

XXVI IUSSP International Population Conference
Marrakech, 27 September – 2 October 2009

Plenary Session on Population and Climate Change

CLIMATE CHANGE - POPULATION INTERACTIONS: A SPATIAL AND REGIONAL PERSPECTIVE

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Overview

- Spatial dimension refers to:
 - variability across space;
 - the effects of scale;
 - the significance of place.
- Focus of this presentation:
 - distribution of hazards, population settlement, and demographic processes.
 - implications of the regional/local variability for vulnerability to climate changes impacts

Spatial dimension in the IPCC's Forth Assessment Report

- About drivers and impacts:
 - The socio-economic processes that drive land-use change include population growth, economic development, trade and migration; these processes can be observed and measured at global, regional and local scales.
 - At a regional and sub-regional scale, vulnerabilities can vary quite considerably.
- About scale:
 - Aggregation, whether by region, sector, or population group, implies value judgments about the selection, comparability and significance of vulnerabilities and cohorts. ***The choice of scale at which impacts are examined is also crucial***, as considerations of fairness, justice or equity require examination of the distribution of impacts, vulnerability and adaptation potential, not only between, but also within, groupings.

Uneven distribution on both sides of the equator

- Environmental hazards, including climate-change related ones, are not evenly distributed across the globe, they happen in specific locations.

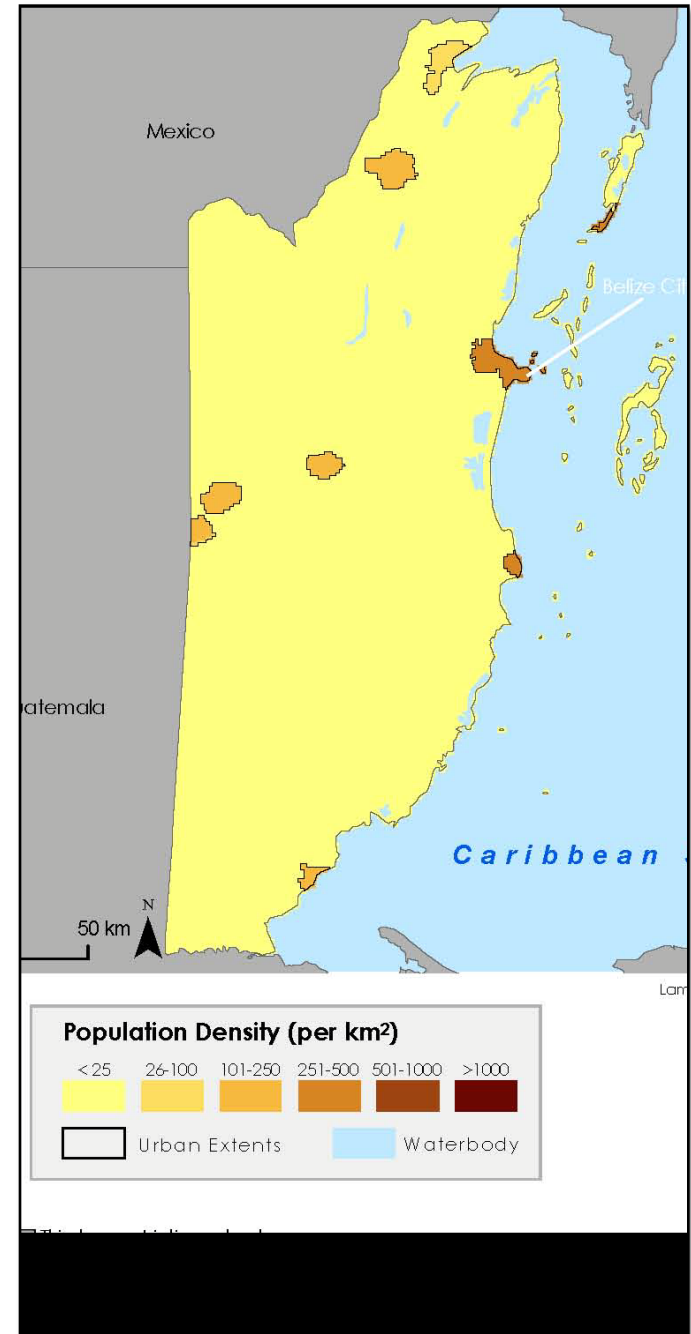


Belize: Low elevation coastal zone

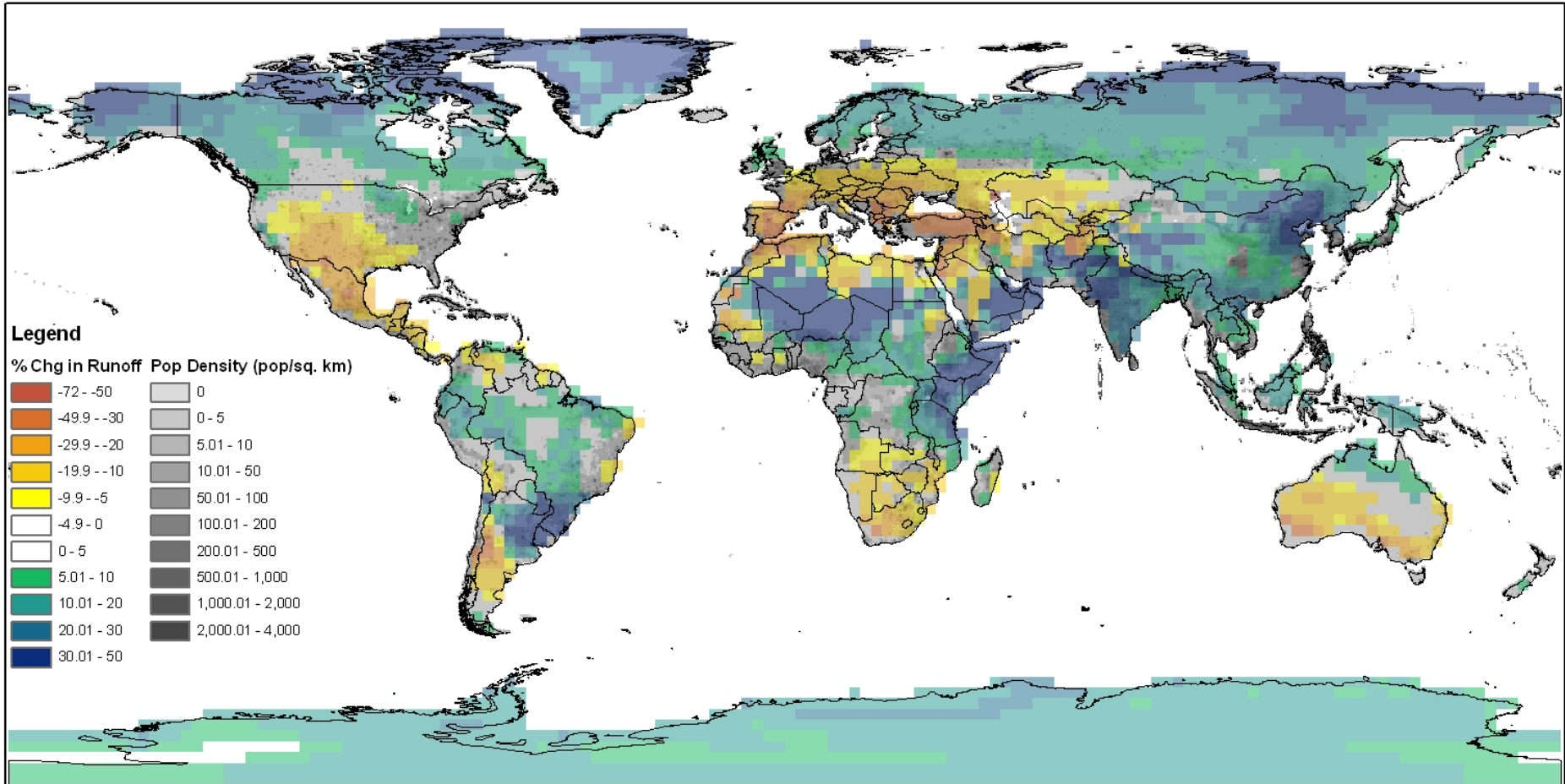
Uneven distribution of both sides of the equation

- Population distribution is also uneven.
 - older adaptations to change and stress;
 - diverse habitability of Earth's biomes;
 - particular settlement history;
 - regional variations in demographic dynamics.

Belize: population density, 2000



Percent change in runoff overlaid on population distribution

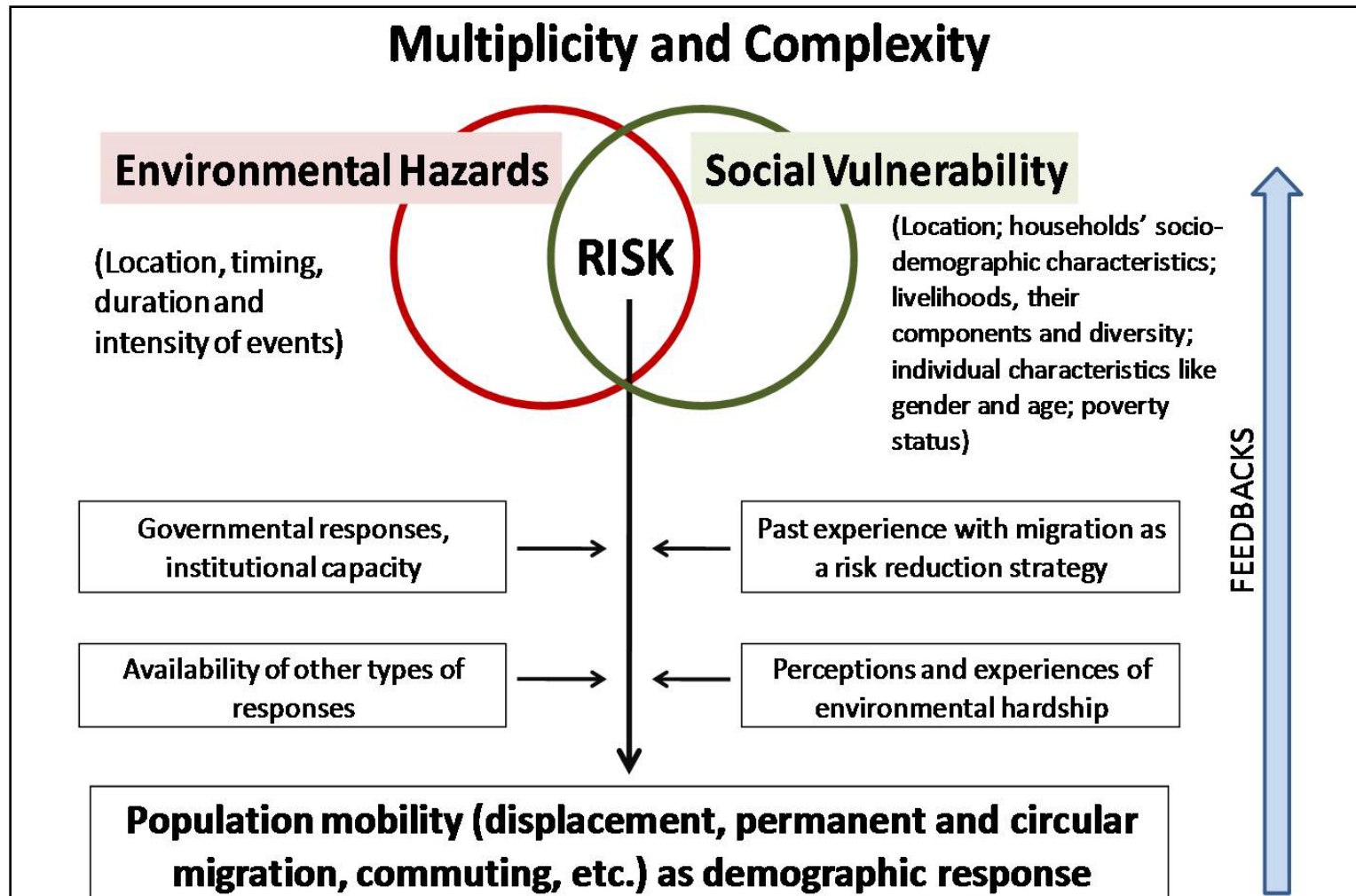


Elaborated by A. de Sherbinin based on Nohara et al. 2006. "Impact of climate change on river runoff. *Journal of Hydrometeorology* 7: 1076-1089; and CIESIN and CIAT. 2005. Gridded Population of the World Version 3 (GPWv3) (<http://sedac.ciesin.columbia.edu/gpw>)

Local implications of the coupled distribution of populations and hazards

- The uneven distribution of natural environments, housing and other elements of the economic and social structure --like infrastructure or economic opportunities-- precede the actual occurrence of the climatic event, laying down the foundations for the risk of being affected by climate changes events.
- The external dimension of vulnerability: someone or something is exposed to hazards or risk just for being present at the place and time of occurrence of the particular hazard.
- Vulnerability varies across space and over time.
- The actual and expected distributions of the impacts of climate change –global, regional, local– are heterogeneous, embedded in contexts and history, for example prior stresses, level of development, or political institutions.

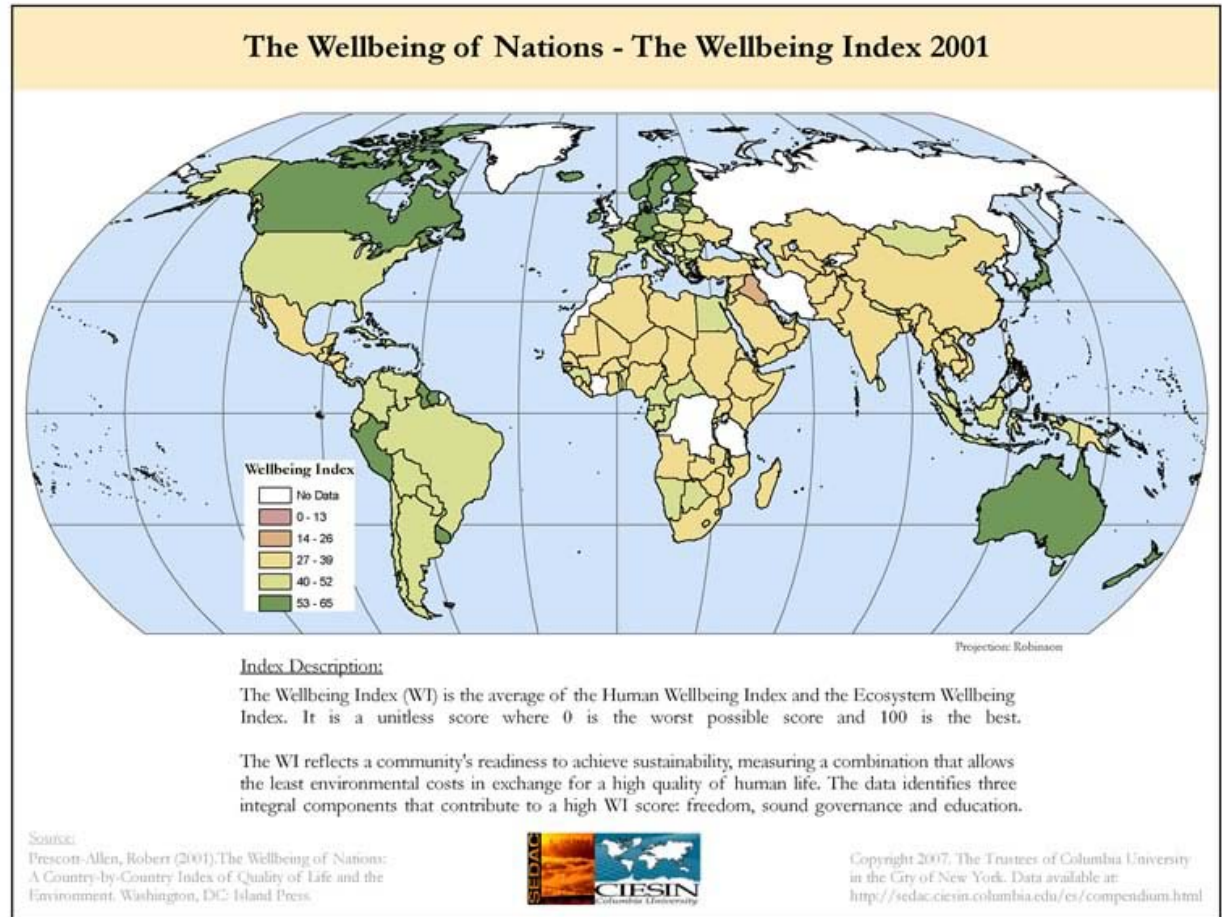
Migration as response to environmental hardship



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*.

The country level: governance and preparedness

- Countries differ in their ability for coping with and adapting to climate change and its effects.
- Country-level differences are superimposed to the local and regional variations.
- Policy issues.



Final remarks

- Regional diversity is built into the mechanisms that link climate change processes and population dynamics.
- Uneven distributions requires regional, national and ***subnational*** approaches for understanding and addressing these processes in order to take into account the dynamics.
- Future scenarios exercises need to consider the background, antecedents and different contexts of population-environment interactions.
- This will present large challenges in terms of conceptual frameworks, data requirements and integration, and the use of geographic information systems.

Thank you