Úrsula Oswald Spring
Regional Centre of Multidisciplinary Research, CRIM-UNAM
Univertsity of Chulalongkorn, Project: DGAPA- IN300213
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6. How are local and global DRR and DRM (management) related to resilience-building?

What is resilience?

Resilience

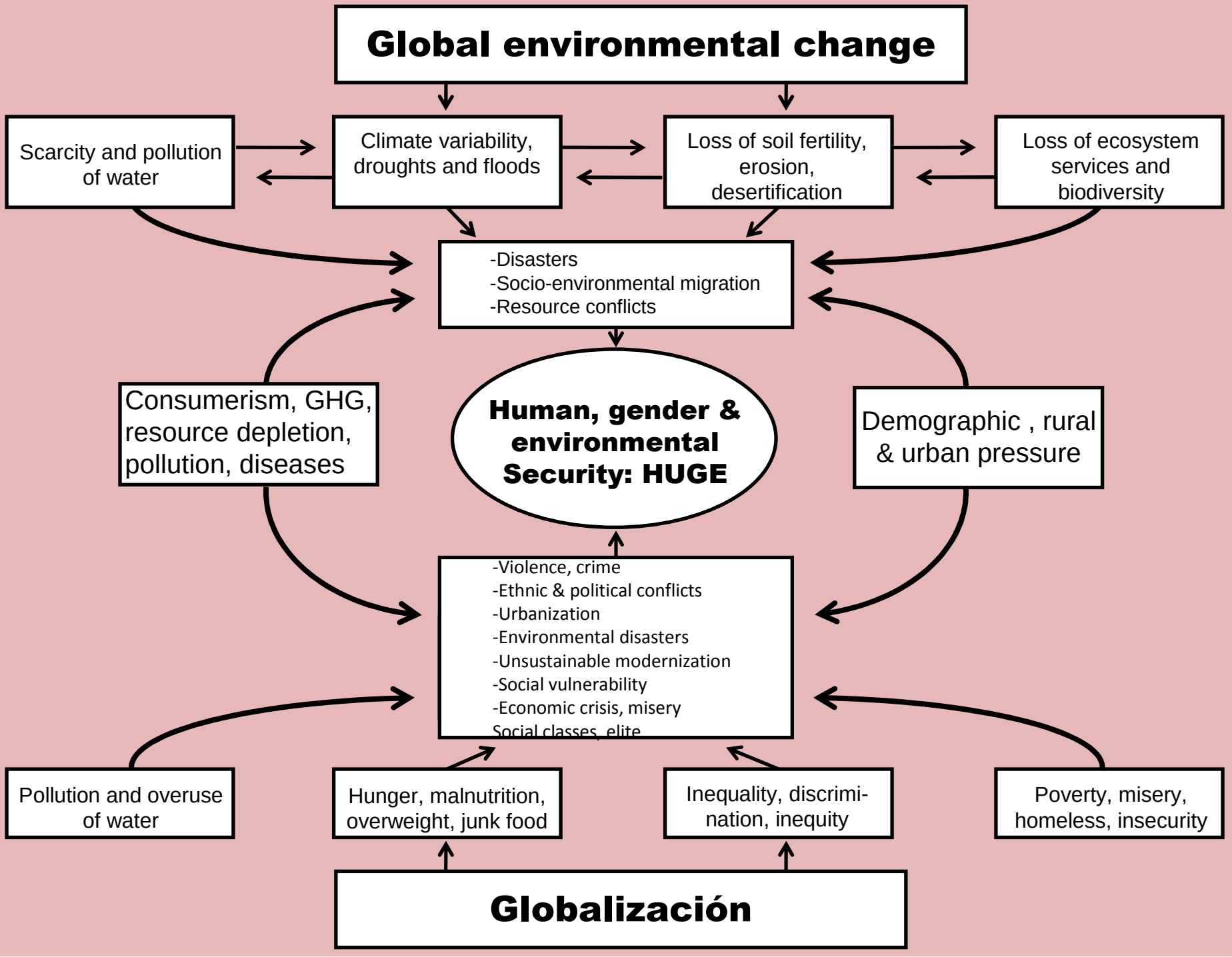
Resilience is the **social capacity** and **ability** to **anticipate, reduce, accommodate, and recover** from the effects of an extreme or a hazardous event in relatively **short term** and in **an efficient manner**. Often a resilient society is **better organized** and **prepared after** an natural event has occurred and can **anticipate future extreme** events with better **preparedness** and less **human**, **natural** and **financial losses**. Resilience mange better hazards and avoids disasters.

- Resilience means in Latin *resilio*, referring to “return from a leap, jump, rebound”, and in common acceptation “elasticity”.
- In physic it represents the capacity of a material to recover the same form after having been exposed to extreme pressures.
- In the social field it refers to the “human capacity which permits persons after having passed through adverse situations to be not only safe but also transformed through this experience”
- Gloria Laengle defines it as “the capacity of human being to overcome difficulties and at the same time learning from the errors”.
  Ángela Quintero refers to “the capacity of a family to adapt and reconstruct from the adverse situation.”
- Helena Combariza defines human resilience as the capacity of an individual or social system to live well and develop positively, irrespective of the difficult conditions that could oblige them to reinforce or transform such adverse conditions

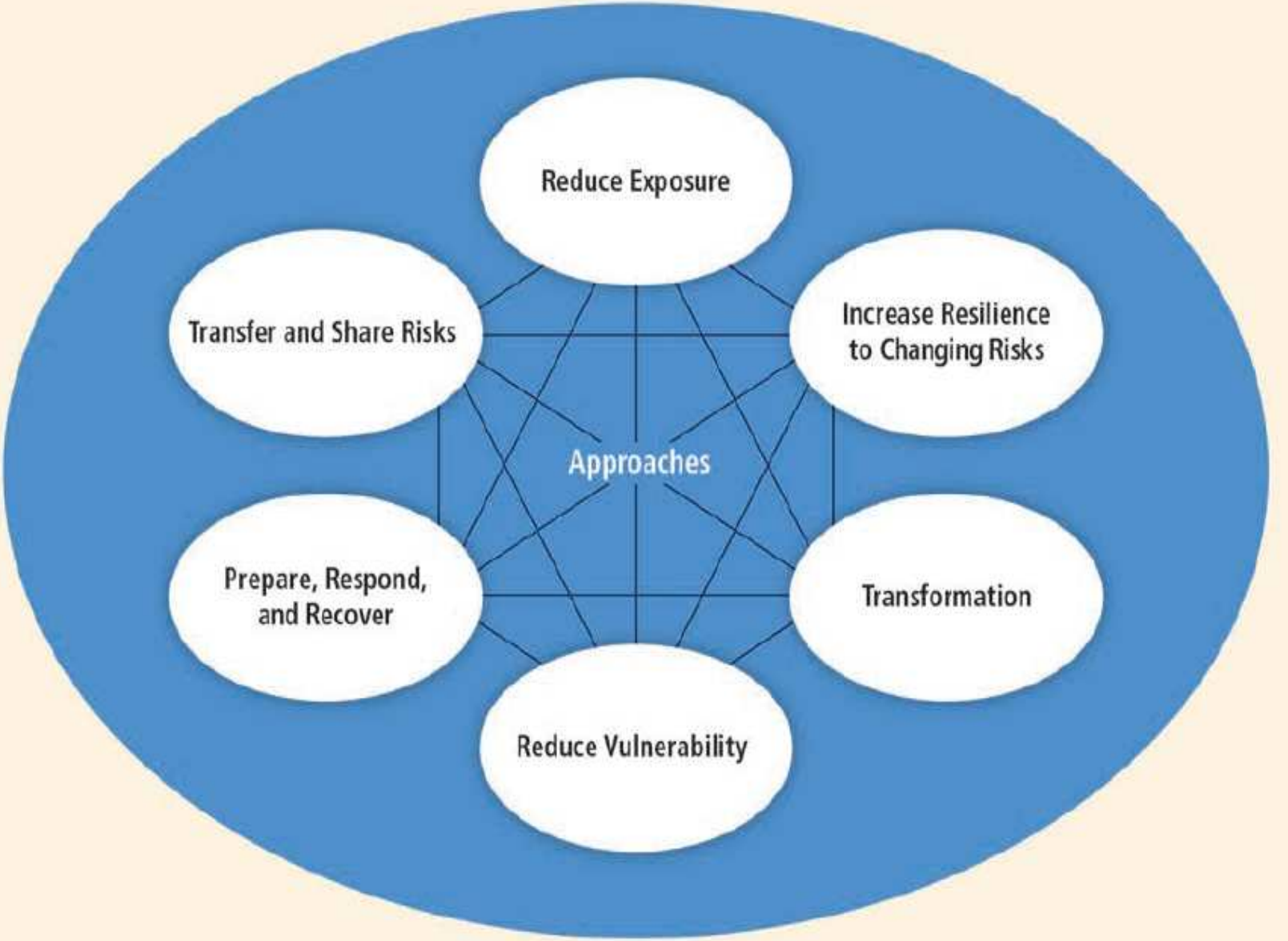

2. How does resilience relate to adaptation and mitigation?
REUTERS

Mitigation and adaptation

- Mitigation facilitate **human interventions and technology** to reduce the **sources or enhance** the sinks of greenhouse gases and therefore **prevent** negative impacts on the climate system and as an outcome more and severe hazards.
- Adaptation refers to the **adjustment** to actual or expected **climate impacts and its effects**, which are able to **moderate harm on natural and human systems**. It includes also the process of **prevention** and **adjustment** to adverse climate conditions.
- Adaptation and mitigation reduces especially the double: the environmental and social vulnerability.


Global environmental change
Scarcity and pollution of water
Climate variability, droughts and floods
Loss of soil fertility, erosion, desertification
Loss of ecosystem services and biodiversity
-Disasters
-Socio-environmental migration
-Resource conflicts
Consumerism, GHG, resource depletion, pollution, diseases
Human, gender & environmental Security: HUGE
Demographic , rural & urban pressure
-Violence, crime
-Ethnic & political conflicts
-Urbanization
-Environmental disasters
-Unsustainable modernization
-Social vulnerability
-Economic crisis, misery
Social classes, elite
Pollution and overuse of water
Hunger, malnutrition, overweight, junk food
Inequality, discrimi-nation, inequity
Poverty, misery, homeless, insecurity
Globalización

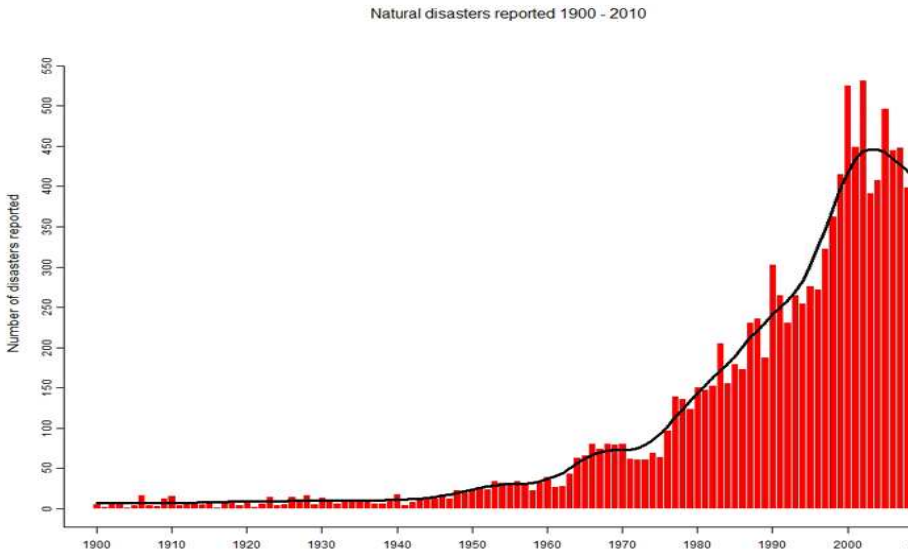
Resilience, adapation and mitigation

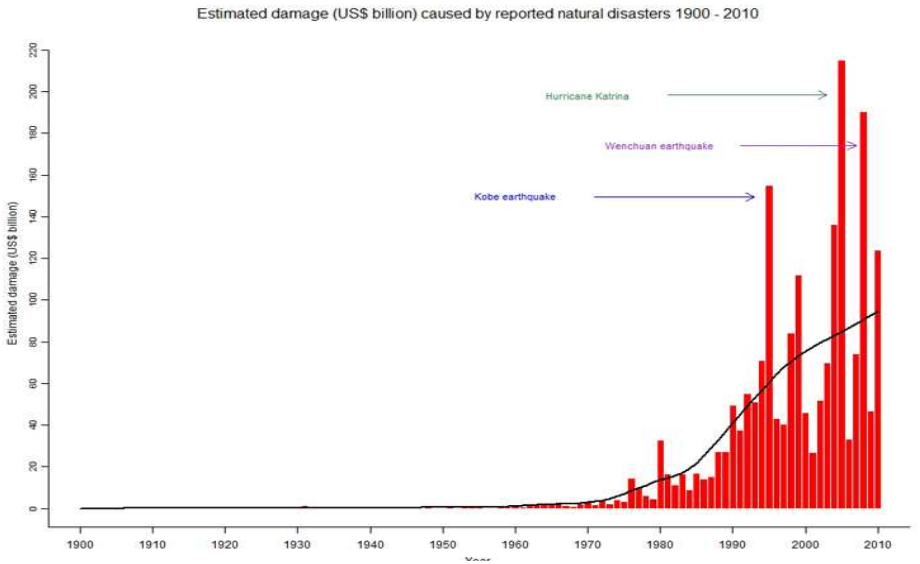


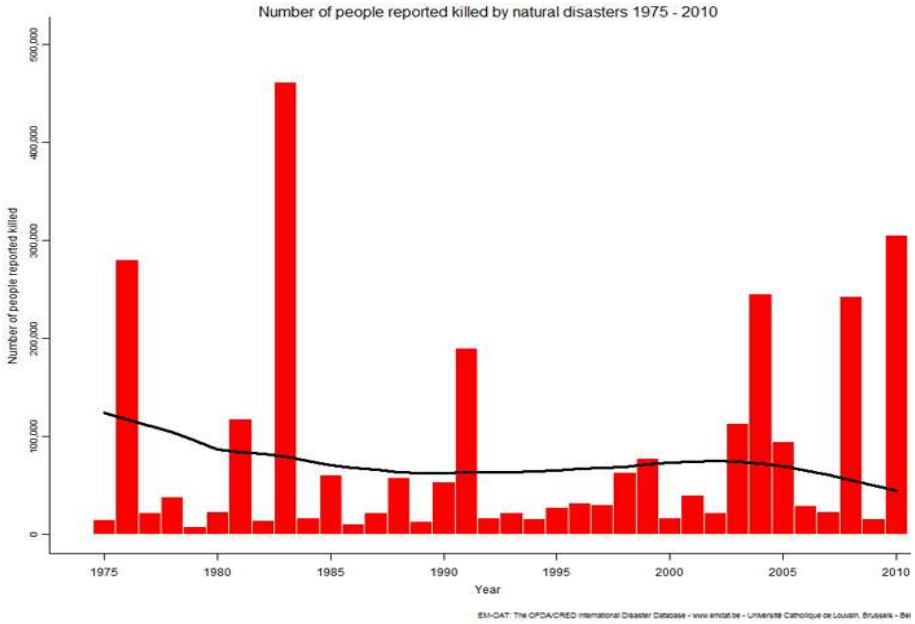
3. What are the local dangers?

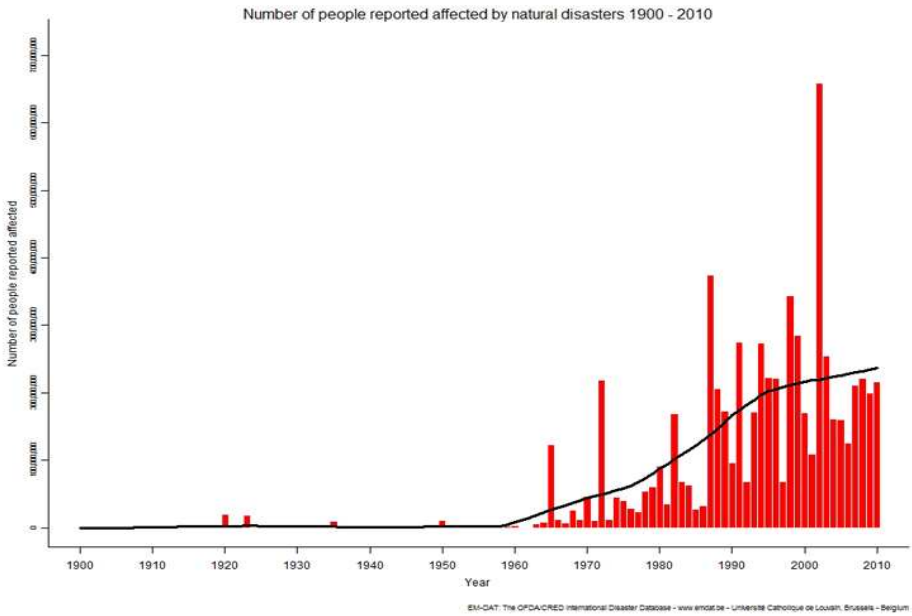
Biggest disasters in 3 decades

Disaster risks, death, affected and costs

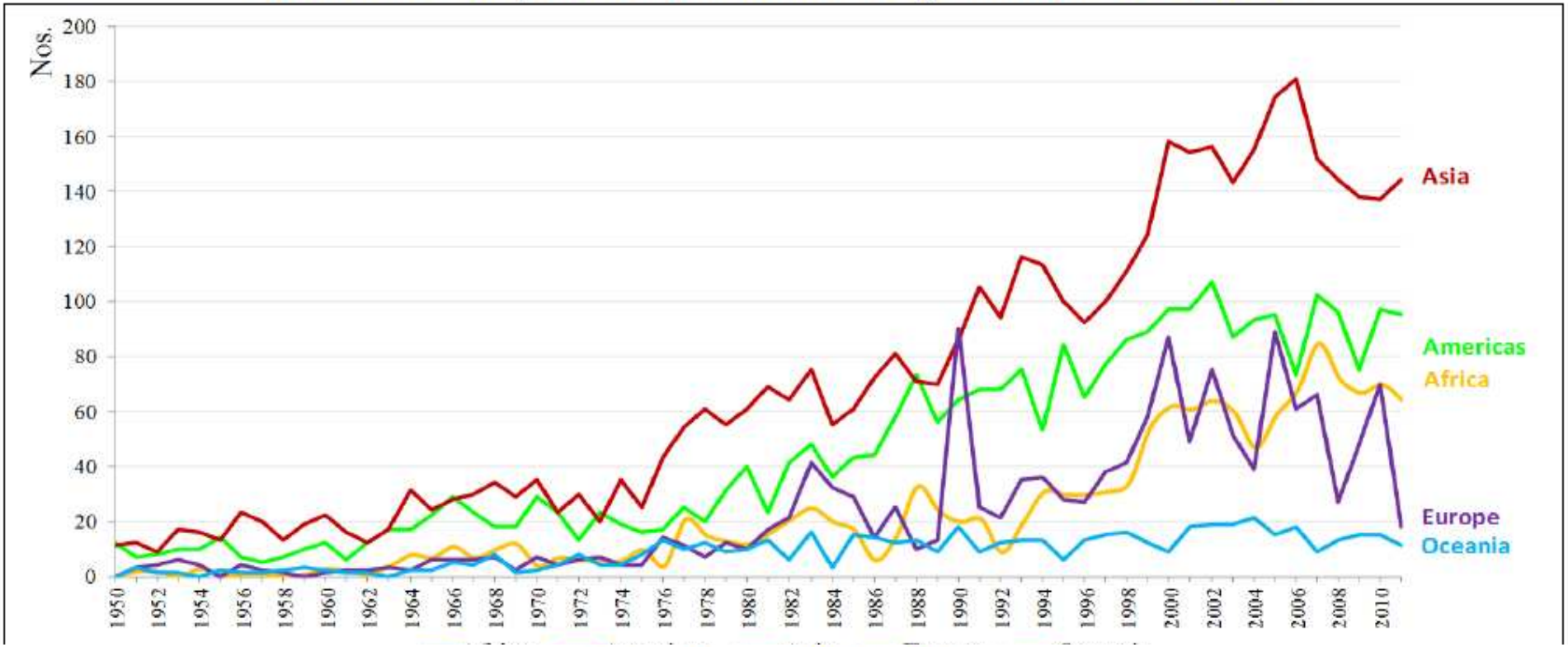




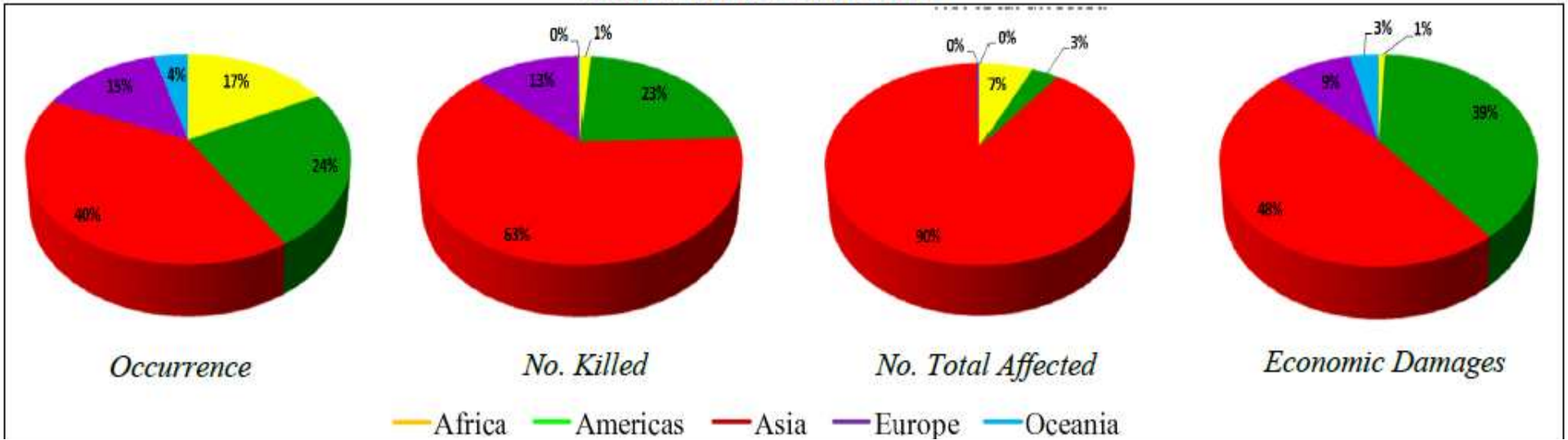




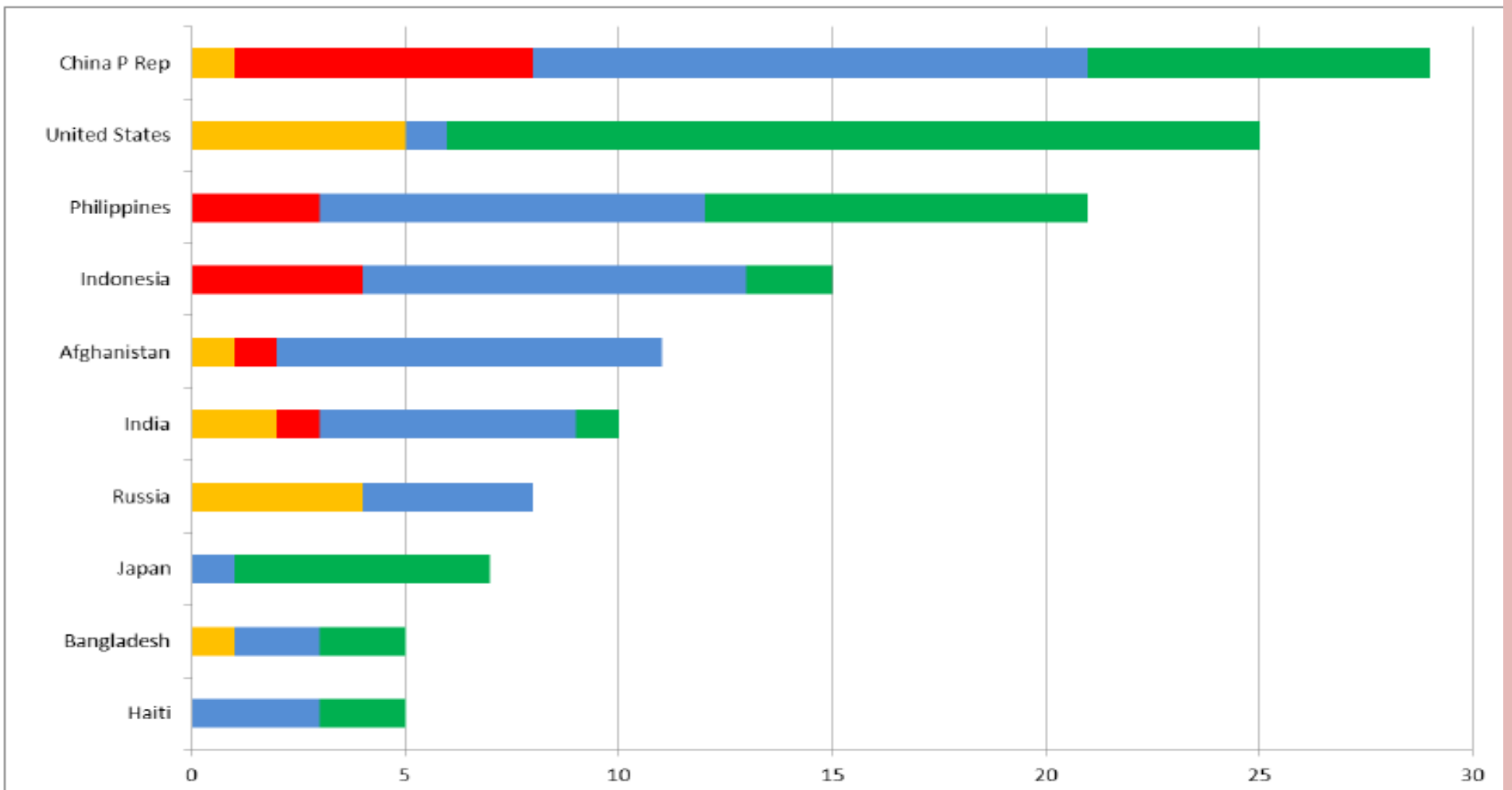
Occurrence of reported natural disasters by continent: 1950 to 2011



Asia's share: 2002-2011



Top ten countries by reported events in 2012



	Haiti	Bangladesh	Japan	Russia	India	Afghanistan	Indonesia	Philippines	United States	China P Rep
Climatological		1		4	2	1			5	1
Geophysical					1	1	4	3		7
Hydrological	3	2	1	4	6	9	9	9	1	13
Meteorological	2	2	6		1		2	9	19	8

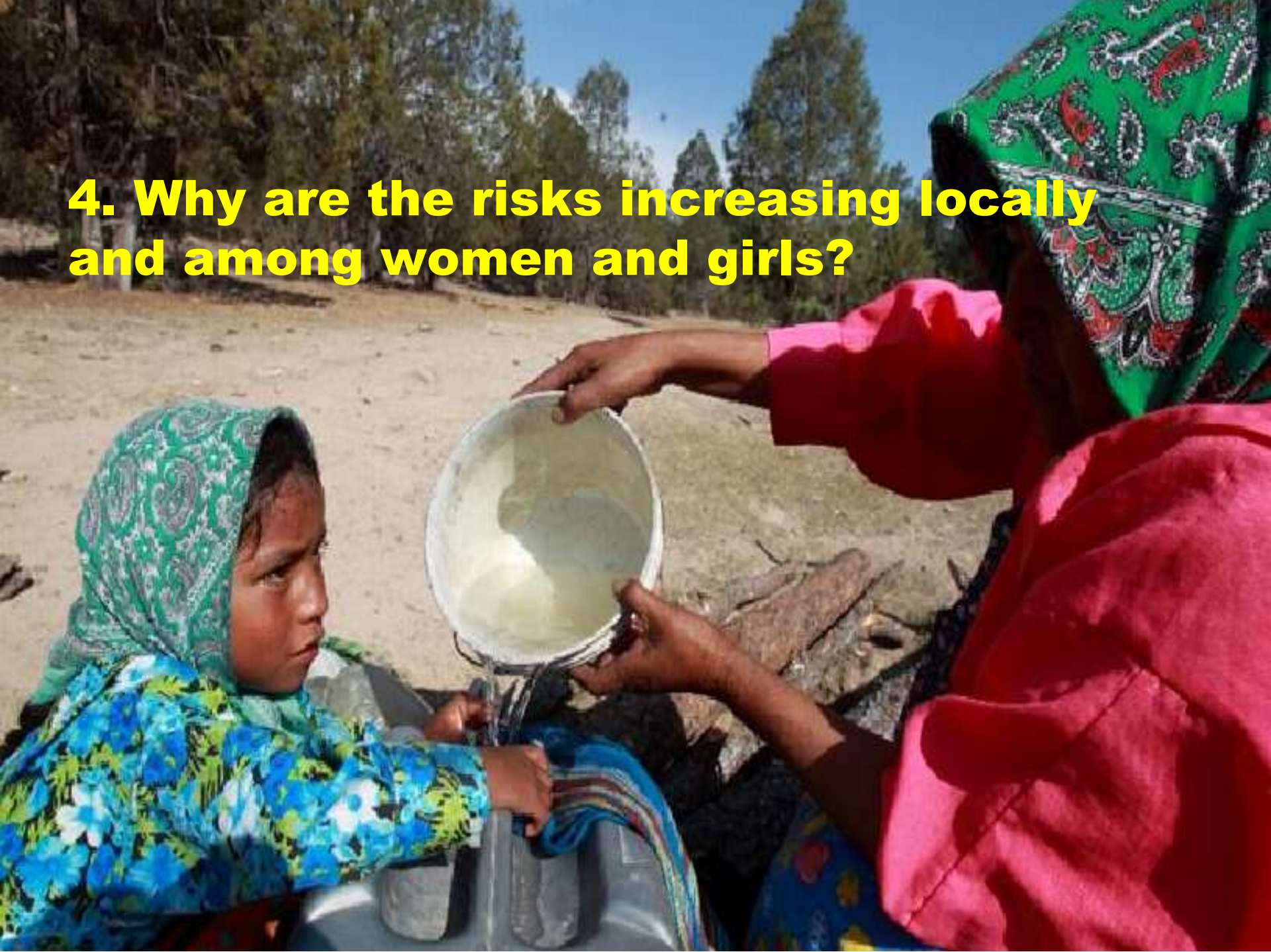
Disaster	Date	No Killed
Earthquake (seismic activity)	26-Dec-2004	8,345
Flood	5-Aug-2011	813
Storm	27-Oct-1962	769
Flood	19-Nov-1988	664
Earthquake (seismic activity)	Jun-1955	500
Storm	3-Nov-1989	458
Flood	10-Oct-2010	258
Flood	3-Jan-1975	239
Flood	1-Aug-1995	231
Flood	20-Aug-2006	164

Disaster	Date	No Total Affected
Drought	Apr-2008	10,000,000
Flood	5-Aug-2011	9,500,000
Flood	10-Oct-2010	8,970,653
Drought	Mar-2010	6,482,602
Drought	Jan-1999	6,000,000
Flood	30-Jun-1996	5,000,000
Drought	Feb-2002	5,000,000
Flood	1-Aug-1995	4,280,984
Flood	Oct-2002	3,289,420
Flood	3-Jan-1975	3,000,093

Disaster	Date	Dammage (000 US$)
Flood	5-Aug-2011	40,000,000
Flood	27-Nov-1993	1,261,000
Earthquake	26-Dec-2004	1,000,000
Storm	3-Nov-1989	452,000
Drought	Jan-2005	420,000
Flood	Dec-1993	400,100
Flood	Aug-1978	400,000
Flood	19-Jan-1984	400,000
Flood	10-Oct-2010	332,000
Flood	31-Oct-1993	319,850

Main Disasters in Thailand: recent & CC-related

19 October 2011: 344% above mean (Water is shown in dark blue)

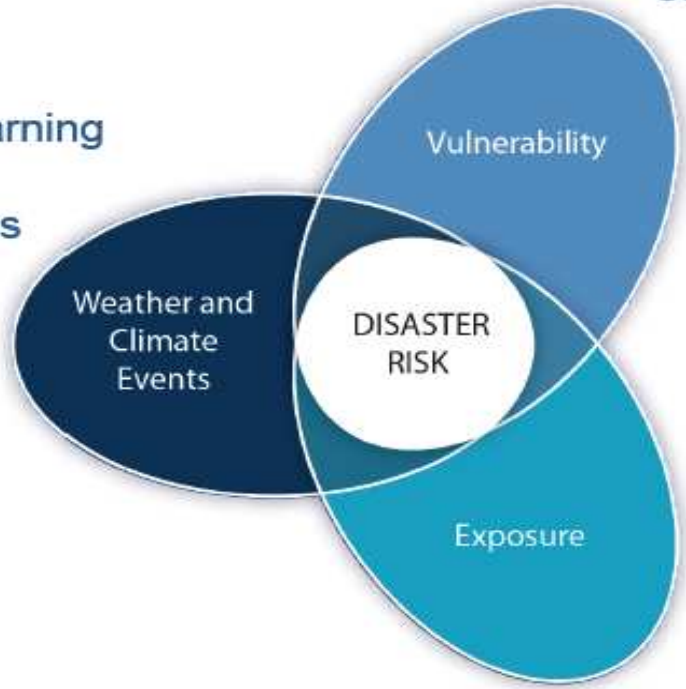


4. Why are the risks increasing locally and among women and girls?

Environmental & social vulnerability, exposure and disaster risks reduction management (DRRM)

- poverty reduction
- better education and awareness
- sustainable development

- improved forecasting for warning systems
- reduction of greenhouse gas emissions



- asset relocation
- weather-proofing assets
- early warning systems

Gender empowerment reduces social vulnerability and disaster risks

- Between **68-89%** of deaths occurs among **women and girls** due to long-term discrimination & self-identity of women to **care** for others
- **Information & training** on vulnerability, exposure, climate extremes, DRR, and resilience-building help people **reducing their risks** and getting prepared for **unknown and unpredictable threats**
- Integrated **water** management, sanitation and drainage improve health, wellbeing and reduce risks of **waterborne diseases**
- **Drought** forecasting, sustainable **farming** practices, drought resistant seeds and early warning reduce risks of hunger
- **Adaption** to changing climate conditions includes maintenance of draining systems, regional risk pooling, relocation from risky locations, early **evacuation** and **disaster risk reduction training**
- **Sustainable development** in the near term reduces longer term social vulnerability
- Managing risks now help **improve livelihood** and wellbeing
- Women maintain **social networks** during normal times and support communities and families during disasters

Economic losses from climate-related disasters have increased, with large spatial and interannual variation, but are higher in industrialized countries, while fatalities are higher in developing countries.

Managing the risks: cyclones and floods

Risk Factors

- population growth
- increasing property value
- higher storm surge with sea level rise

Risk Management/ Adaptation

- better forecasting
- warning systems
- stricter building codes
- regional risk pooling

Projected globally: *likely* increase in average maximum wind speed and associated heavy rainfall (although not in all regions)

ipcc climate change

WMO UNEP

Gender vulnerability and women's discrimination increase vulnerability of exposed communities: even non-extreme events can have extreme impacts in loss of lives and livelihood

Managing the risks: drought in the context of food security in the drylands

Risk factors

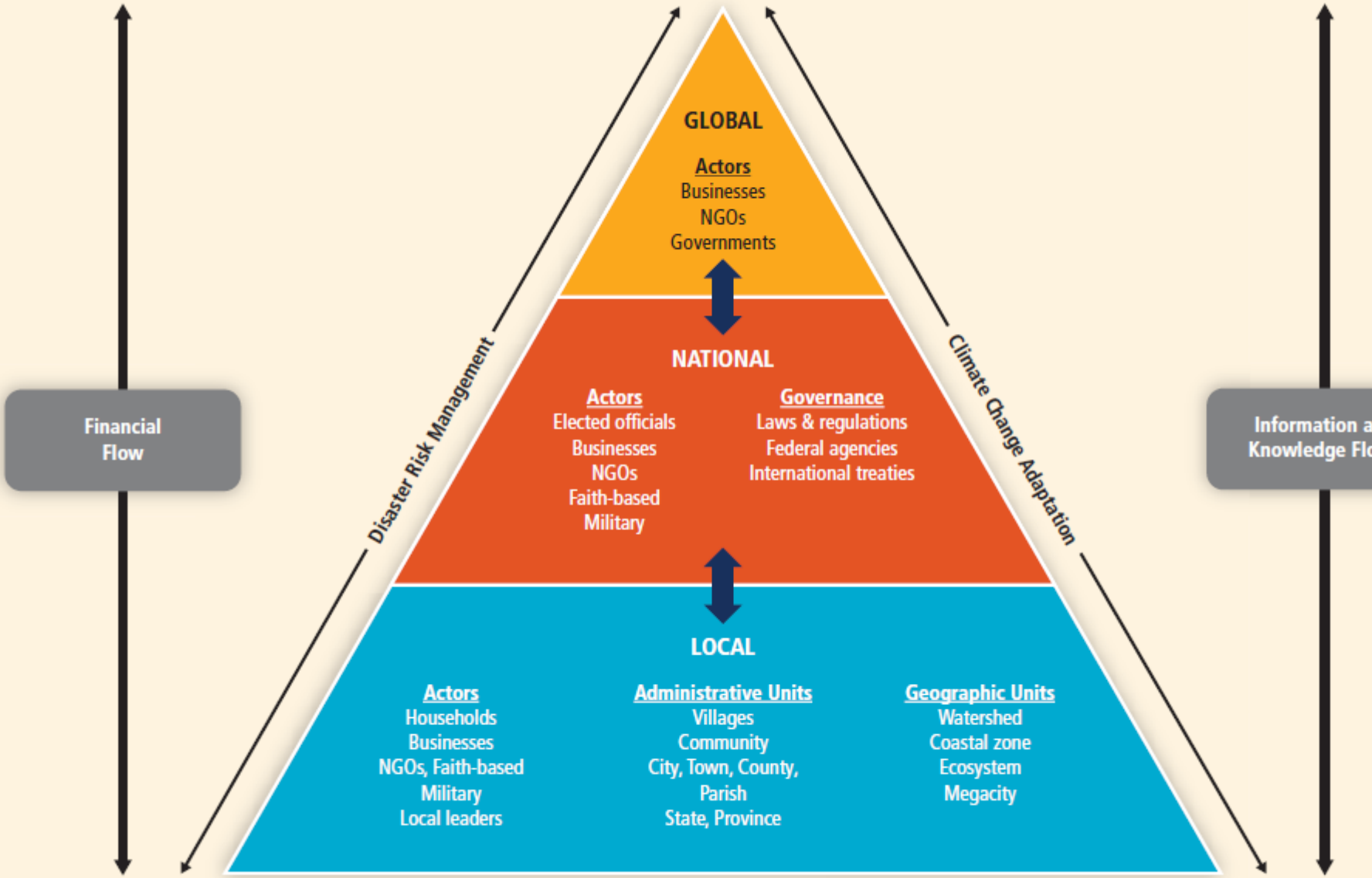
- more variable rain
- ecosystem degradation
- hotter days
- discrimination of women
- poor health and education conditions

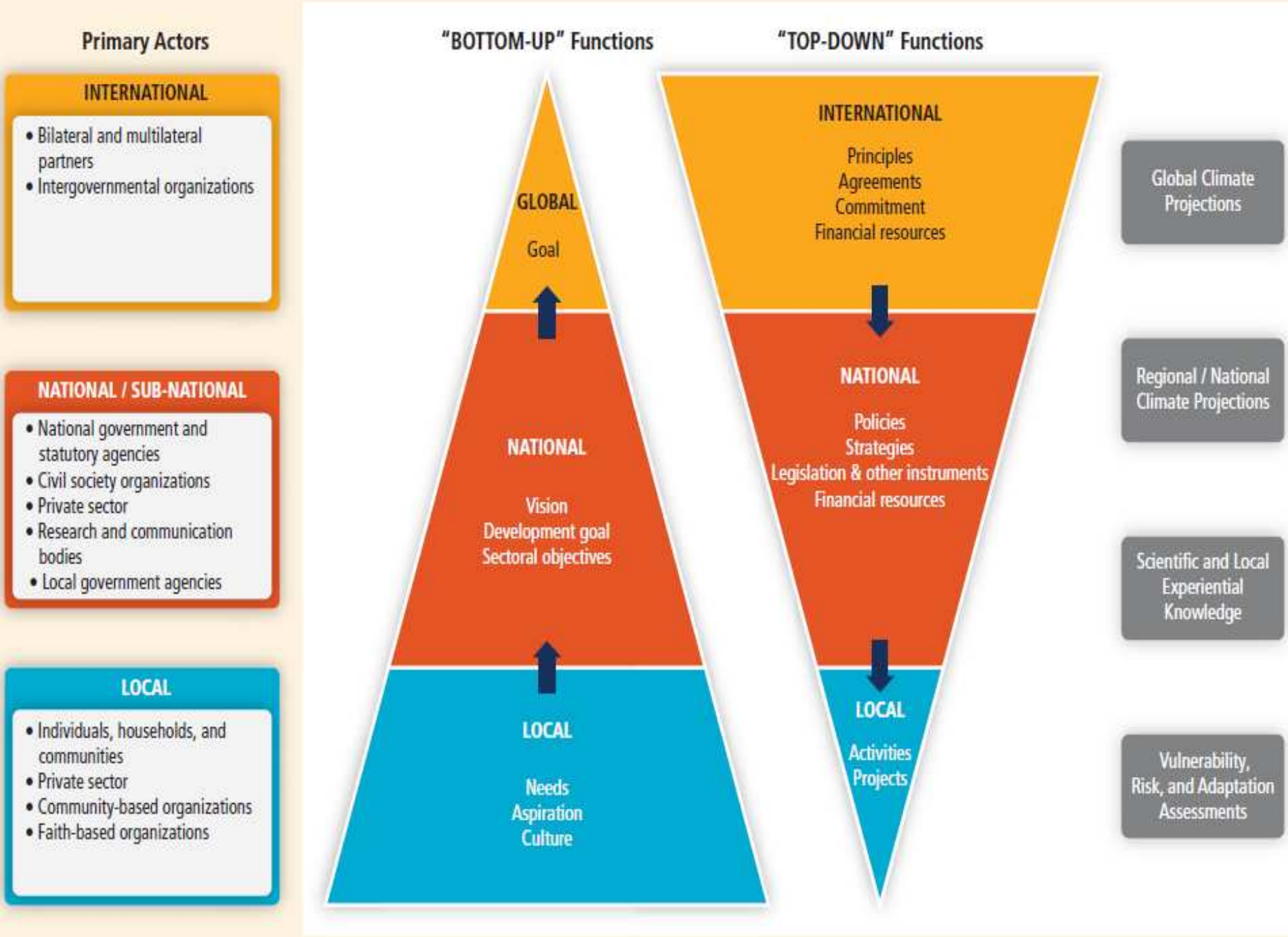
Risk Management/ Adaptation

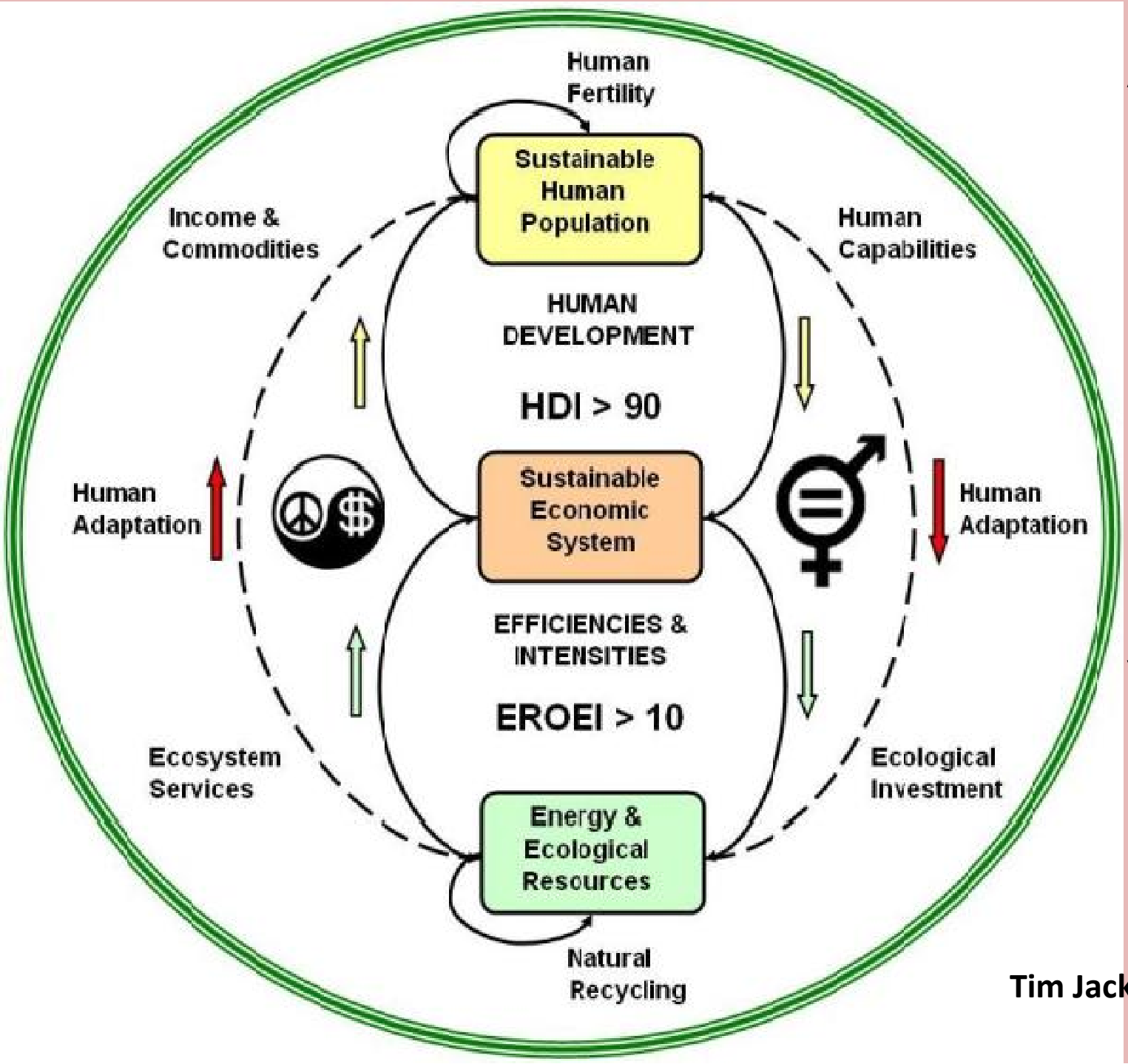
- improved water management
- sustainable farming practice
- drought-resistant crops
- drought forecasting


5. How can local disaster risks reduction (DRR) be improved?
REUTERS

Linking local to global actors and responsibilities




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
GLOBAL
Goal
NATIONAL
Vision
Development goal
Sectoral objectives
LOCAL
Needs
Aspiration
Culture
"TOP-DOWN" Functions
INTERNATIONAL
Principles
Agreements
Commitment
Financial resources
NATIONAL
Policies
Strategies
Legislation & other instruments
Financial resources
LOCAL
Activities
Projects
Global Climate Projections
Regional / National Climate Projections
Scientific and Local Experiential Knowledge
Vulnerability, Risk, and Adaptation Assessments

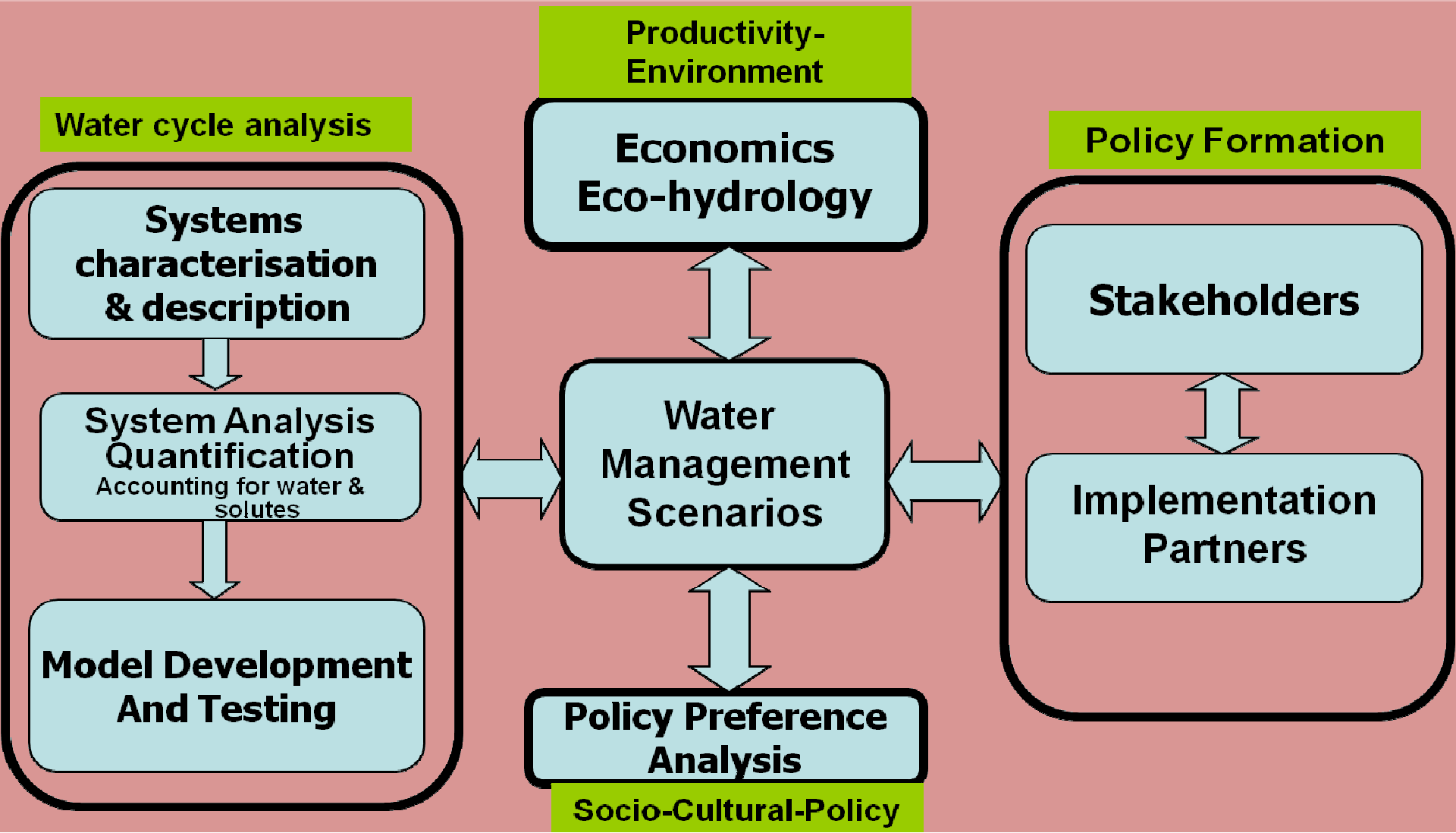


Adaptation to nature and new climate conditions with a gender perspective

Tim Jackson, 2011: 195

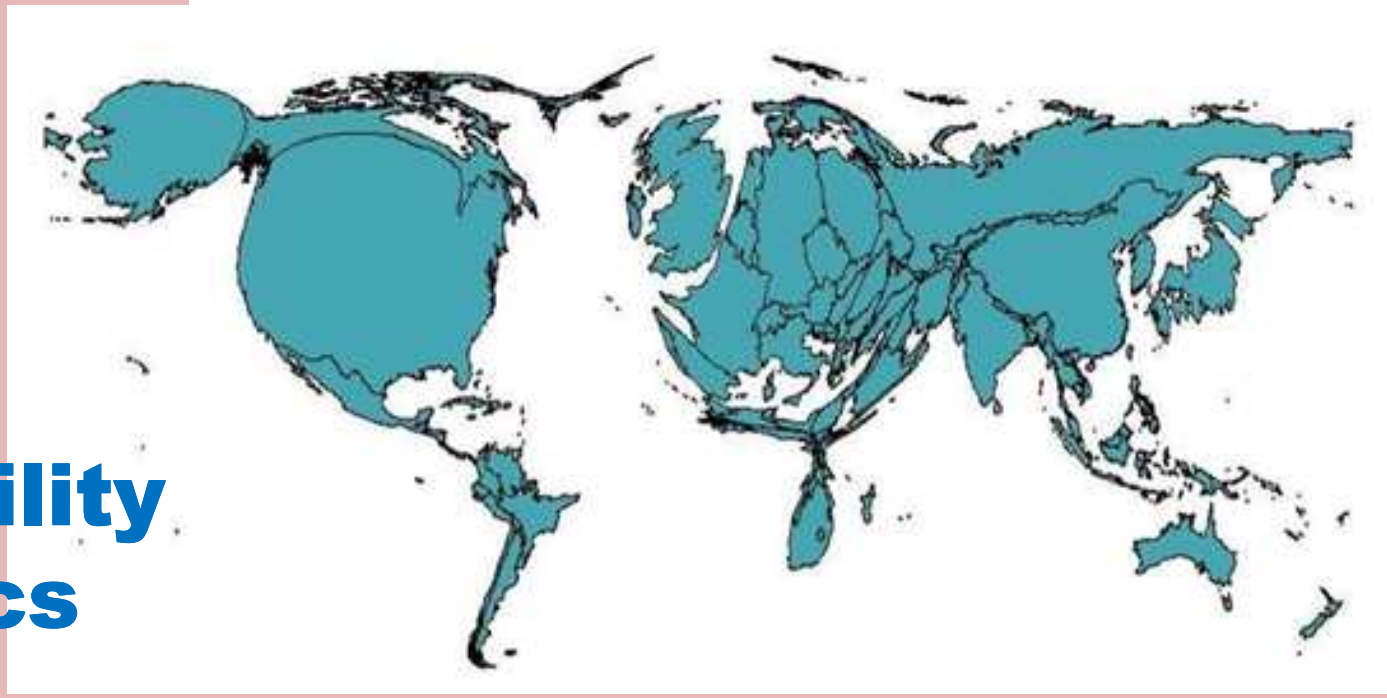
6. How are local and global DRR and DRM (management) related to resilience?

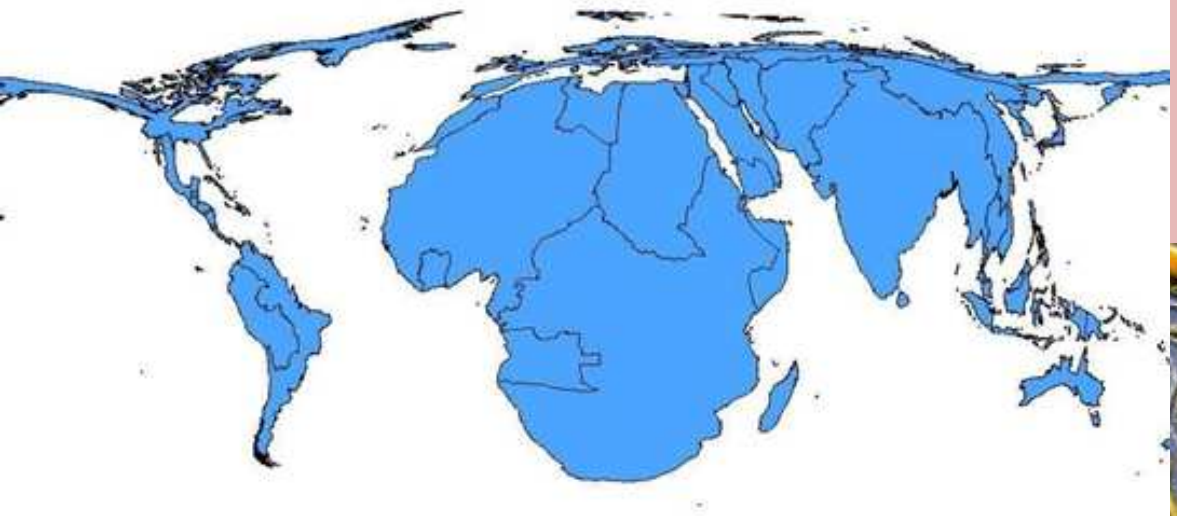
Environmental and water knowledge for decision-making



Global responsability and ethics

Cumulative Greenhouse Gas Emissions, 2002

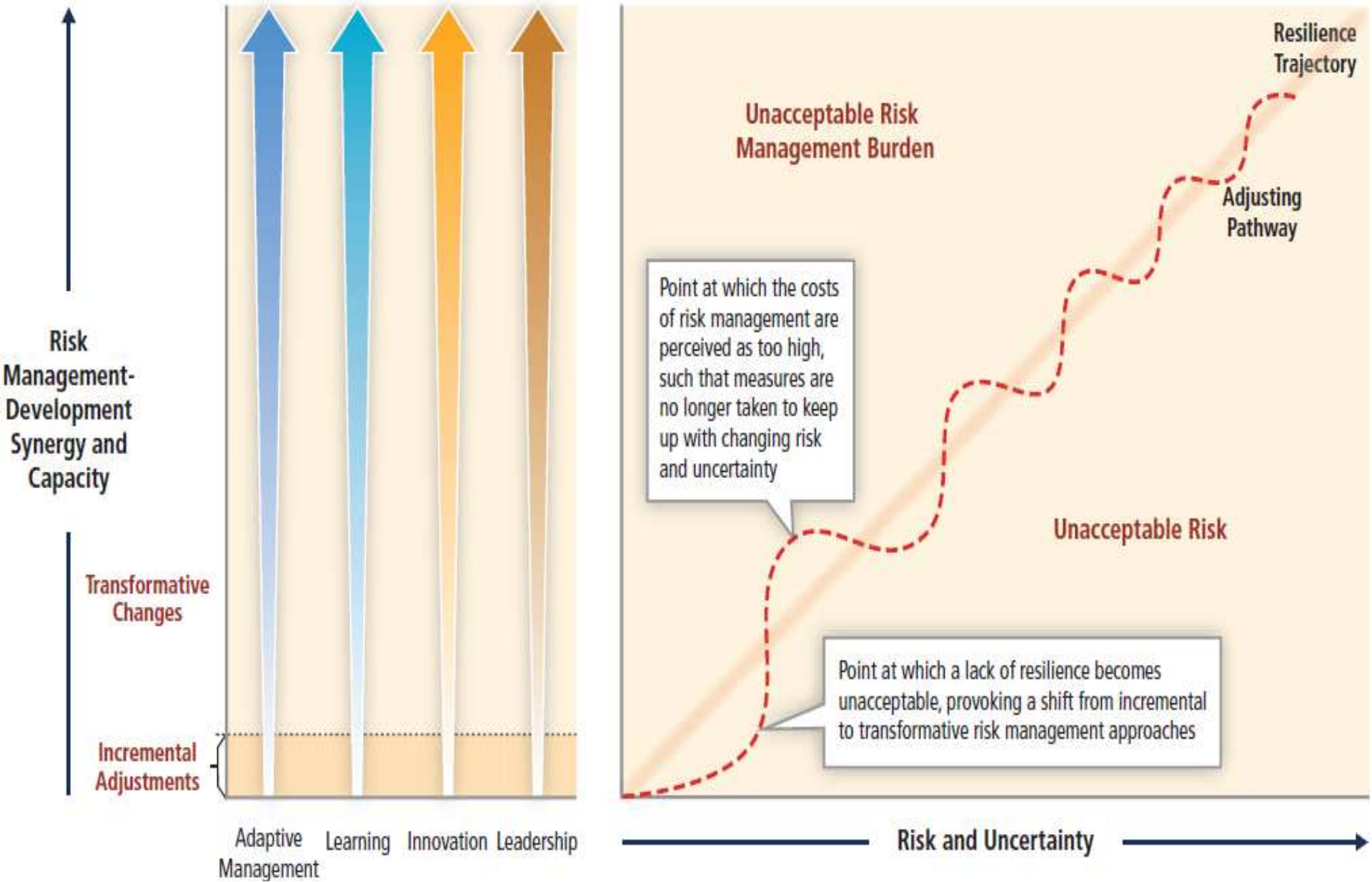




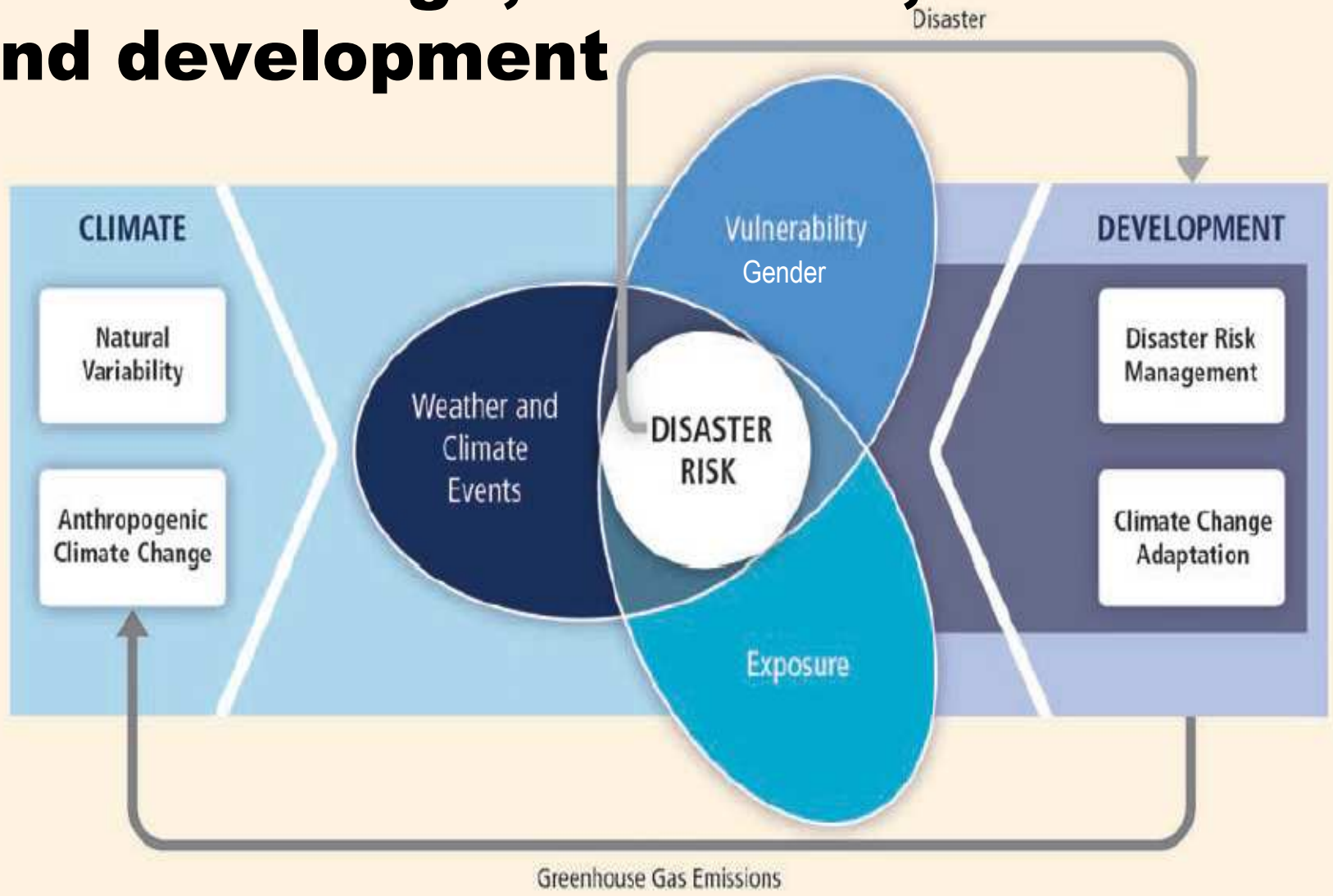
Mortality rate attributable to climate change, 2000

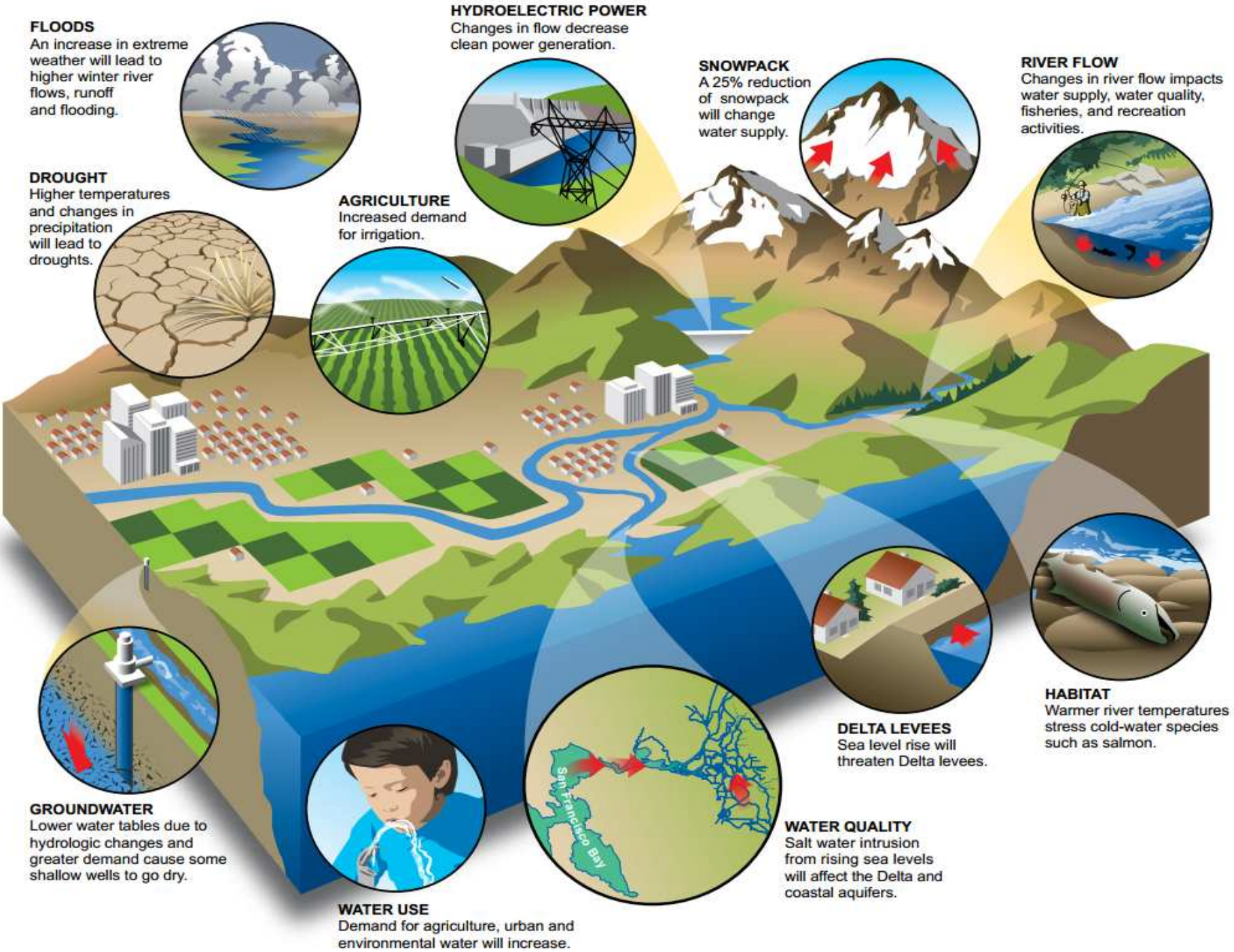
Patz et al., 2007

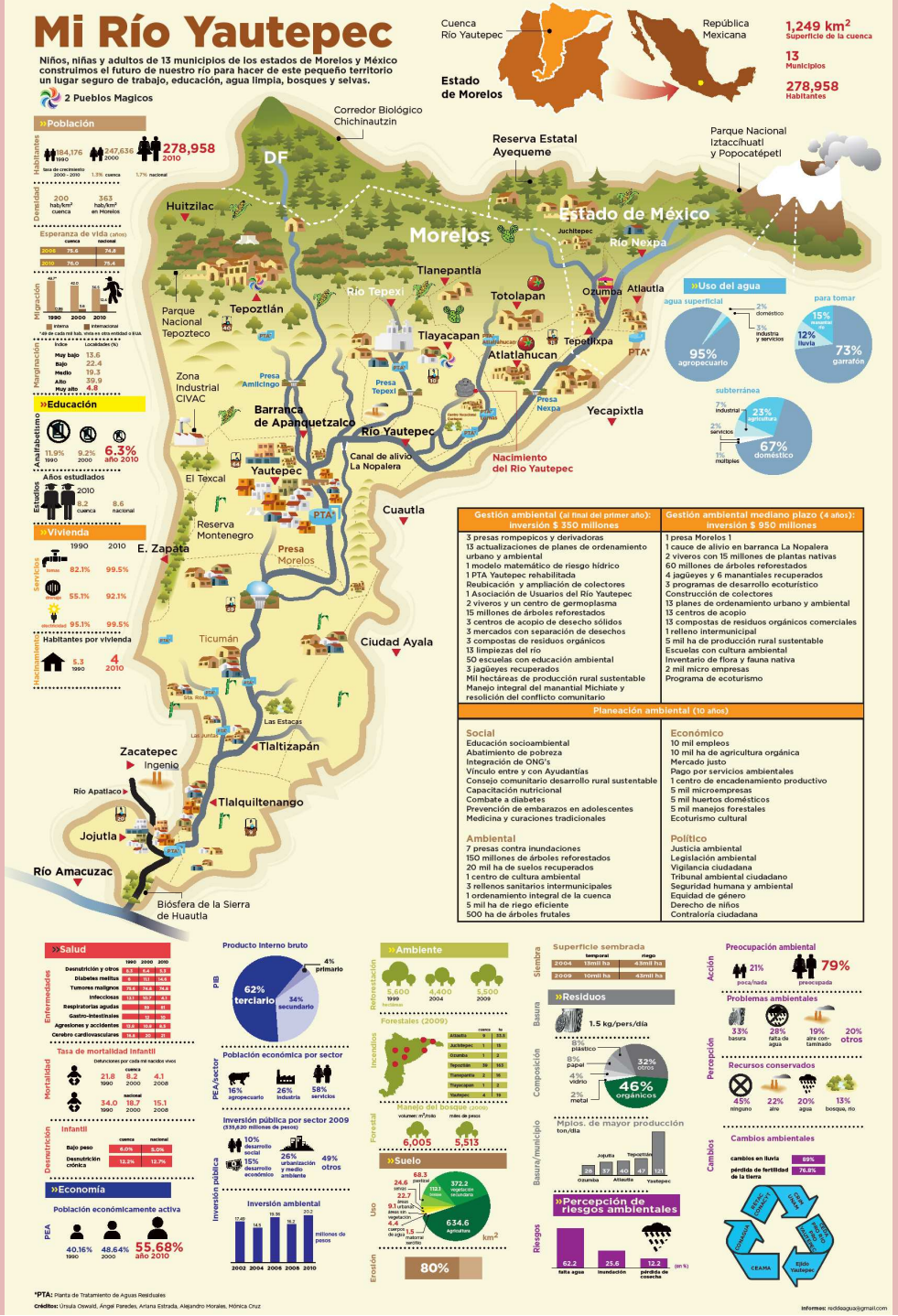
Incremental & transformative pathways to resilience



Climate Change, disasters, vulnerability and development




FLOODS
An increase in extreme weather will lead to higher winter river flows, runoff and flooding.
HYDROELECTRIC POWER
Changes in flow decrease clean power generation.
SNOWPACK
A 25% reduction of snowpack will change water supply.
RIVER FLOW
Changes in river flow impacts water supply, water quality, fisheries, and recreation activities.
DROUGHT
Higher temperatures and changes in precipitation will lead to droughts.
AGRICULTURE
Increased demand for irrigation.
HABITAT
Warmer river temperatures stress cold-water species such as salmon.
DELTA LEVEES
Sea level rise will threaten Delta levees.
GROUNDWATER
Lower water tables due to hydrologic changes and greater demand cause some shallow wells to go dry.
WATER QUALITY
Salt water intrusion from rising sea levels will affect the Delta and coastal aquifers.
San Francisco Bay
WATER USE
Demand for agriculture, urban and environmental water will increase.



Peasants, traders, micro-entrepreneurs, business people, social movements, NGO's, citizens, scientists, people affected by disasters, women, children, teachers and the three levels of government developed an integrated basin management of the River Yautepec for reducing risks increased by climate change and are promoting a transition to sustainability from local niches.

Conclusions

1. Complex social networks sustain humans in normal times. **Human vulnerabilities** during change, hazard, disaster or conflict are usually a matter of disruption or failure of these networks.
2. Future research and policy on resilience building during extreme hidro-meteorological events helps to improve theories, data and concrete training about the impacts of climate, disaster, and other disruptions. Existing data overlooks social vulnerability and does not account for gender identity during normal, let alone in crisis situations.
3. Gender analysis will lend a more nuanced understanding of women as social beings aligning in networks of family and community.
4. More accurate understanding and training will facilitate to support networks that underlie a resilient society, where women educate, care and reproduce the historical memory and the cultural background, but increasingly generate also the material family sustain and the food.
5. Active female participation opens the possibility to reduce gender related social vulnerability, improve hazard resilience, and increase the survival of the whole communities frequently affected by hydrological disasters, but reduce also gender violence and insecurity before, during and after disasters.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uoswald@gmail.com
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