to be enhanced
  - Migration can be among several adaptation strategies
  - Countries of destination lack coherent policies to address potential future flows

Source: Laczko, Aghazarm 2009.

Recommendations, 1/2

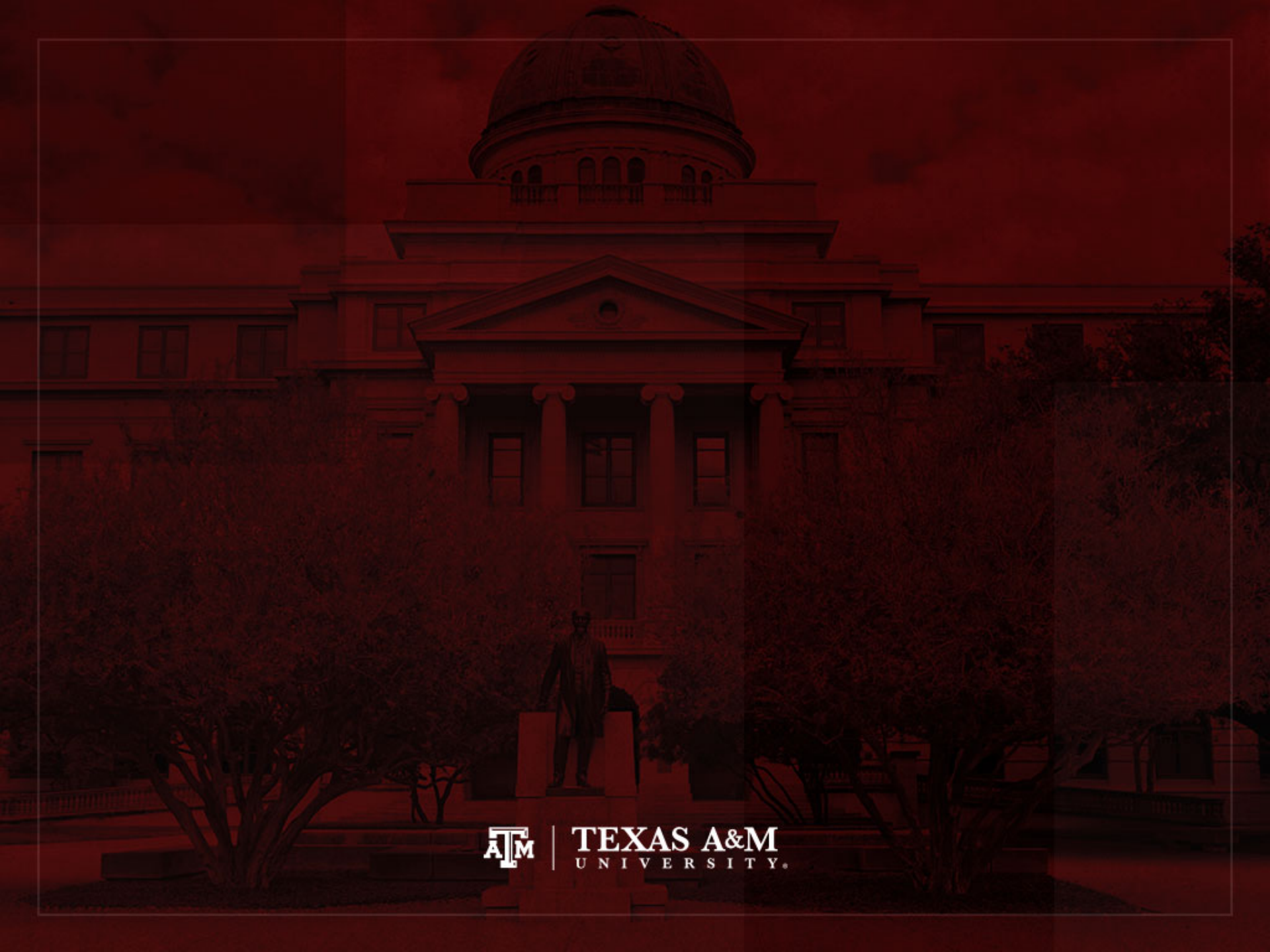
- Research agenda should have stronger focus on **internal migration**, more emphasis on South-South migration
- Research needs to be more balanced to include a greater focus on **slow-onset changes** in the environment
- Broader and larger scale of **interdisciplinary** work

Source: Laczko, Aghazarm 2009.

Recommendations, 2/2

- Improve **data** on environmental migration
- **Comparative research** needs to understand why in some circumstances environmental pressures contribute to migration and in others they do not
- Develop **research capacity-building** component to enable developing countries to build their knowledge base
- Ensure that existing data sources and research findings are utilized by **policymakers**

Source: Laczko, Aghazarm 2009.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Migration and the environment

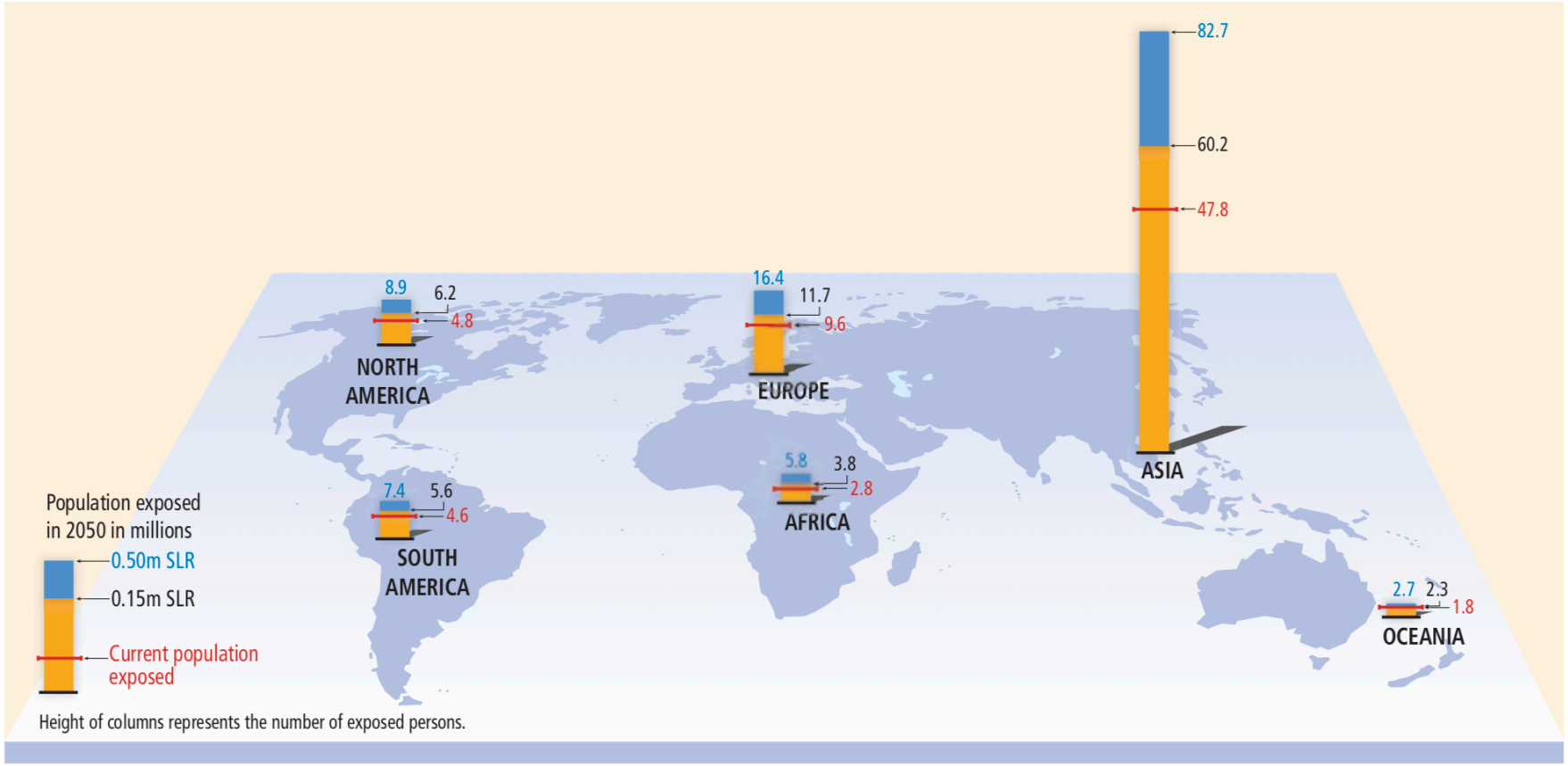
- There are an estimated 230 million international migrants, a number that is projected to double to over 400 million by 2050
- Probably more than two to three times as many are internal migrants, people who have moved within their own countries
- A major concern is whether climate change will displace large numbers of vulnerable people around the world

Source: Bremner, Hunter 2014.

Examples

FIGURE 1

Current and Future Population Exposure to Inundation in a 100-Year Storm Event Due to Sea Level Rise



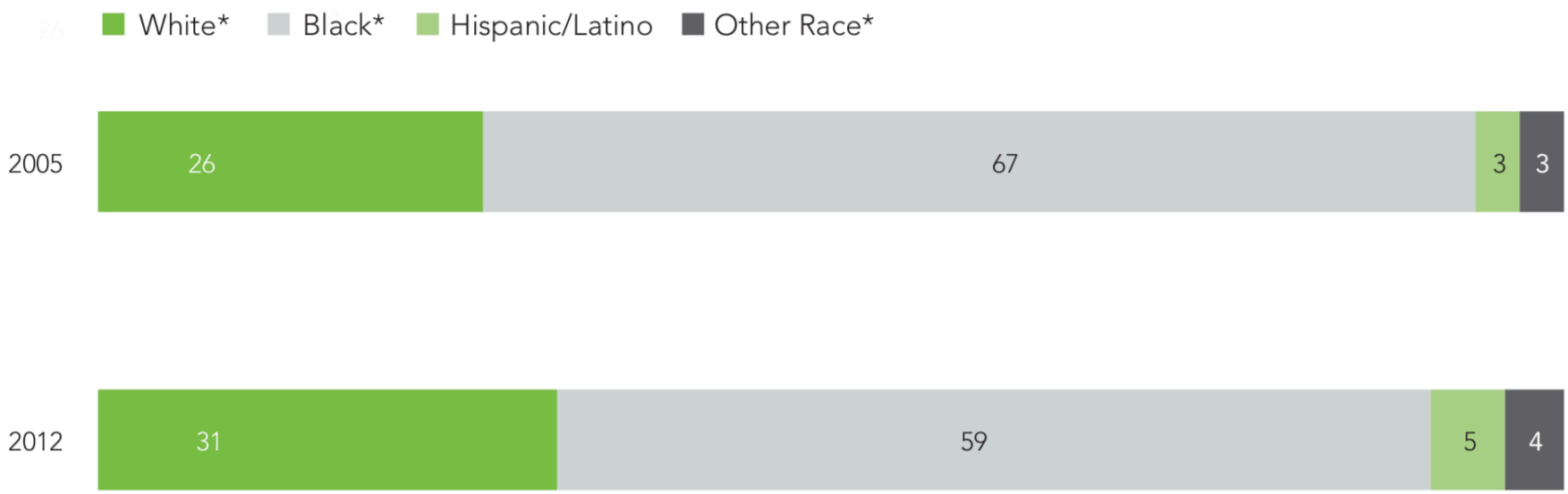
For low-elevation coastal areas, current and future (2050) population exposure to inundation in the case of the 1-in-100-year extreme storm for sea level rise of 0.15 m and for sea level rise of 0.50 m due to the partial melting of the Greenland and West Antarctic Ice Sheets.

Source: Handmer, J., Y. Honda, Z.W. Kundzewicz, N. Arnell, G. Benito, J. Hatfield, I.F. Mohamed, P. Peduzzi, S. Wu, B. Sherstyukov, K. Takahashi, and Z. Yan, 2012: Changes in impacts of climate extremes: human systems and ecosystems. In: *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation* [Field, C.B., V. Barros, T.F. Stocker, D. Qin, D.J. Dokken, K.L. Ebi, M.D. Mastrandrea, K.J. Mach, G.-K. Plattner, S.K. Allen, M. Tignor, and P.M. Midgley (eds.)]. A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change (IPCC). Cambridge University Press, Cambridge, UK, and New York, NY, USA, pp. 231-290. © IPCC 2012.

Source: Bremner, Hunter 2014.

FIGURE 2

Distribution of the Population in New Orleans by Race/Ethnicity, 2005 and 2012



Notes: *Non-Hispanic; "Other Race" includes Asian/Pacific Islanders, American Indians/Alaska Natives, and persons of two or more races.

Source: U.S. Census Bureau, Population Estimates Program.

Source: Bremner, Hunter 2014.

Deaths in the U.S. From Natural Disasters by Type, 1970-2004

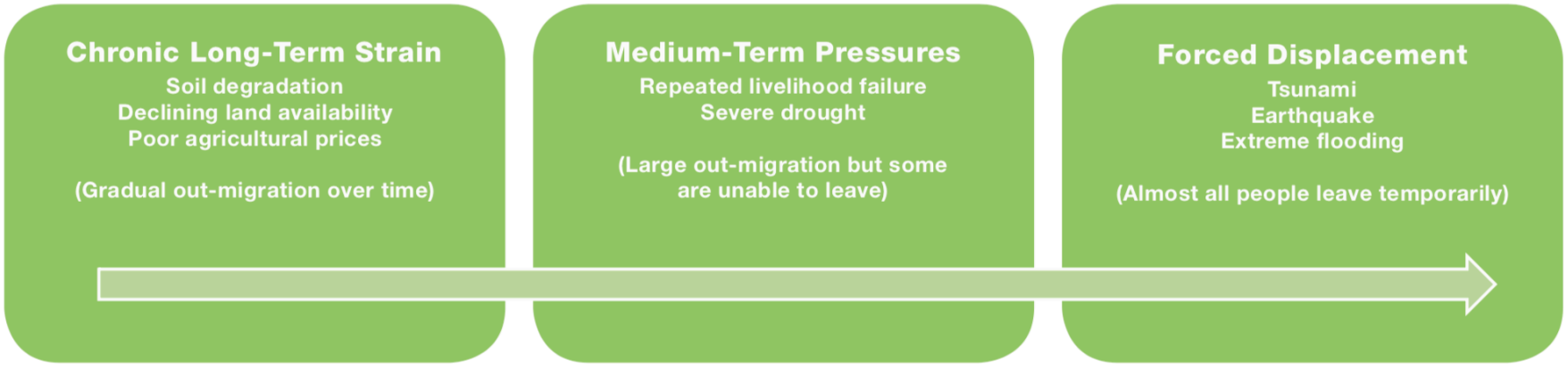
	NUMBER	PERCENT
All Deaths From Natural Disasters	19,959	100.0
Heat or Drought	3,906	19.6
Severe Weather (severe storm/thunderstorm, fog, hail, wind)	3,762	18.8
Winter Weather	3,612	18.1
Flooding	2,788	14.0
Tornado	2,314	11.6
Lightning	2,261	11.3
Coastal (storm surge, rip current)	456	2.3
Hurricane or Tropical Storm	304	1.5
Geophysical (earthquake, tsunami, volcano)	302	1.5
Mass Movement (avalanche, landslide)	170	0.9
Wildfire	84	0.4

Source: Kevin A. Borden and Susan L. Cutter, "Spatial Patterns of Natural Hazards Mortality in the United States," *International Journal of Health Geographics* 7, no. 64 (2008): figure 1 and table 3, accessed at www.ij-healthgeographics.com/content/7/1/64, on June 16, 2014.

Source: Bremner, Hunter 2014.

FIGURE 3

A Continuum of Environmental Pressures That Contribute to Migration



Source: Jason Bremner, Population Reference Bureau, 2014.

Source: Bremner, Hunter 2014.

Considerations, 1/2

- **Current understanding** of migration and environment relationships does not predict how migration might respond to future climate change on a global scale
- Even **extreme events** do not necessarily lead to an international refugee crisis (Indonesian case)
- Droughts and soil degradation are **unlikely to lead to large-scale** migration across international borders

Source: Bremner, Hunter 2014.

Considerations, 2/2

- Environmental migration is **real** and deserves international attention
  - But simplistic views of massive numbers of environmental refugees moving across borders should be avoided

- **Resilience policies and programs** are an opportunity to reduce impacts of disasters and environmental change

Source: Bremner, Hunter 2014.

References

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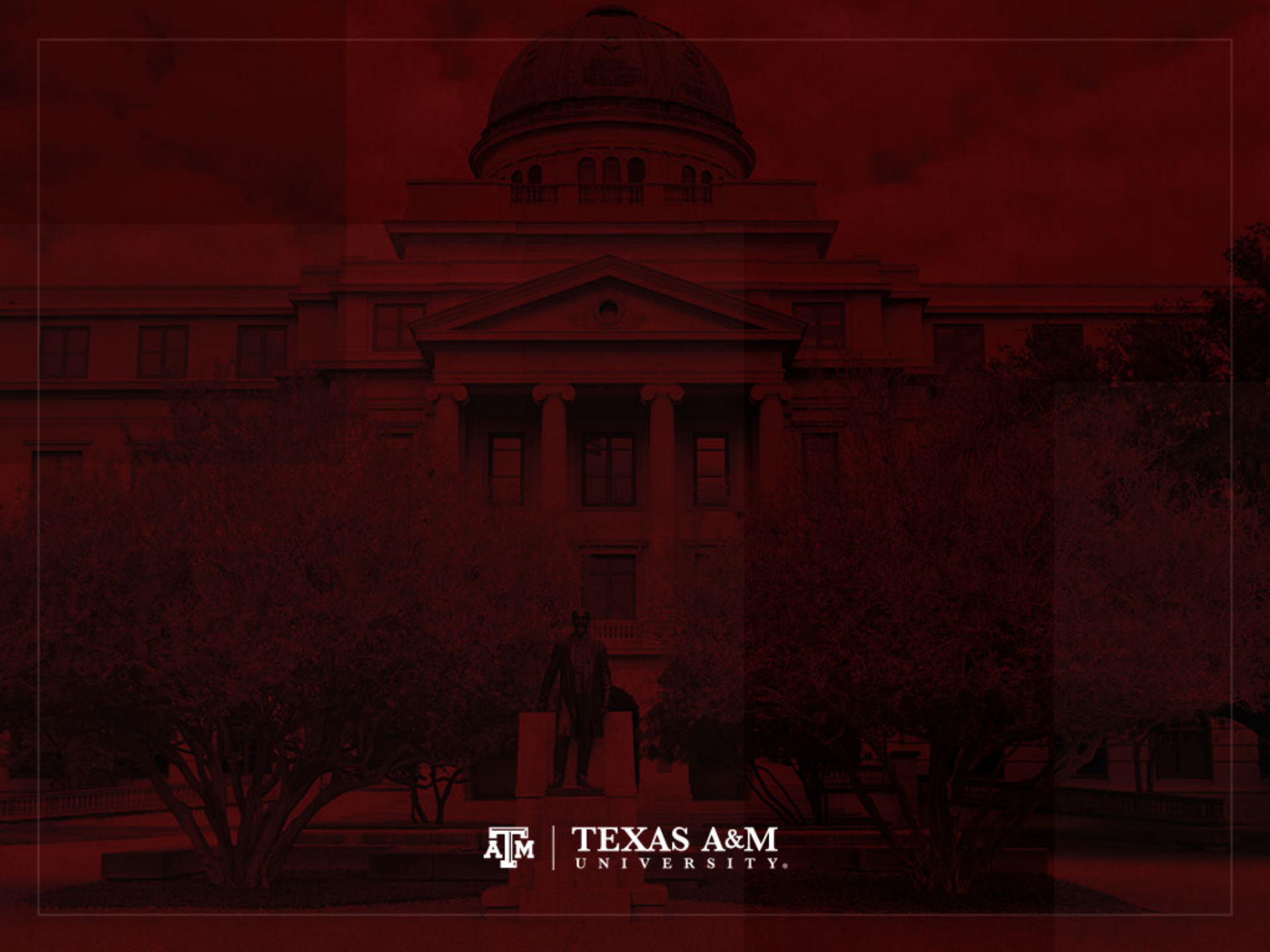
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