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Protection Gaps and Responses: Challenges and Opportunities

Slow-onset hazards and population displacement in the context of climate change

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Outline

- Conceptual issues
 - Conceptual issues are key when addressing environmental displacement and migration
 - Have policy implications
- Slow-onset hazards related to climate change:
 - Sea level rise
 - Rainfall variability, changes in water availability
- Environmental displacement and climate change:
 - What is known and what is expected
- A very brief comment about numbers
 - Large uncertainties

Different terms, different groups

- ***Refugee***: a person who owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable, or, owing to such fear, is unwilling to avail himself of the protection of that country
- ***Internally Displaced Persons***: Persons or group of persons who have been forced to flee or to leave their homes or places of habitual residence, in particular, as a result of, or in order to avoid the effects of, armed conflict, internal strife, systematic violations of human rights, or natural or man-made disasters, and who have not crossed an internationally recognized State border.
- ***Environmentally Displaced Persons***: Persons who are displaced within their country of habitual residence or who have crossed an international border and for whom environmental degradation, deterioration or destruction is a major cause of their displacement, although not the sole one.
- ***Environmental Migrants***: persons or group of persons who, for compelling reasons of sudden or progressive changes in the environment that adversely affect 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.

Debate on
environmental
refugees

CONTINUUM FROM FORCED TO NON-FORCED MOBILITY

Refugee-like situations:

very low level of control over the whole process and very high degree of vulnerability

Environmentally driven displacement:

compelled but voluntary; more control over timing and direction and less vulnerability than refugees; but less control and more vulnerability than migrants.

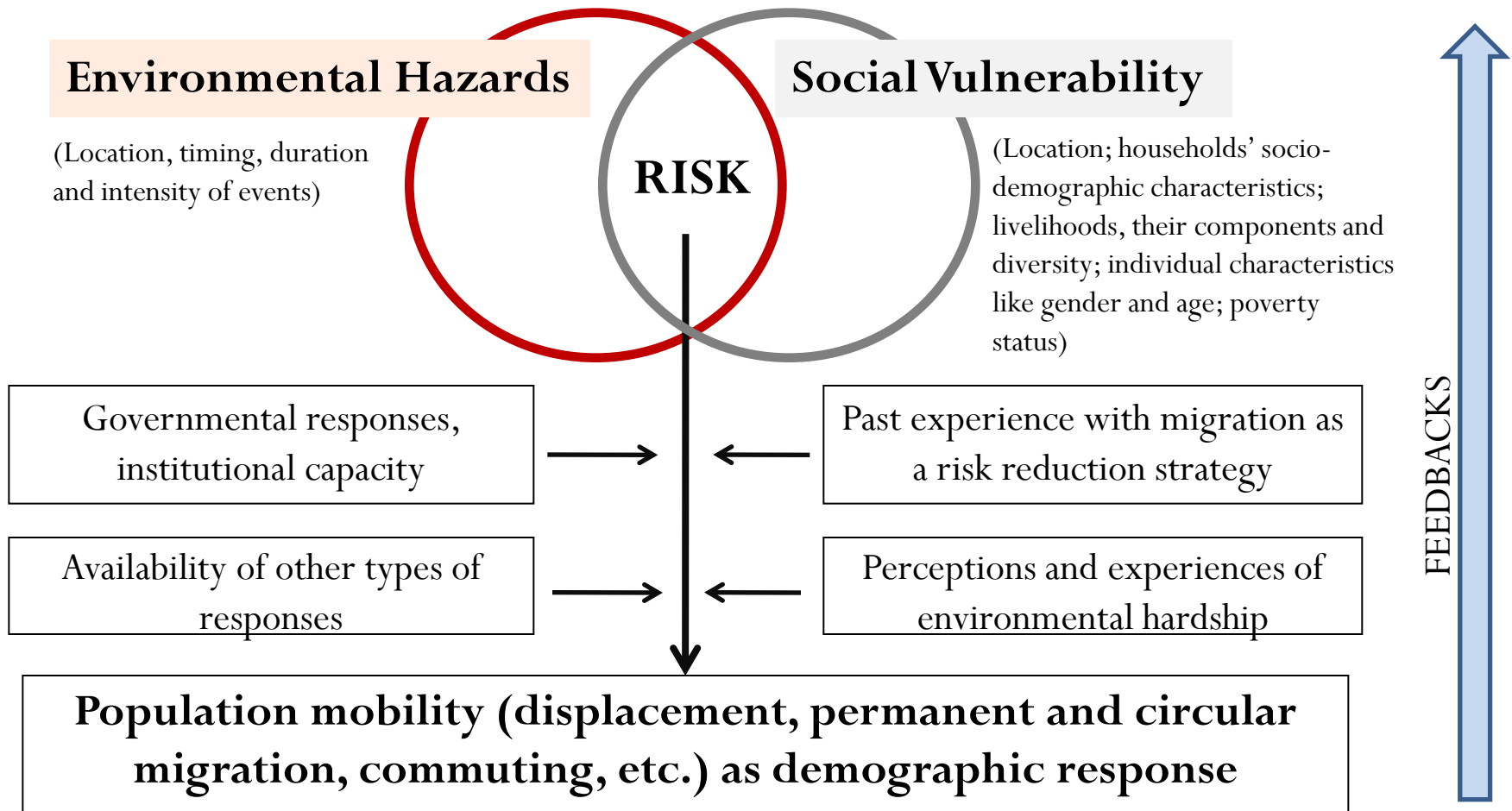
Migrant-like situations:

greater control over the process and less vulnerability, even if people are moving in response to deteriorating conditions.

- Effects of climate change on population displacement to vary by type of event, place and time, by degree of vulnerability, and availability of alternative responses (mitigation measures, adaptation in place)
- Mobility as response to climate hazards needs a conceptual model to help visualize the integration of different factors.

How do environmental factors affect migration decisions?

Multiplicity and Complexity



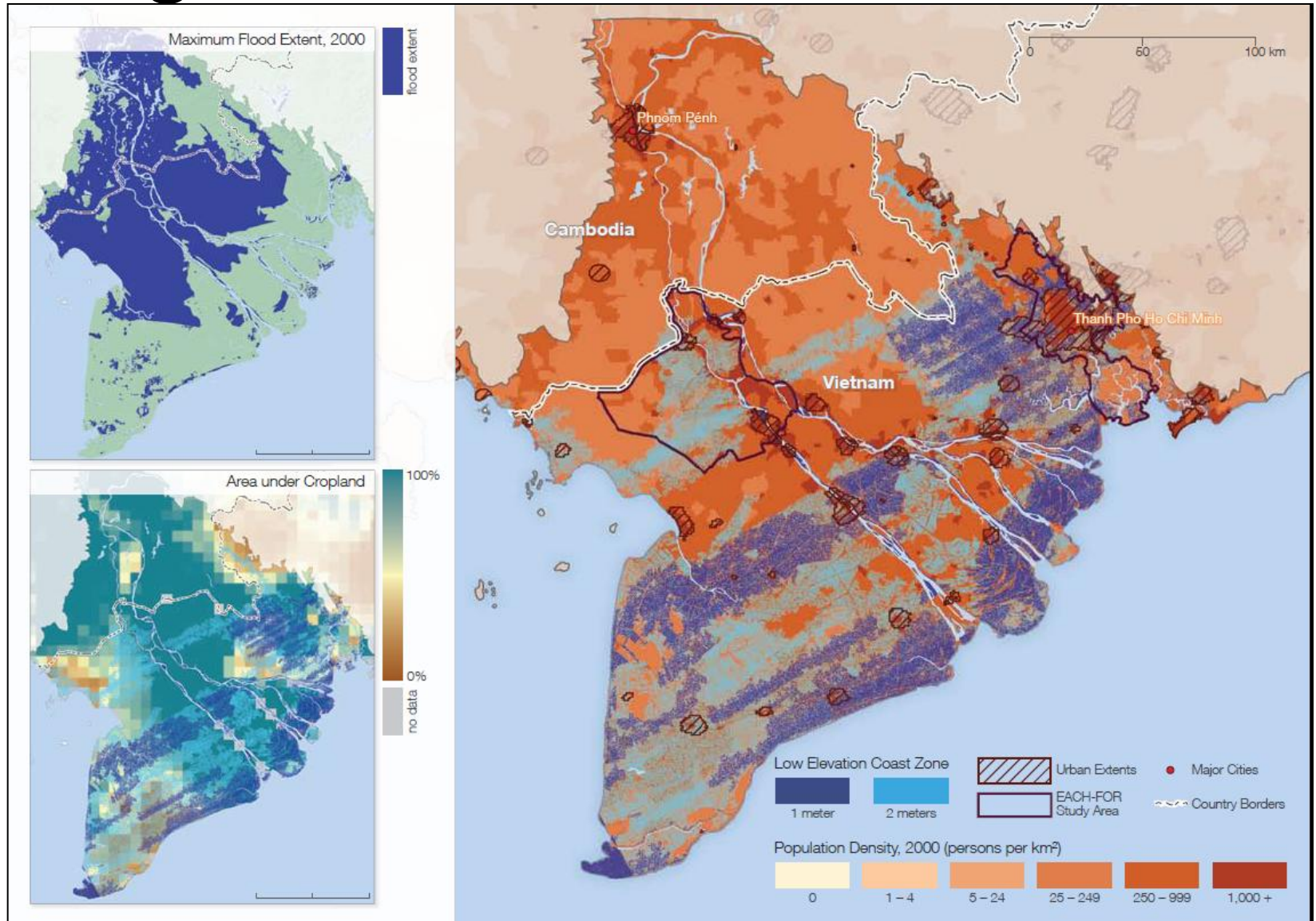
Elaborated by S. Adamo based on Hewitt, K. 1997. *Regions of risk. A geographical introduction to disasters*; Blaikie, P., T. Cannon, I. Davis, and B. Wisner. 1994. *At risk: natural hazards, people's vulnerability and disasters*; Meze-Hausken, E. 2000. *Migration caused by climate change: how vulnerable are people in dryland areas? A case study in Northern Ethiopia*; Adamo, S. 2003. *Vulnerable people in fragile lands: migration and desertification in the drylands of Argentina*.

Slow-Onset Hazards

- Slow onset hazards, like drought, insect infestations, and disease epidemics take months or years to develop.
- A slow-onset emergency or disaster is defined as one that does not emerge from a single, distinct event but one that emerges gradually over time, often based on a confluence of different events.
- Two main slow onset hazards related to climate change are expected to have an impact on population mobility
 - Changes in rainfall and water availability
 - Sea level rise

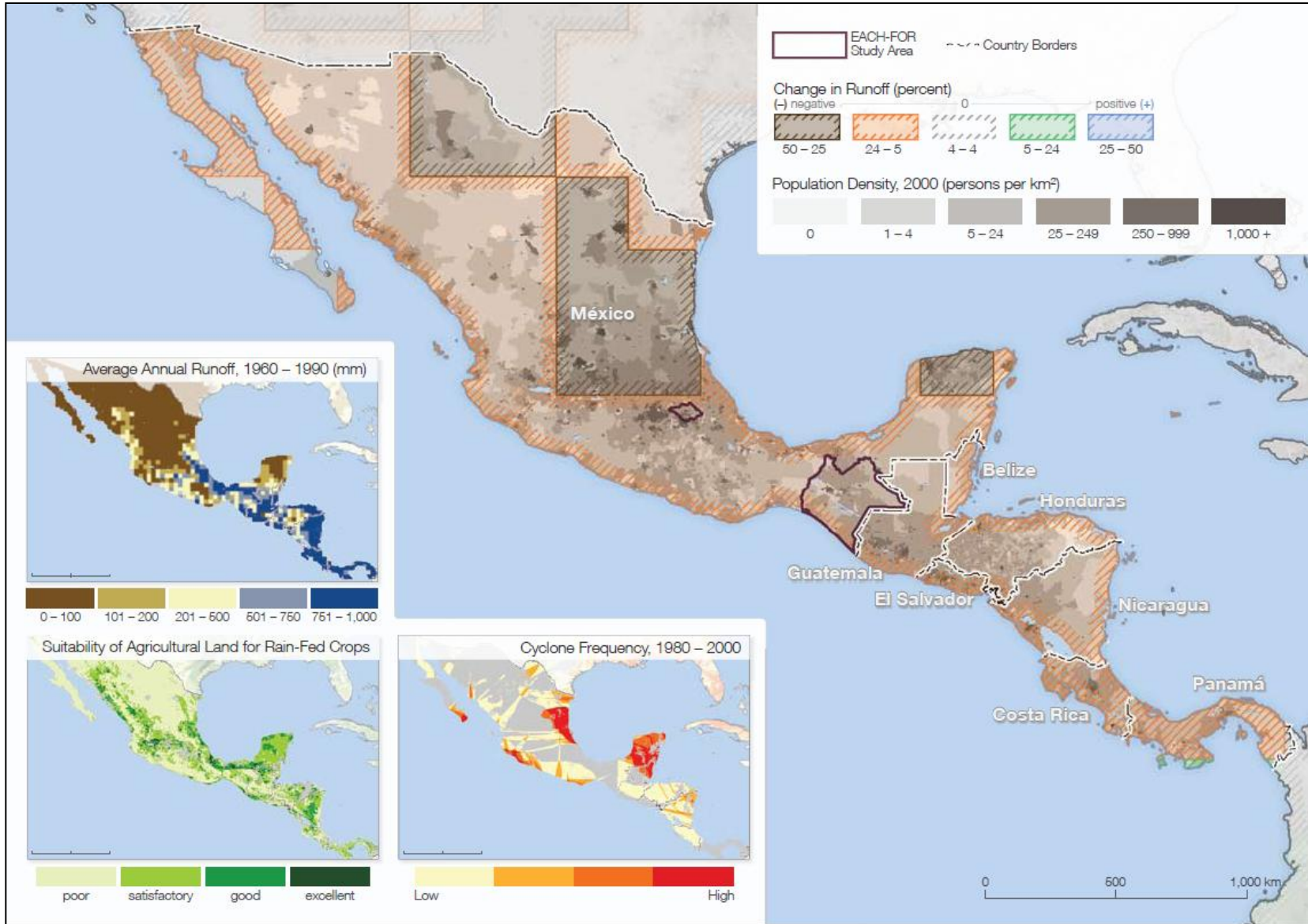
- Rainfall variability and changes in water availability (slow onset events)
 - Increases in areas affected by drought
 - Crop damage and failure, lower yields, livestock deaths, and wildfires;
 - Water stress
 - Food and water shortages, risk of malnutrition, risk of water and food-borne diseases
 - Water shortages for settlements and industry, reduced hydropower generation, increased population migrations
- Rising sea level (very slow onset)
 - Salinization of irrigation water
 - Saltwater intrusion of aquifers and coastal water sources
 - Risk of death from drowning
 - Movements of populations and infrastructure, high costs of relocation or armaments
- *Predicted impacts vary substantially by geographic location*

Rising sea level



Source: Warner, K., Erhart, C., de Sherbinin, A., Adamo, S.B., Chai-Onn, T.C. 2009. "In search of shelter: Mapping the effects of climate change on human migration and displacement." A policy Paper prepared for the 2009 Climate Negotiations. Bonn, Germany: United Nations University, CARE, and CIESIN-Columbia University and in close collaboration with the European Commission "Environmental Change and Forced Migration Scenarios Project", the UNHCR, and the World Bank. Pp. 14

Changes in water availability



Source: Warner, K., Erhart, C., de Sherbinin, A., Adamo, S.B., Chai-Onn, T.C. 2009. "In search of shelter: Mapping the effects of climate change on human migration and displacement." A policy Paper prepared for the 2009 Climate Negotiations. Bonn, Germany: United Nations University, CARE, and CIESIN-Columbia University and in close collaboration with the European Commission "Environmental Change and Forced Migration Scenarios Project", the UNHCR, and the World Bank. Pp. 6

Environmental displacement and climate change: what is known and what is expected

- Current underlying factors:
 - globalization
 - urbanization and population distribution
 - development status
 - current migration patterns/systems
- Overall, probability of displacement is higher in developing countries
 - Socioeconomic status as predictor, but the effect is not linear
- The direction of the flows is uncertain
 - Relevance of previous migration systems and networks

- Sea Level Rise:
 - the most certain impact leading to displacement and resettlement
 - it will worsen saline intrusions, inundation, storm surges, erosion, and other coastal hazards, the threat is particularly grave vis-à-vis island communities
 - different options for adaptation, including mobility
- Changes in rainfall/water availability:
 - key factors: disruption of livelihoods, progressive impoverishment, and general deterioration of population's living conditions

- **Some recent findings**

- Although economic and political factors are the dominant drivers of displacement and migration today, climate change is already having a detectable effect
- The breakdown of ecosystem-dependent livelihoods is likely to remain the premier driver of long-term migration during the next two to three decades. Climate change will exacerbate this situation
- Seasonal migration already plays an important part in many families' struggle to deal with environmental change. This is likely to become even more common, as is the practice of migrating from place to place in search of ecosystems that can still support rural livelihood

- **What is expected?**

- most environmentally induced migration would remain within national boundaries, particularly in the case of sea-level rise, eventually increasing the numbers of IDPs (internally displaced people)
- where international migration takes place, the direction of flows will likely be determined by prior migration ties between sending and receiving countries, and on political considerations within receiving countries
- international migration is highly likely and indeed may be the only option in the cases of small-island states (e.g. Tuvalu and Maldives) and of countries that share threatened coastal areas (e.g. India and Bangladesh)
- indirect effects are likely, linked to adaptation and mitigation infrastructure leading to displacement and resettlement:
 - Sea walls, dykes, freshwater injection facilities
 - Dams, irrigation works, water transfer schemes, desalination plants

A very brief comment about numbers

Selected estimated magnitudes of environmental displacement

Source	Climate Change Impact	Estimates
Myers (2002)	Droughts and other climate change events	50 million by 2050
Almería Statement on Desertification and Migration (1994)	Desertification	135 million
Myers (2002, 2005)	Sea level rise	162 million by 2050
McGranahan, Balk and Anderson (2007)	Sea level rise (10 meters)	634 million living below 10m sea level ca2000

- Often it is not known how these numbers were developed
- Available numbers tend to reflect populations at risk
- The consideration of different time ranges also makes comparisons difficult

In conclusion

- A complex issue, multiple aspects and determinants
- It is difficult to estimate future trends
- Climate change effects on population mobility: already detected and likely to increase
- Trans-disciplinary research on environmental displacement due to climate change events, as well as collaboration and interaction between the research, policy and relief communities have increased substantially

References:

- Adamo, S. 2003. *Vulnerable people in fragile lands: migration and desertification in the drylands of Argentina*. PhD Dissertation, University of Texas at Austin
- Adamo, S. 2008. *Addressing environmentally induced population displacements: a delicate task*. Background Paper for the Population-Environment Research Network Cyberseminar on “Environmentally Induced Population Displacements”, 18-29 August 2008 http://www.populationenvironmentresearch.org/papers/sadamo_pern2008.pdf
- Adamo, S. 2010. “Environmental migration and cities in the context of global environmental change”. *Current Opinion in Environmental Sustainability*. 2(3):161-165
- Adamo, S. and A. de Sherbinin (forthcoming). *The impact of climate change on the spatial distribution of populations and migration*. In UNDESA Population Division. Proceedings of the Expert Group Meeting on Population Distribution, Urbanization, Internal Migration and Development.
- Blaikie, P., T. Cannon, I. Davis, and B. Wisner. 1994. *At risk: natural hazards, people's vulnerability and disasters*. London ; New York : Routledge, 1994.
- Hewitt, K. 1997. *Regions of risk. A geographical introduction to disasters*. Longman
- Hugo, G.J., 1996. Environmental Concerns and International Migration, *International Migration Review*, 30, 1, pp. 105-131
- Laczko, F. and C. Aghazarm, eds. 2009. *Migration, environment and climate change: assessing the evidence*. Geneva: IOM, UNU-EHS, CCEMA, Rockefeller Foundation; 2009. http://publications.iom.int/bookstore/free/migration_and_environment.pdf
- Meze-Hausken, E. 2000. Migration caused by climate change: how vulnerable are people in dryland areas? A case study in Northern Ethiopia. *Mitigation and Adaptation Strategies for Global Change*, 5(4)
- Warner, K., Erhart, C., de Sherbinin, A., Adamo, S.B., Chai-Onn, T.C. 2009. *In search of shelter: Mapping the effects of climate change on human migration and displacement*. Policy Paper prepared for the 2009 Climate Negotiations. Bonn, Germany: UNU, CARE, and CIESIN-Columbia University and in close collaboration with the European Commission “Environmental Change and Forced Migration Scenarios Project”, the UNHCR, and the World Bank. www.ciesin.columbia.edu/documents/ClimMigr-rpt-june09.pdf - 2009-12-04