

Human Dimensions of Climate Change (Dimensões Humanas das Mudanças Climáticas)

Internacional
Mudanças

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Research Questions

- **How could human interference with climate change be mitigated and how can impacts and risks be reduced and managed through adaptation, mitigation and resilience?**
- **Which could be the key impacts on humankind by climate change, especially on women: collapse of ecosystem services, yield reduction and loss of food security, lack and polluted water, reduction of firewood, hot and polluted air in urban areas, new epidemics and reinforcement of existing health problems, and forced migration, when confronted with a survival dilemma among vulnerable people?**

2. How are the human dimensions interrelated to the natural conditions in the Anthropocene?



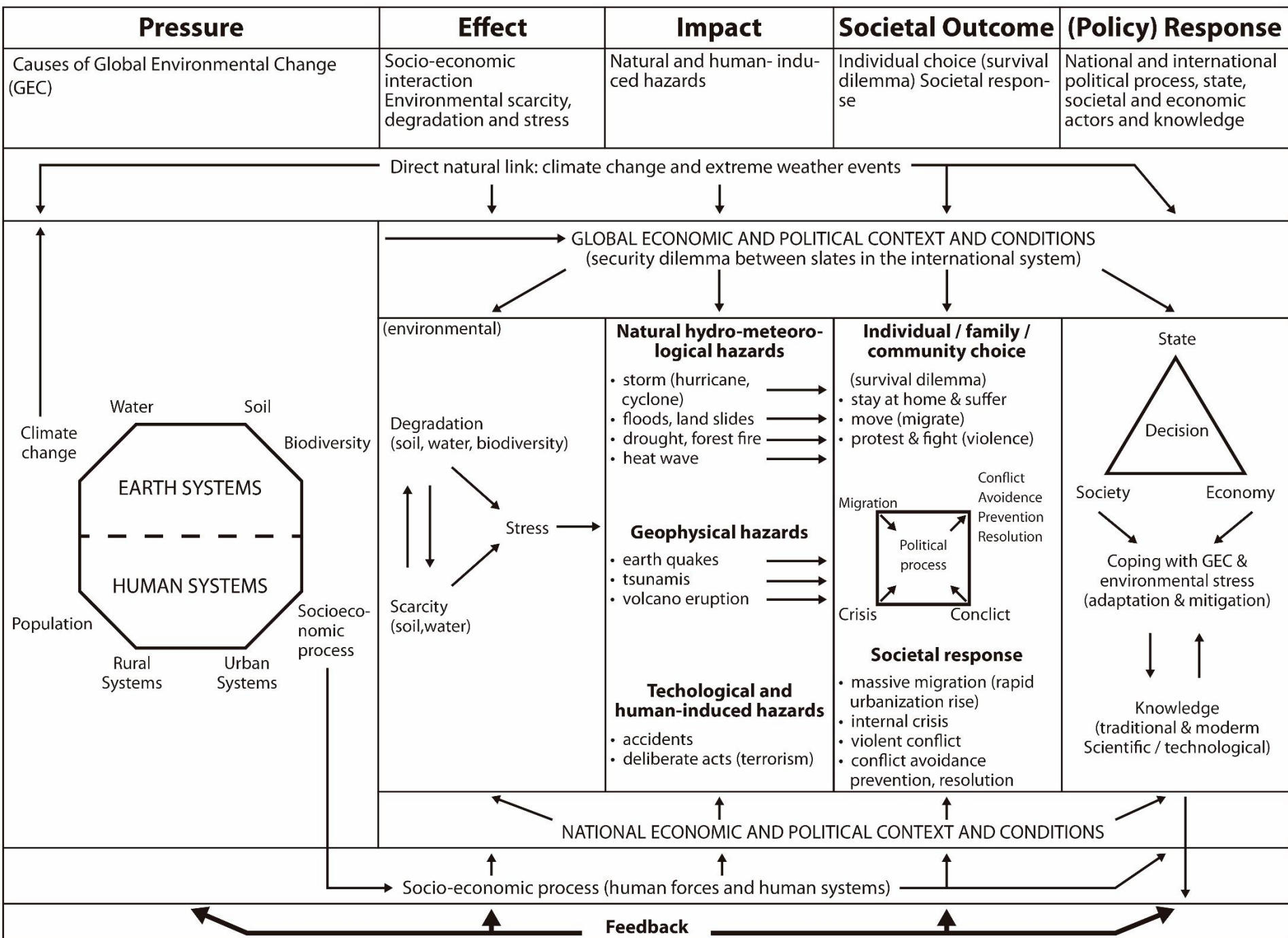
2. Global Environmental Change (GEC)

Ecosphere

Anthroposphere



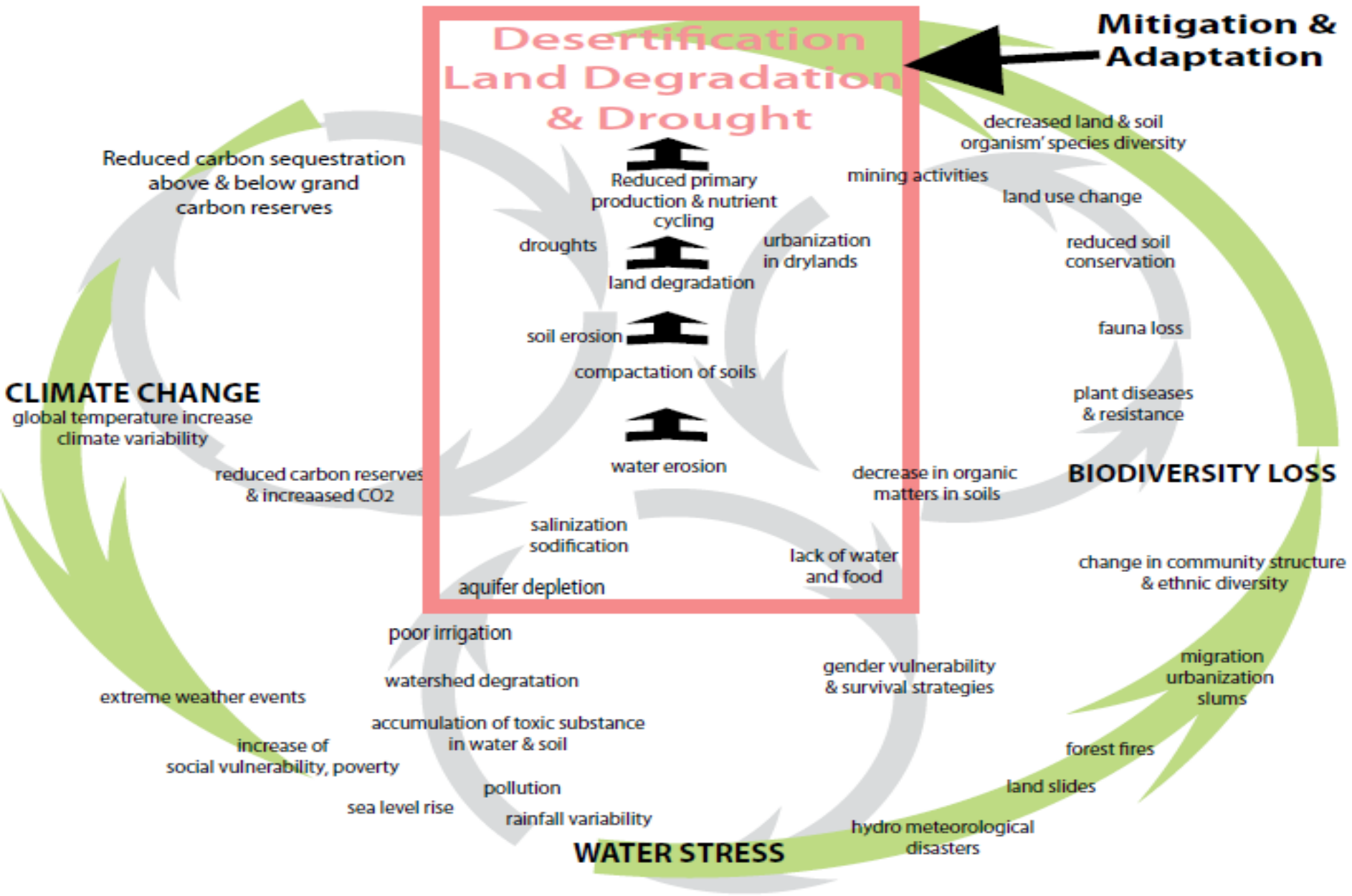
GEC poses threats, challenges, vulnerabilities and risks for international, national and human security and survival



3. Interactions and feedbacks between the natural and the human system



3. Interactions and feedbacks between the natural and the human system



4. Human security and climate change

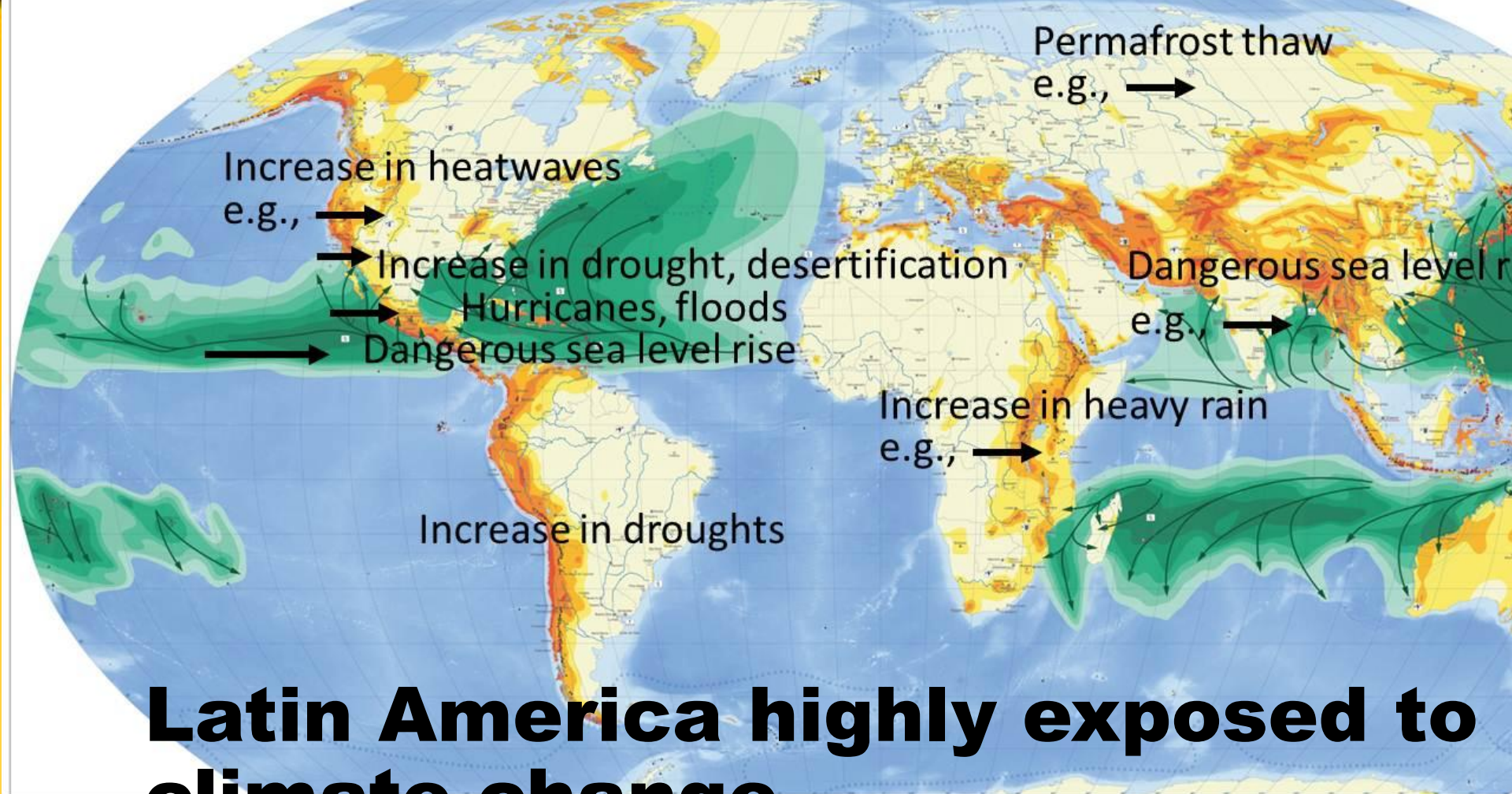


4.1 What is human security (Brauch, 2005, 2009, Oswald 2011)

1. “***Freedom from fear***” which reduce the dangers of being killed by landmines, small arms and natural conditions that force people to migrate (UNESCO, HSN) Canadian Approach: Human Security Report
2. “***Freedom from needs***” which limits the social vulnerability through poverty reduction, respect for human rights and equality and equity policies (PNUD 1994, CHS 2003: Ogata / Sen: Human Security Now) Japanese Approach;
3. “***Freedom from disasters***”, which reduced social vulnerability and the possibility of extreme natural events become social disasters (Bogardi / Brauch 2005; Brauch 2005a, 2005b; Oswald 2008, 2010, 2011, 2013); UNU (EHS) approach
4. “***Living with dignity and in a state of law***” (Kofi Annan in his report: In Larger Freedom (March 2005), UN Approach: rule of law, human rights, equity, empowerment.

4.2 How is human security affected by climate change

- Human security identifies the **risks climate change poses to livelihoods, cultures, indigenous peoples, women, governance, and political stability**. Migration and violent conflicts increase vulnerability to climate change, as well as highlight that migration plays a role in adaptation.
- Human security and insecurity are **universal issues**. While the impacts of climate change on human security will be experienced **most in developing countries**, human security is at risk for **vulnerable populations everywhere**, especially for **women and girls** in developing countries.
- Understanding the effects of climate change on human security analyses evidence **about social, political, cultural, and environmental processes across multiple scales and sectors**.
- Some transboundary impacts of climate change, such as changes in sea ice, shared water resources, and pelagic fish stocks, have the potential to increase rivalry among states, but robust national and **intergovernmental institutions can enhance cooperation and manage many of these rivalries**.



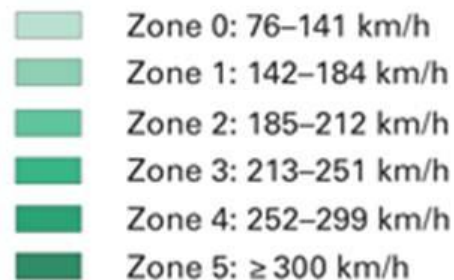
Latin America highly exposed to climate change

Earthquakes



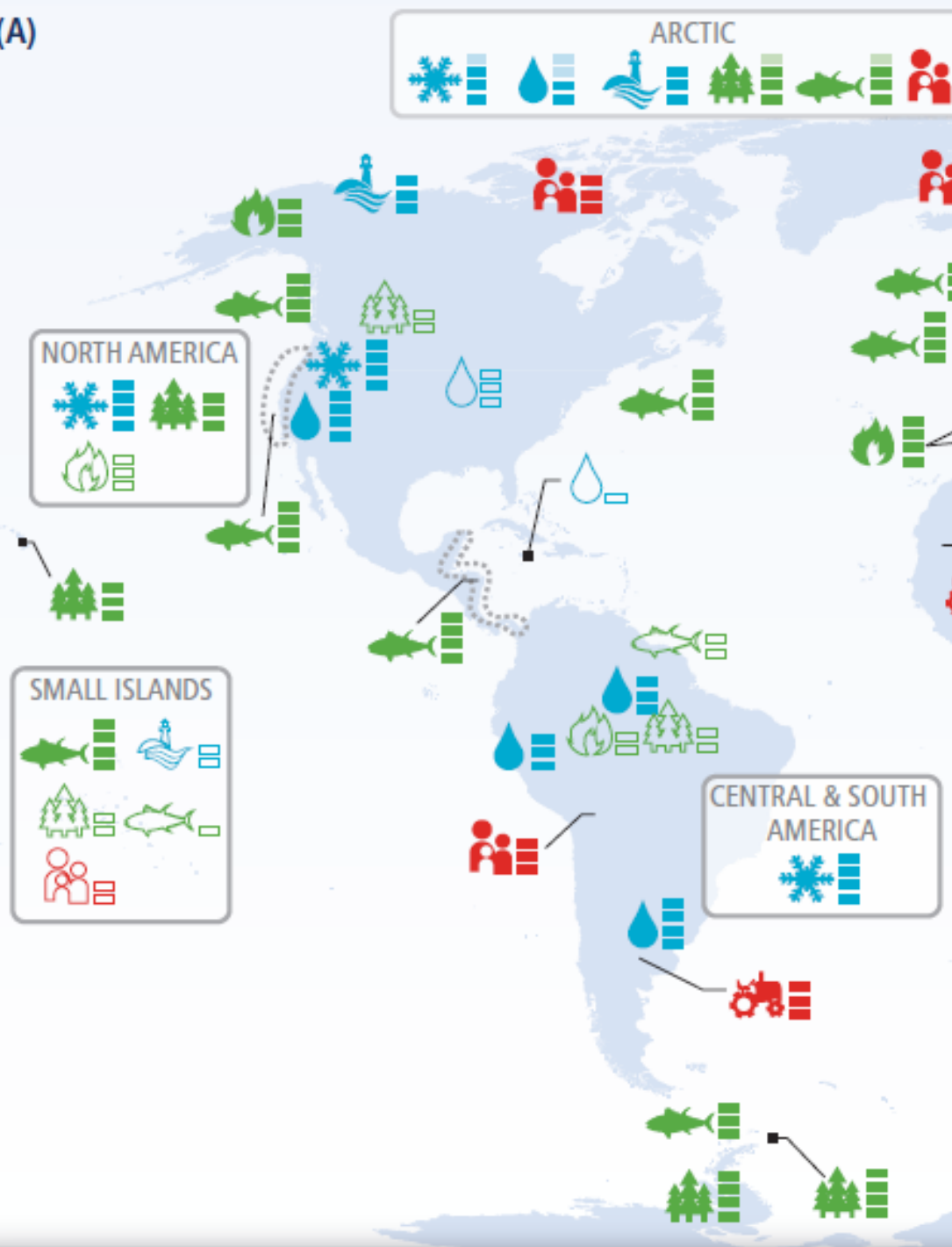
MM: modified Mercalli scale

Tropical Hurricanes



MunichRe, 2008

(A)



Climate change and global impacts in the physical, biological and human system in LA

Physical systems

		Glaciers, snow, ice, and/or permafrost
		Rivers, lakes, floods, and/or drought
		Coastal erosion and/or sea level effects

Biological systems

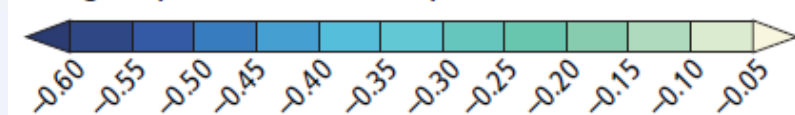
		Terrestrial ecosystems
		Wildfire
		Marine ecosystems

Human and managed systems

		Food production
		Livelihoods, health, and/or economics

IPCC, 2014

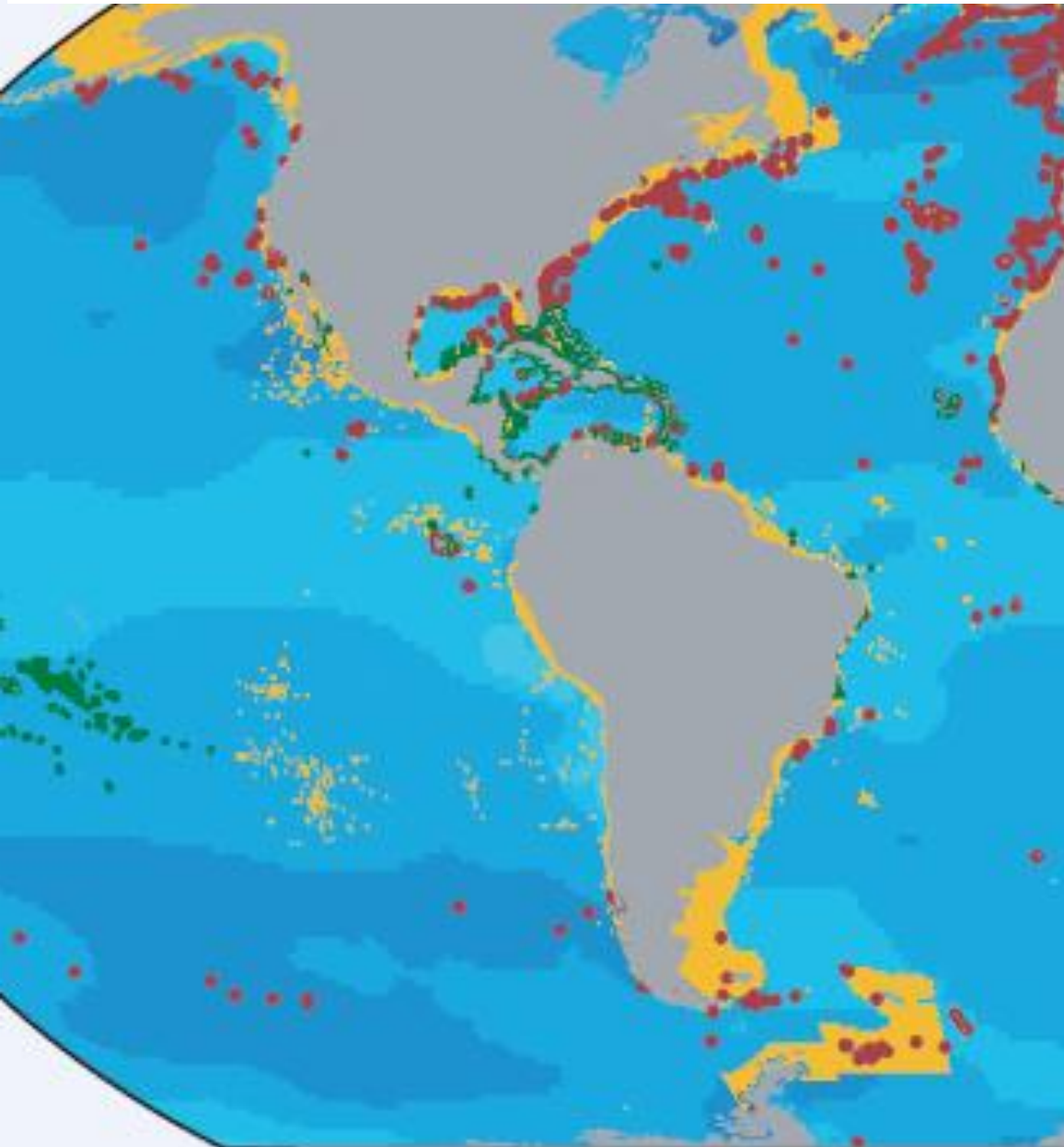
Change in pH (2081–2100 compared to 1986–2005, RCP8.5)



Mollusk and crustacean fisheries
(present-day annual catch rate ≥ 0.005 tonnes km^{-2})

Cold-water
corals

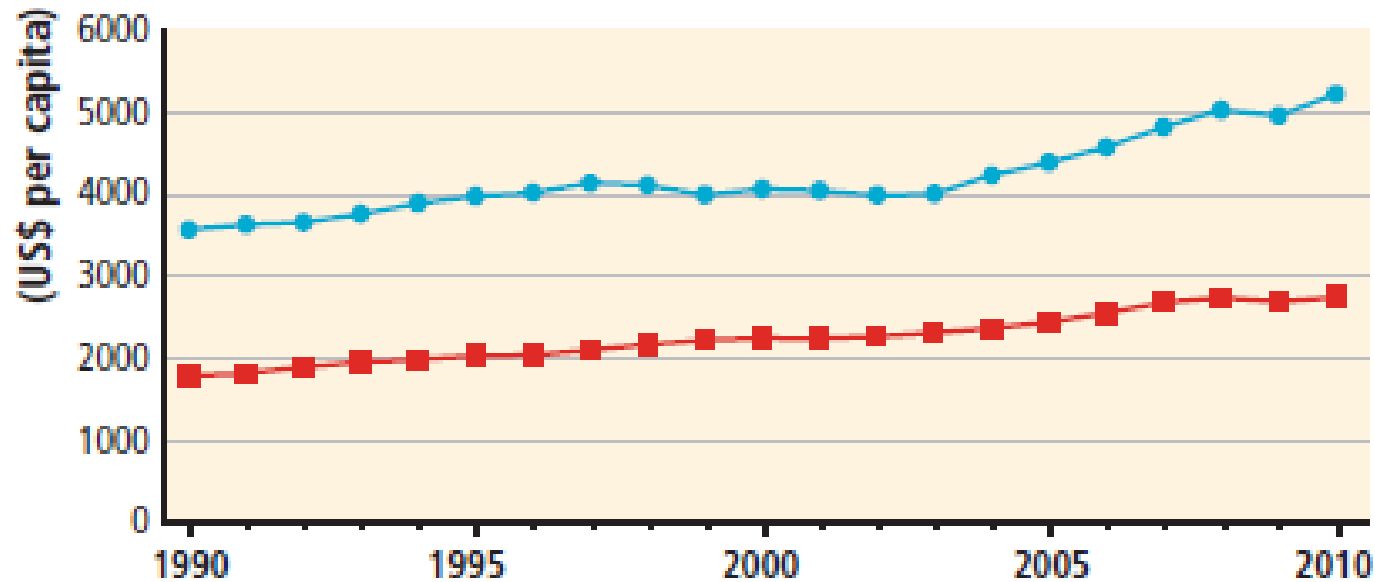
Warm-water
corals



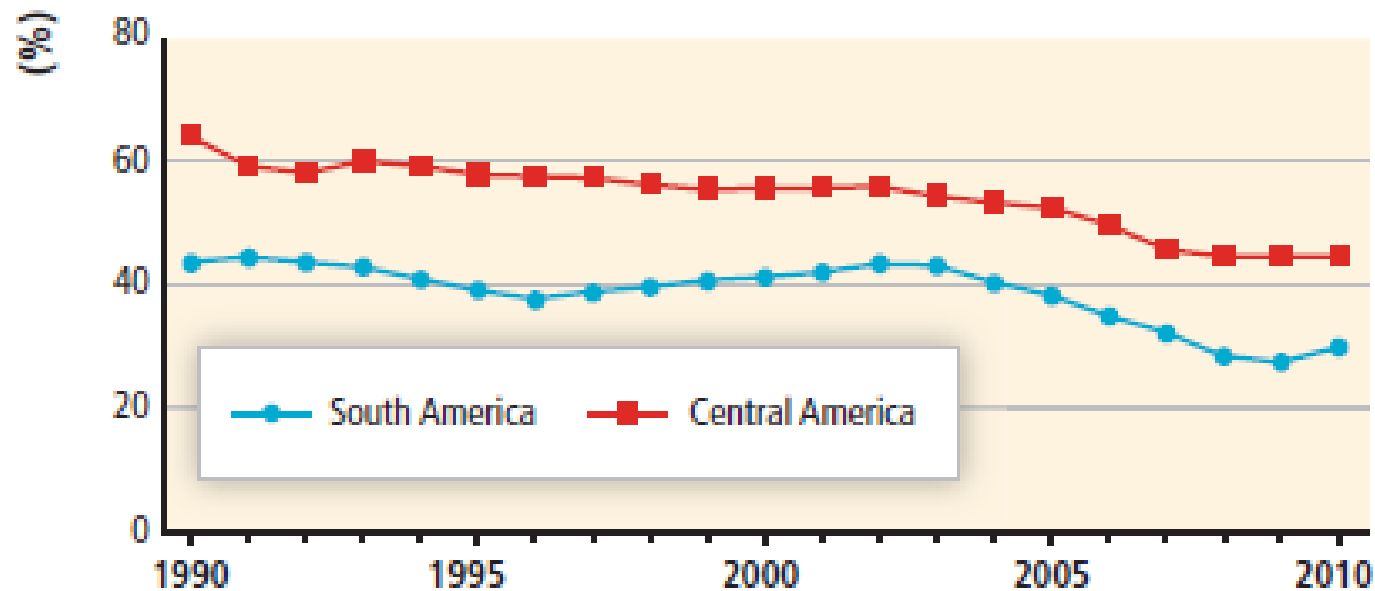
Impacts of CC in coral reefs, mollusks and crustaceans in Latin America

IPCC, 2014

(a) GDP per capita



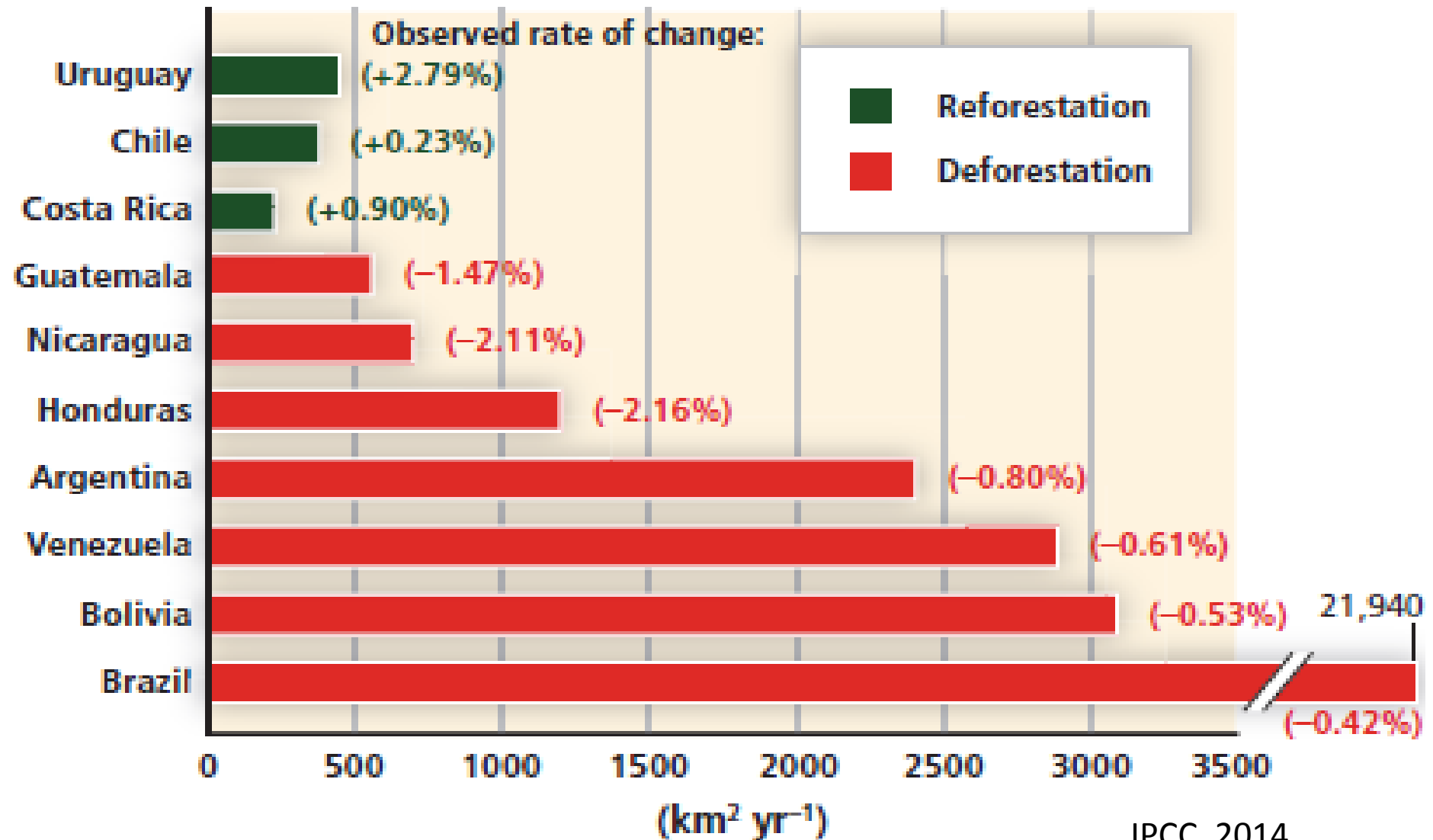
(b) % poverty



**GDP/cap
growth
and
poverty
allevia-
tion in
Latin
America**

- **Human security will be progressively threatened as the impacts of climate change are stronger.**
- **Climate change will compromise the cultural values that are important for community and individual wellbeing.**
- **Indigenous, local and traditional forms of knowledge are a major resources for adapting to climate change.**
- **Climate change will have significant impacts on forms of migration that compromise human security and wellbeing.**
- **Mobility is a widely used strategy to maintain livelihoods in response to social and environmental changes, often letting the most vulnerable (women, children, elderly) behind.**
- **Some of the factors that increase the risks of violent conflict within states are sensitive to climate change.**
- **People living in places affected by violent conflict are particularly vulnerable to climate change, food scarcity and loss of livelihood.**
- **Climate change will lead to new challenges to states and will increasingly shape both conditions of security and national security policies, but also human and gender security.**

Deforestation/ reforestation



Multiple stressors

Climate change

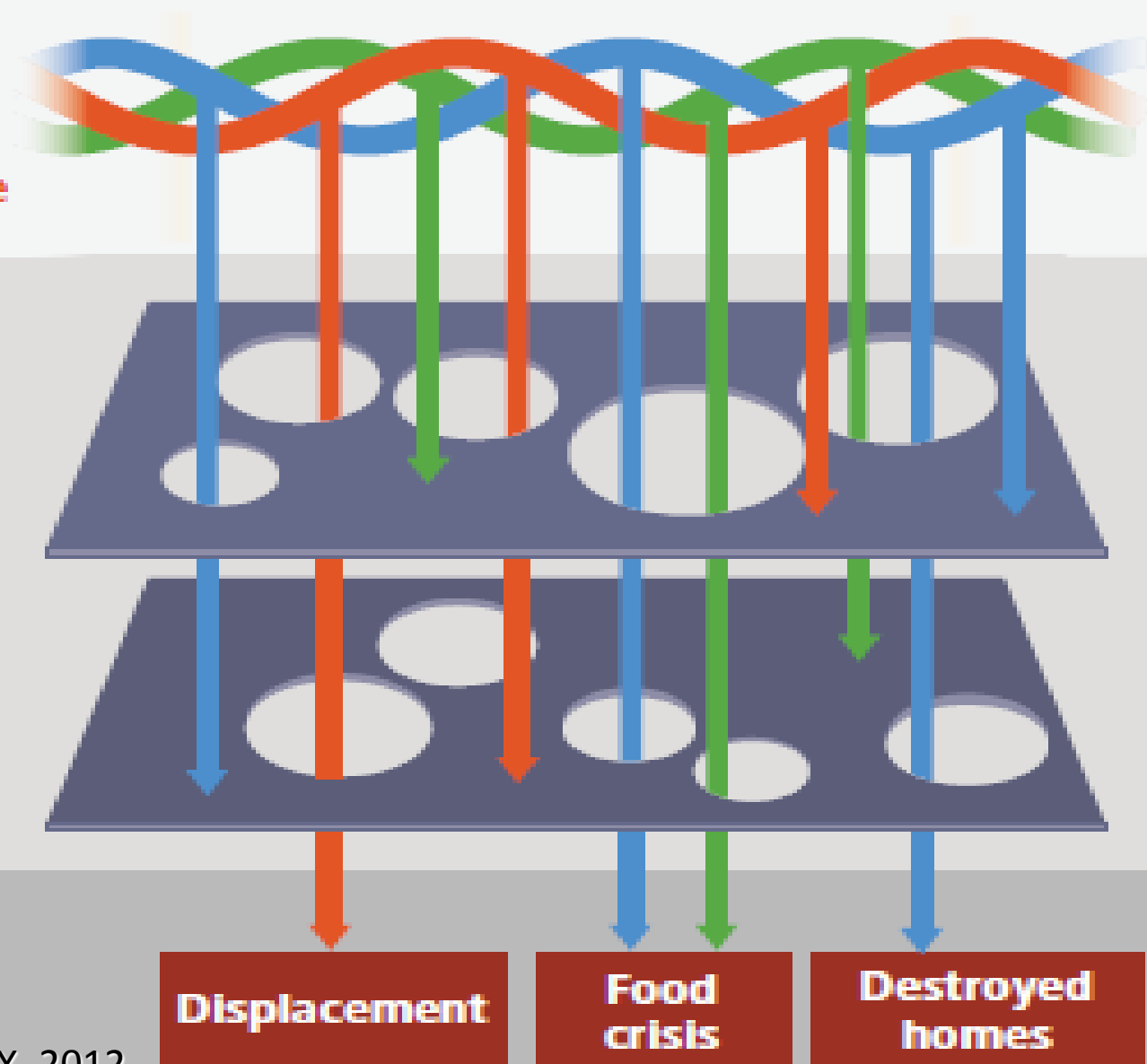
Globalizations

Technological change

Institutions such as:

- Social protection
- Relief organizations
- Disaster prevention

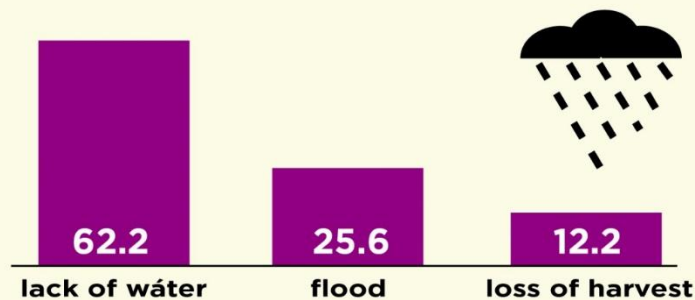
Livelihoods



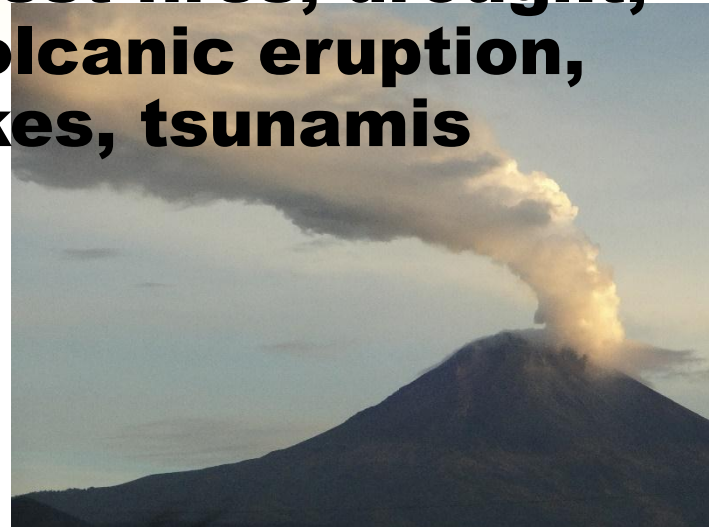
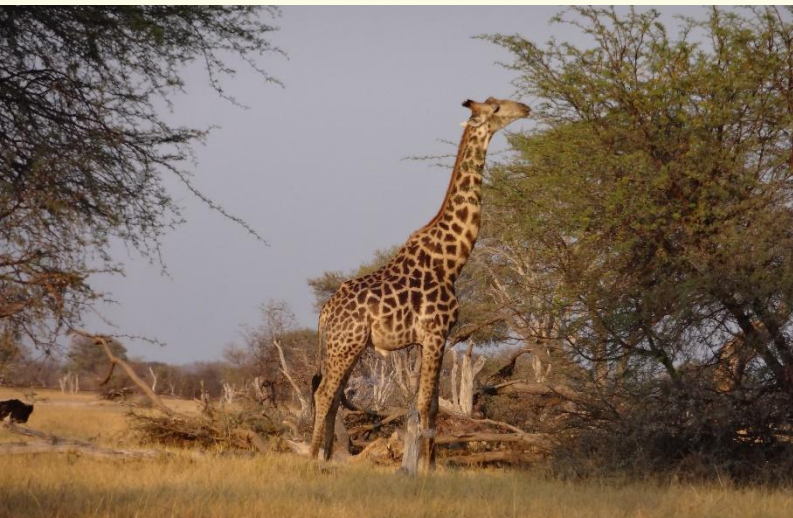
IPCC-SREX, 2012



Risks

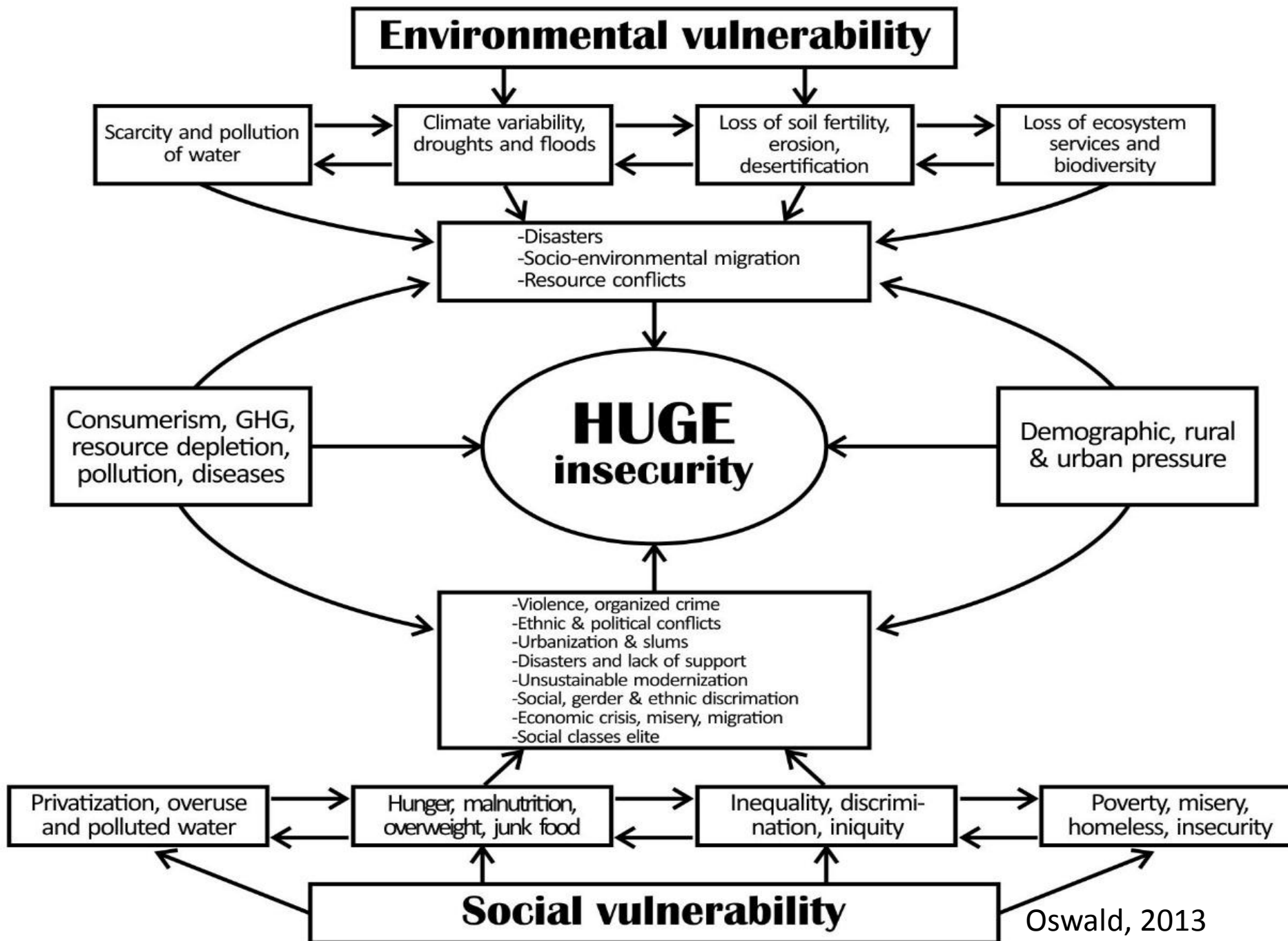


Multiple risks: flood, landslides, forest fires, drought, hunger, volcanic eruption, earthquakes, tsunamis



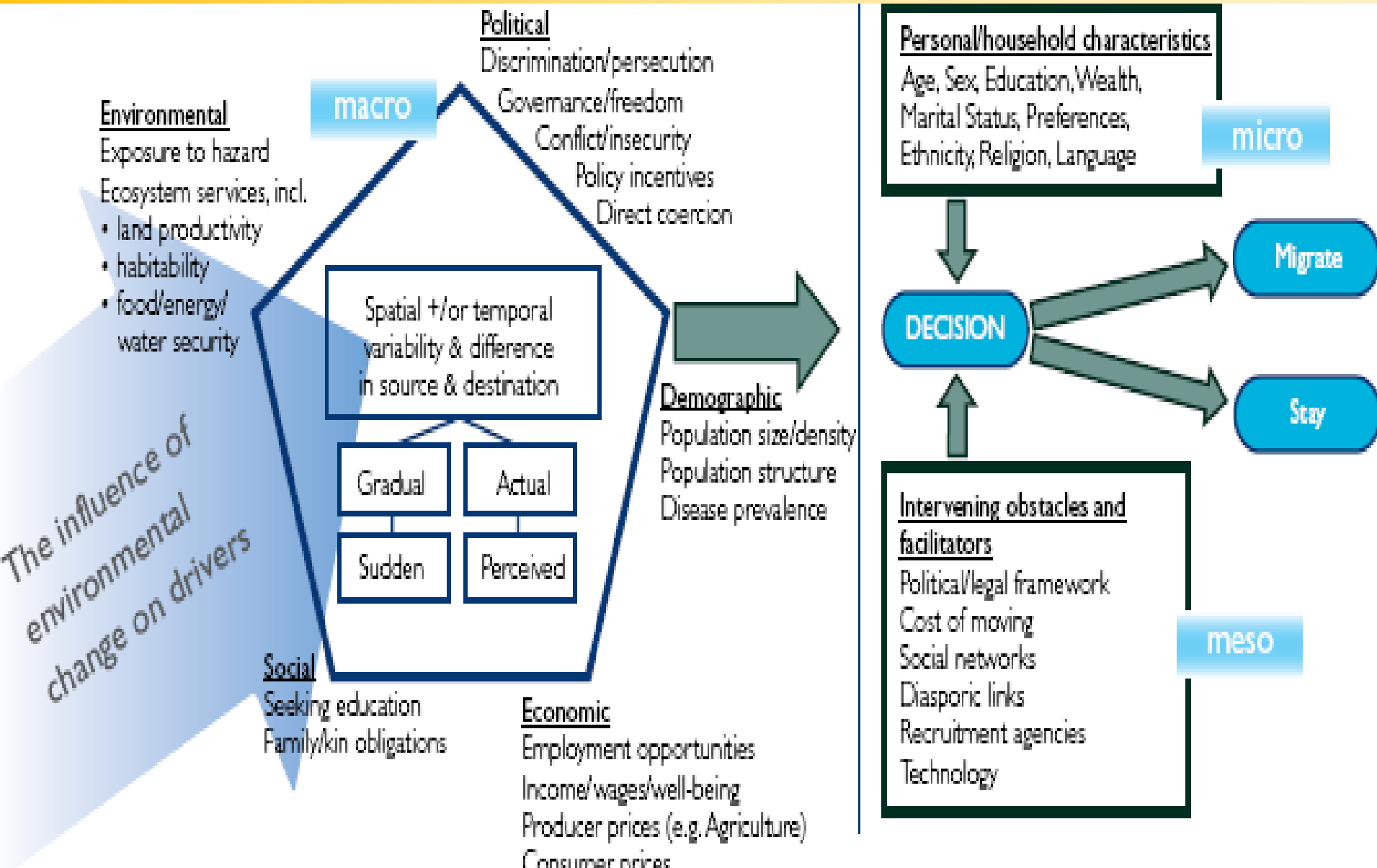
4.3 Social vulnerability With a gender perspective



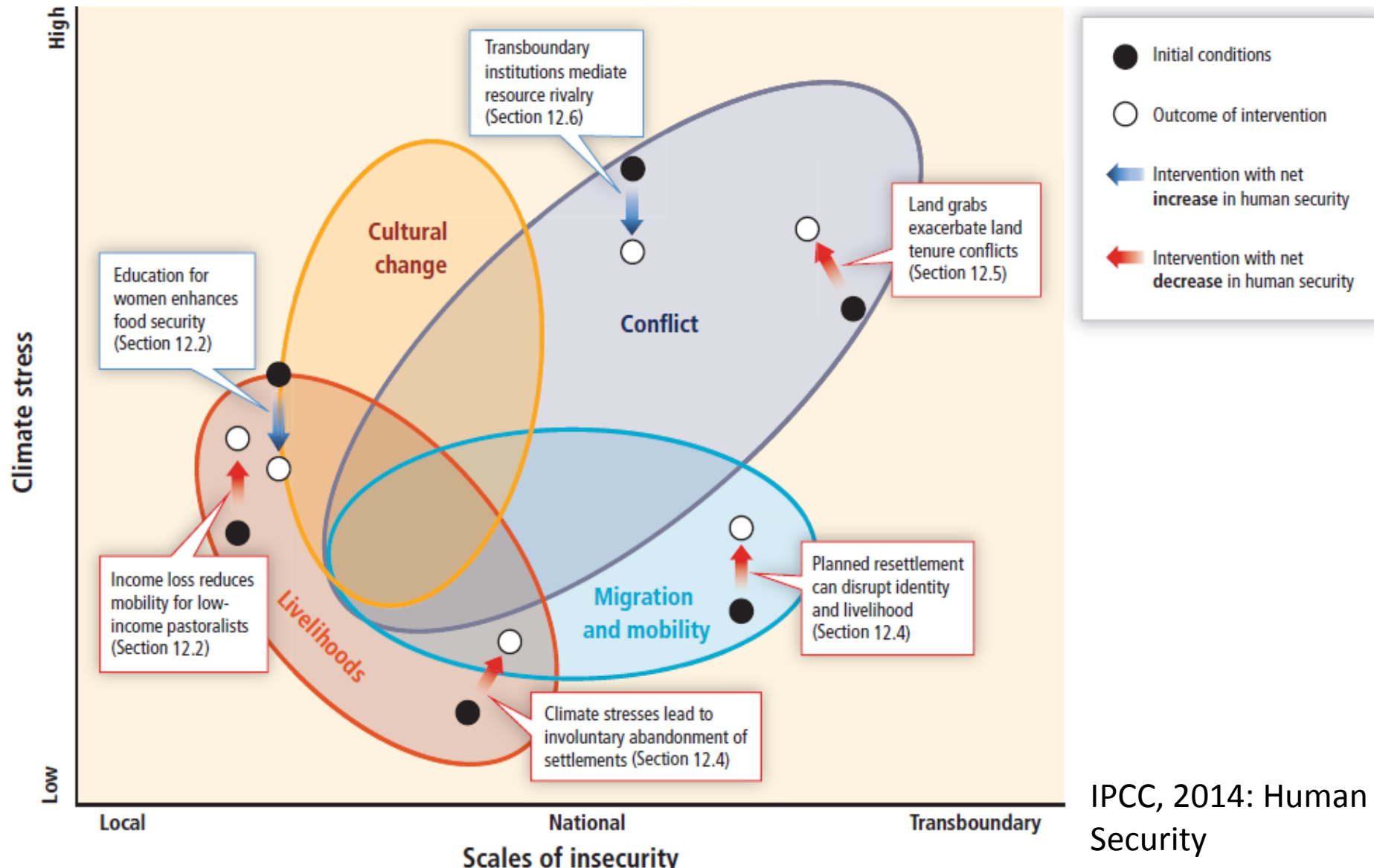


4.4 Climate-induced migration

Source: UK Government Office for Science (2011: 12)



4.5 Climate change and conflicts affecting human & gender security



Primary Actors

INTERNATIONAL

- Bilateral and multilateral partners
- Intergovernmental organizations

NATIONAL / SUB-NATIONAL

- National government and statutory agencies
- Civil society organizations
- Private sector
- Research and communication bodies
- Local government agencies

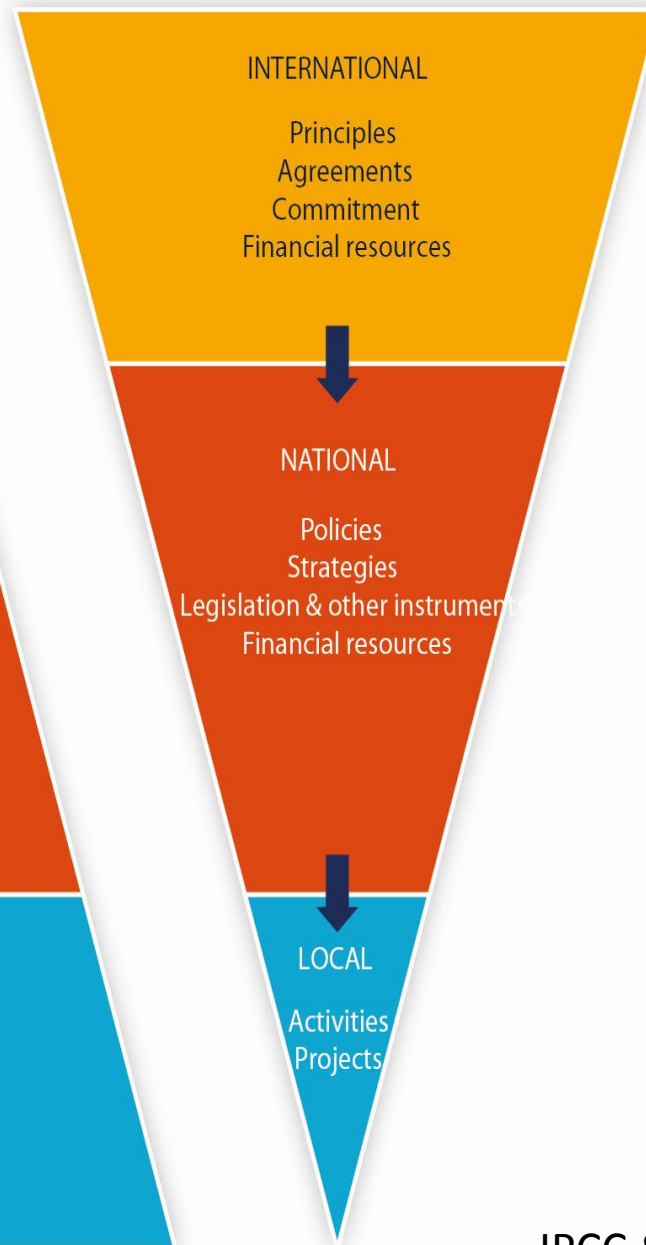
LOCAL

- Individuals, households, and communities
- Private sector
- Community-based organizations
- Faith-based organizations

"BOTTOM-UP" Functions



"TOP-DOWN" Functions



Global Climate
Projections

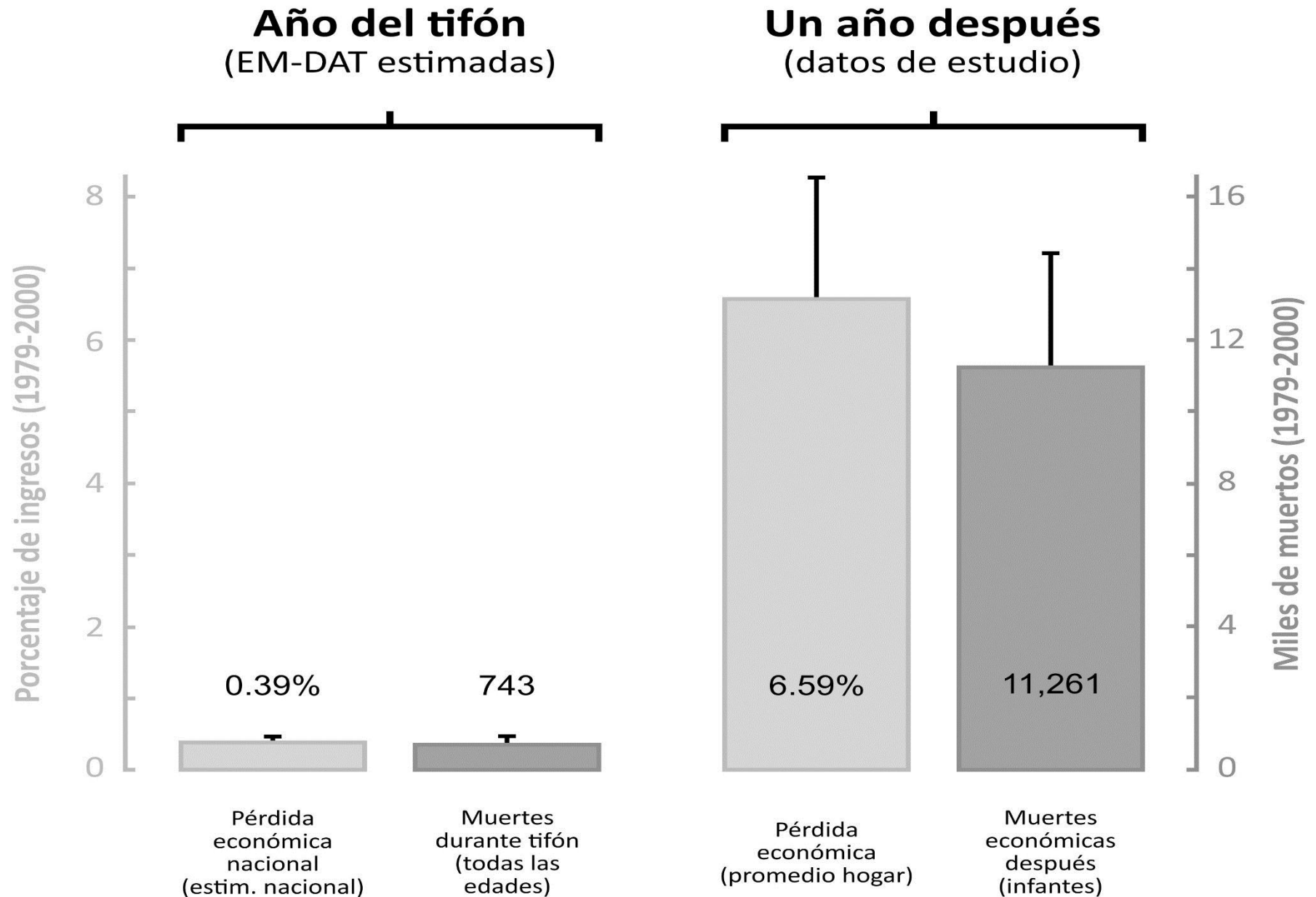
Regional / National
Climate Projections

Scientific and Local
Experiential
Knowledge

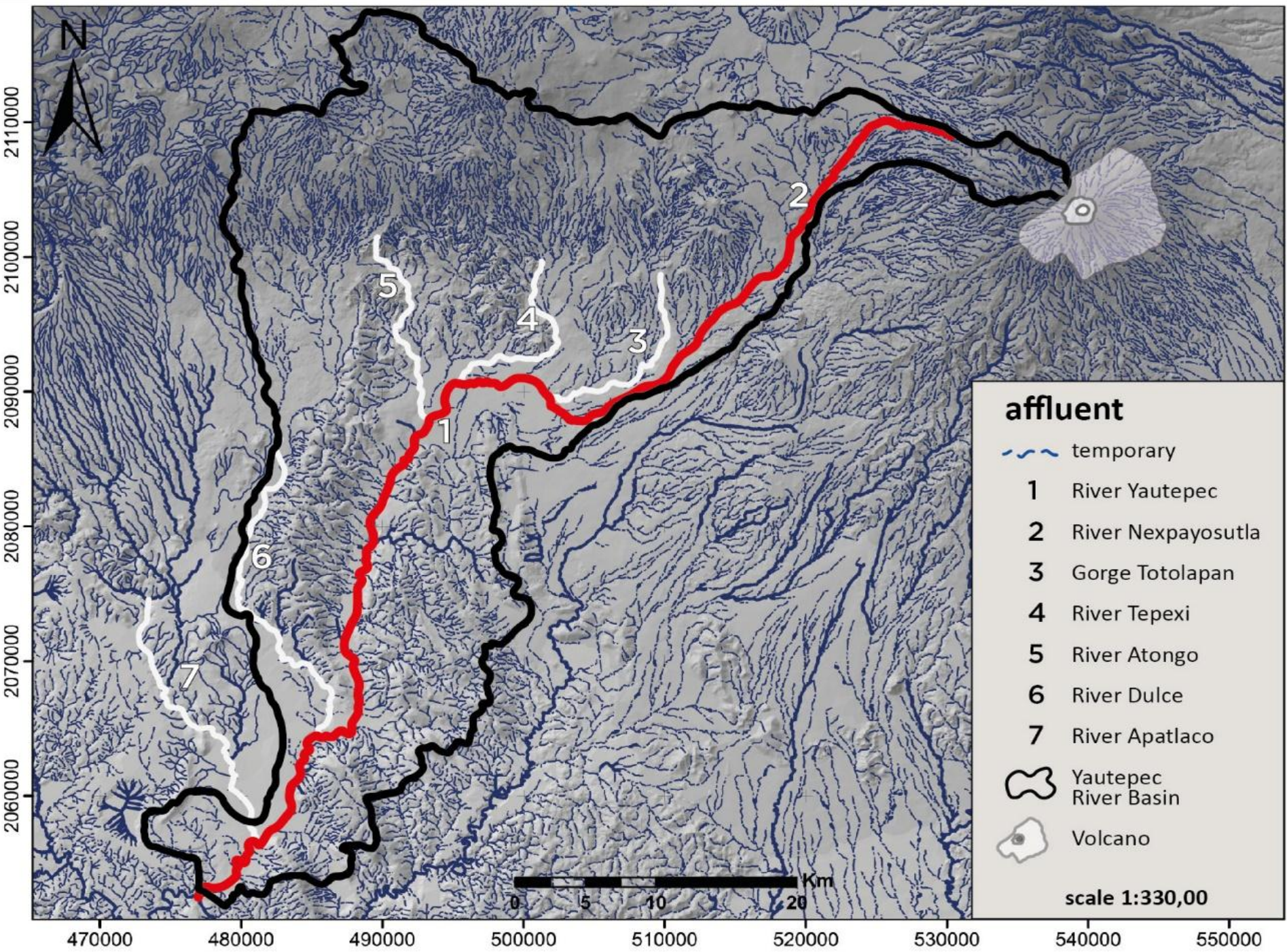
Vulnerability,
Risk, and Adaptation
Assessments

2 years after 1 typhoon 15x more baby girls are dead

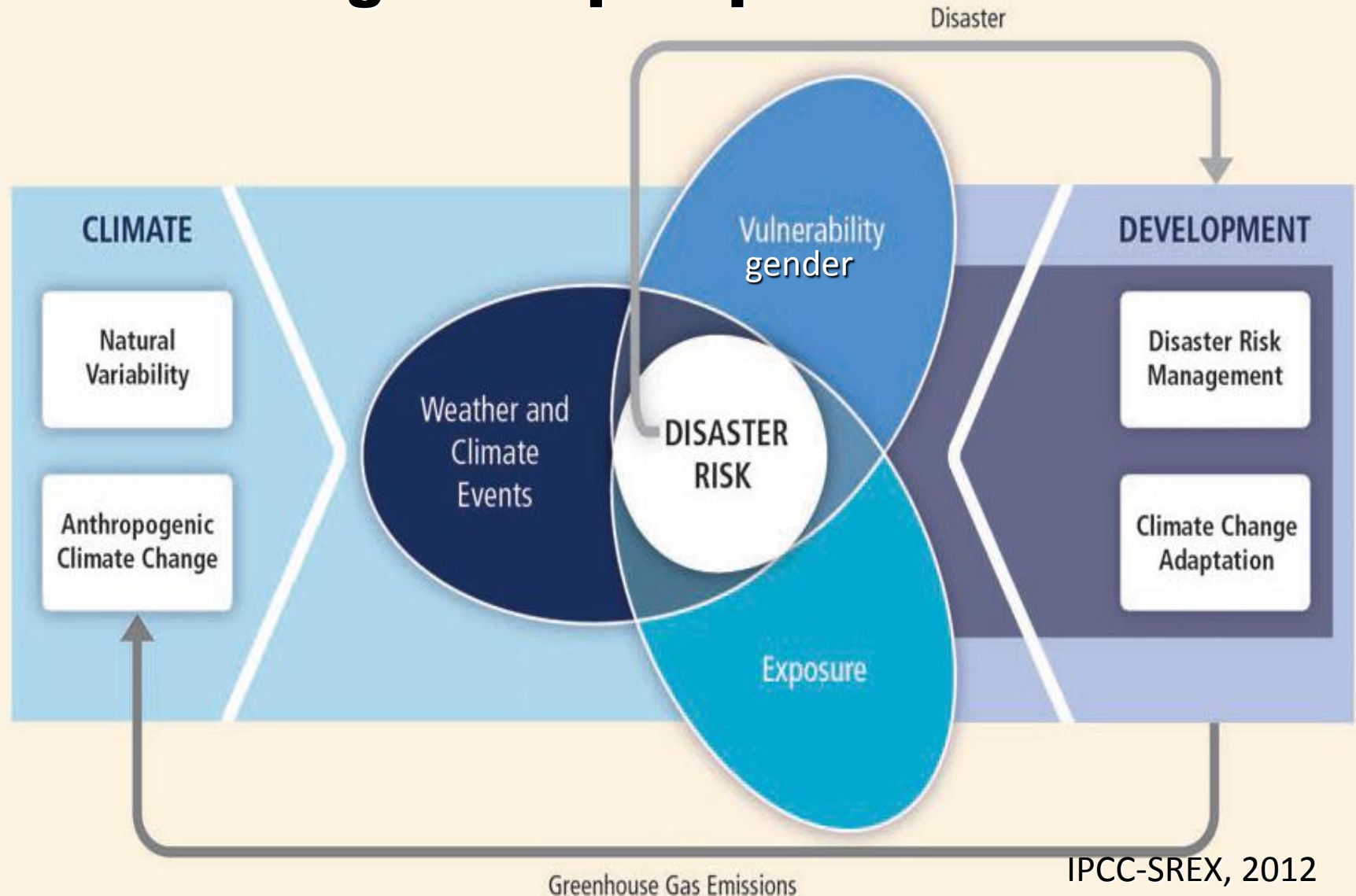
(Anttila-Hughes, Jesse K./Solomon M. Hsiang (2013)).



Information: info@www.vallentail.com



5. Conclusion: Integration of 3 epistemic communities: DRR, CC & development with a gender perspective



MITIGATION ADAPTATION

RENEWABLE ENERGY & WATER MANAGEMENT

Science & Technology

Finances

Institutional Consolidation

Citizen Participation

Photovoltaic/Thermosolar
Tidal
Geothermal
Wind

IWRM
Aquifers

Traditional knowledge
Ecosystem services
Soil management
Wetland
Coastal areas

**EXTREME
EVENTS &
DISASTERS**

**CC
GEC**

Social vulnerability

(Population growth, migration, gender discrimination, unemployment, poverty, hunger, violence, land grabbing, war, crime, minorities, exclusive globalization, economic crisis, inequity, lack of governance)

Environmental vulnerability

Loss of biodiversity & ecosystem services, scarcity & pollution of water, loss of soil fertility, desertification, temperature rise, heatwaves, storms, hurricanes, precipitation change, monsoon alteration, drought, sandstorms, sea level rise, glacier melting, vector-borne diseases

RESILIENCE

DEVELOPMENT

Sustainable Development Goals

GDP per capita

Wellbeing

Food sovereignty

Water security

Energy security

Health security

Employment

Water management

Culture

Social fabric

Conflict resolution

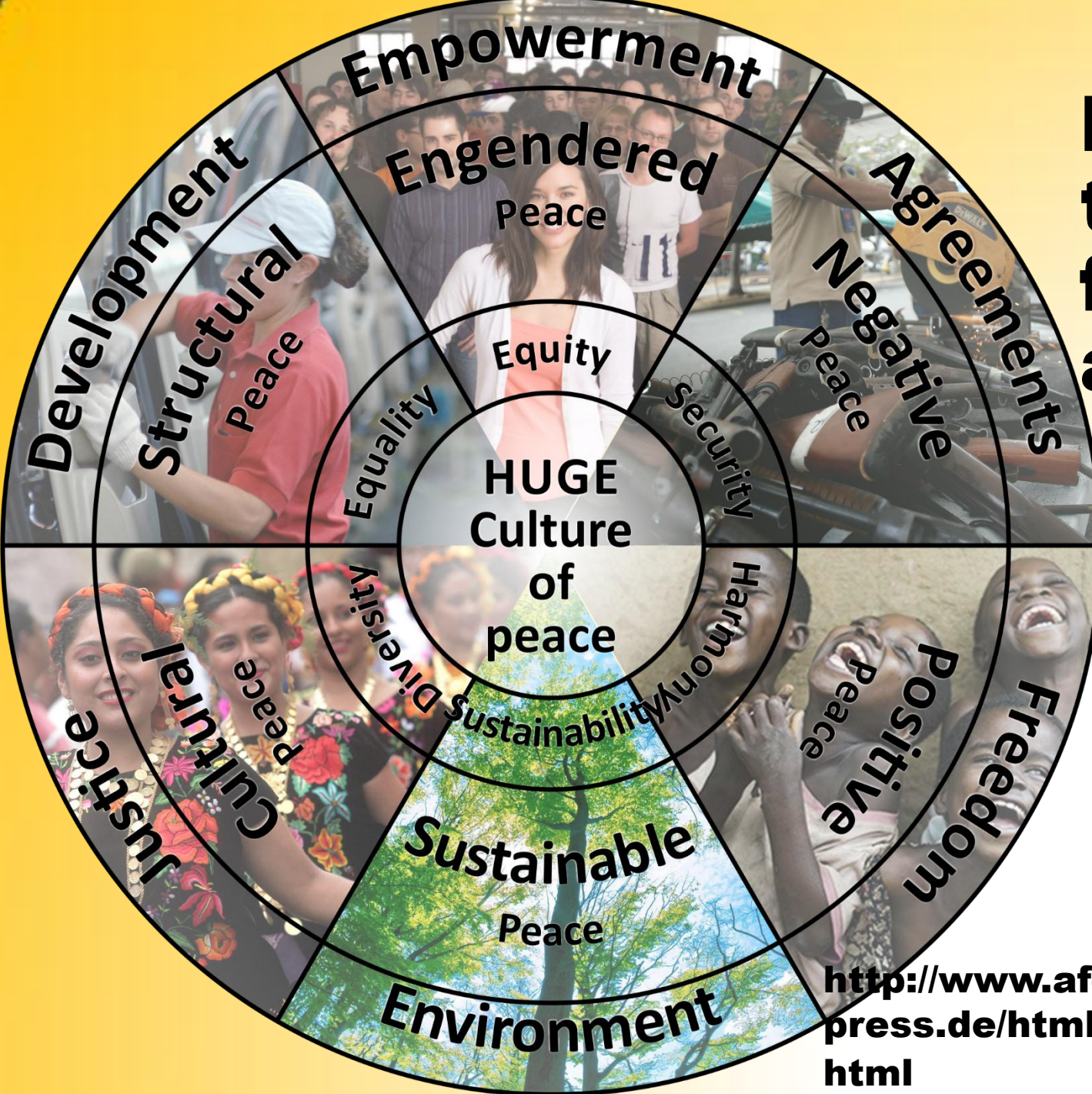
Sustainable consumption

Renewable energy

Ecosystem restoration

Human solidarity

Transparency in knowledge and finances



**Many
thanks
for your
attention**

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