Challenges for Transformative Social Sciences: The Glocal Connectedness

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2. December, 2013

Content

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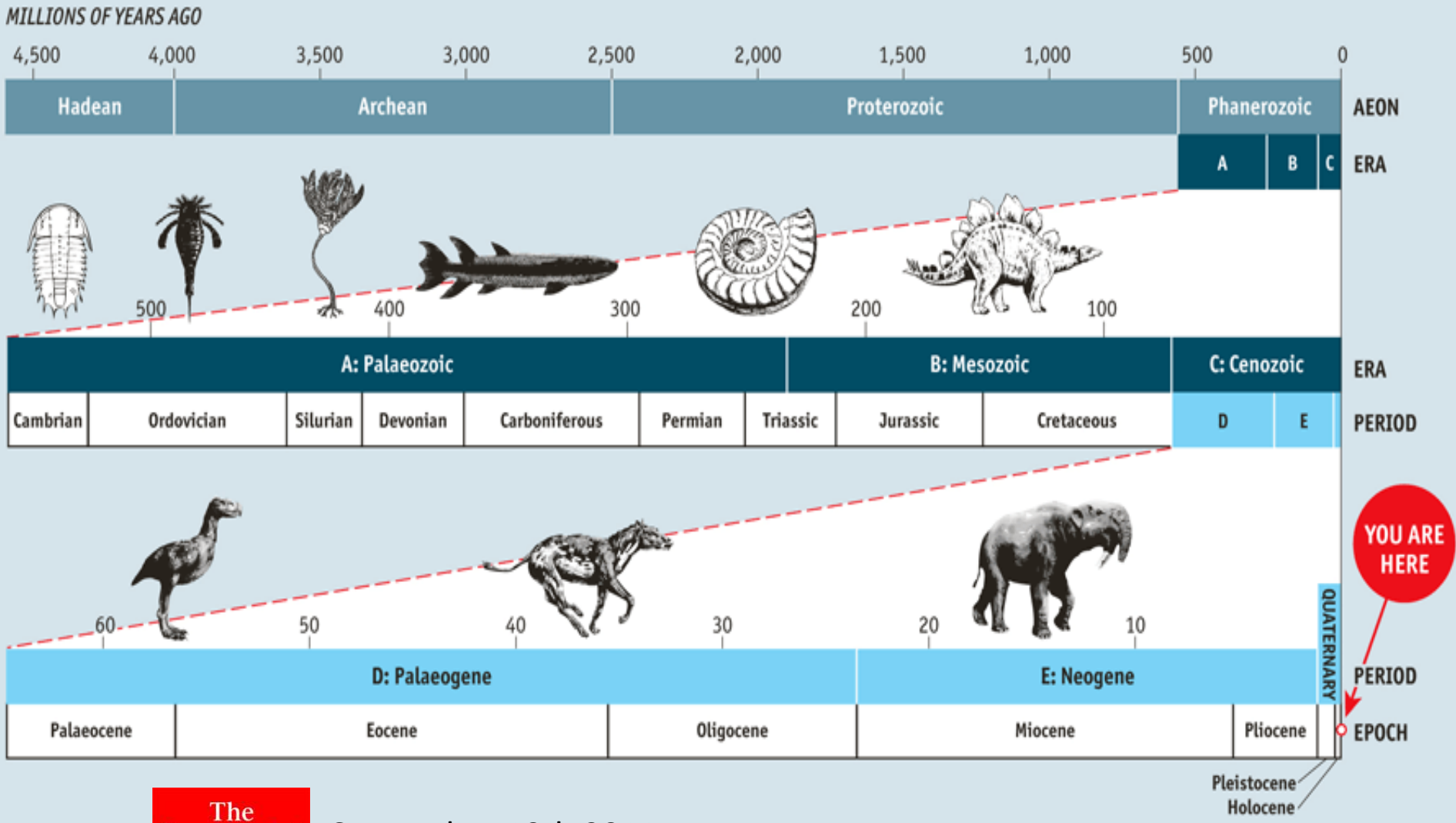
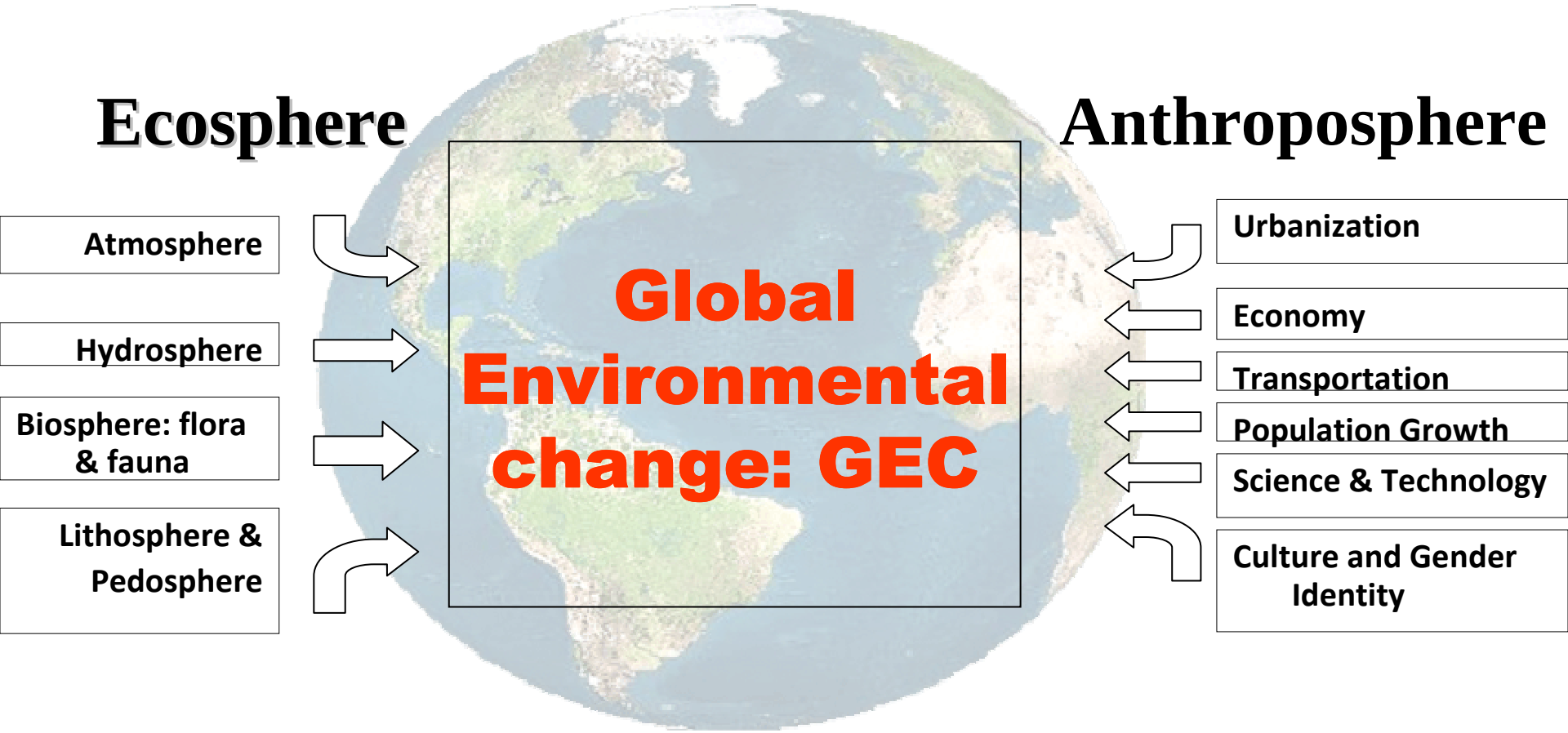
2. Why is climate change threatening humanity and the Earth? Some basic data at glocal (global, national, local) level.
3. What are the fundamental glocal challenges during the next three decades?: need for a paradigm shift in social sciences
4. What are the crucial obstacles for a glocal change: worldview, mind-set and governance?
5. Long-term transformation in social sciences and behaviour (theoretical, epistemological and practical approaches)
6. Local sustainable transition: overcoming patriarchal mindset with social transformative sciences
7. Some preliminary conclusions: glocal connectedness with equity and sustainability

From Holocene to Anthropocene

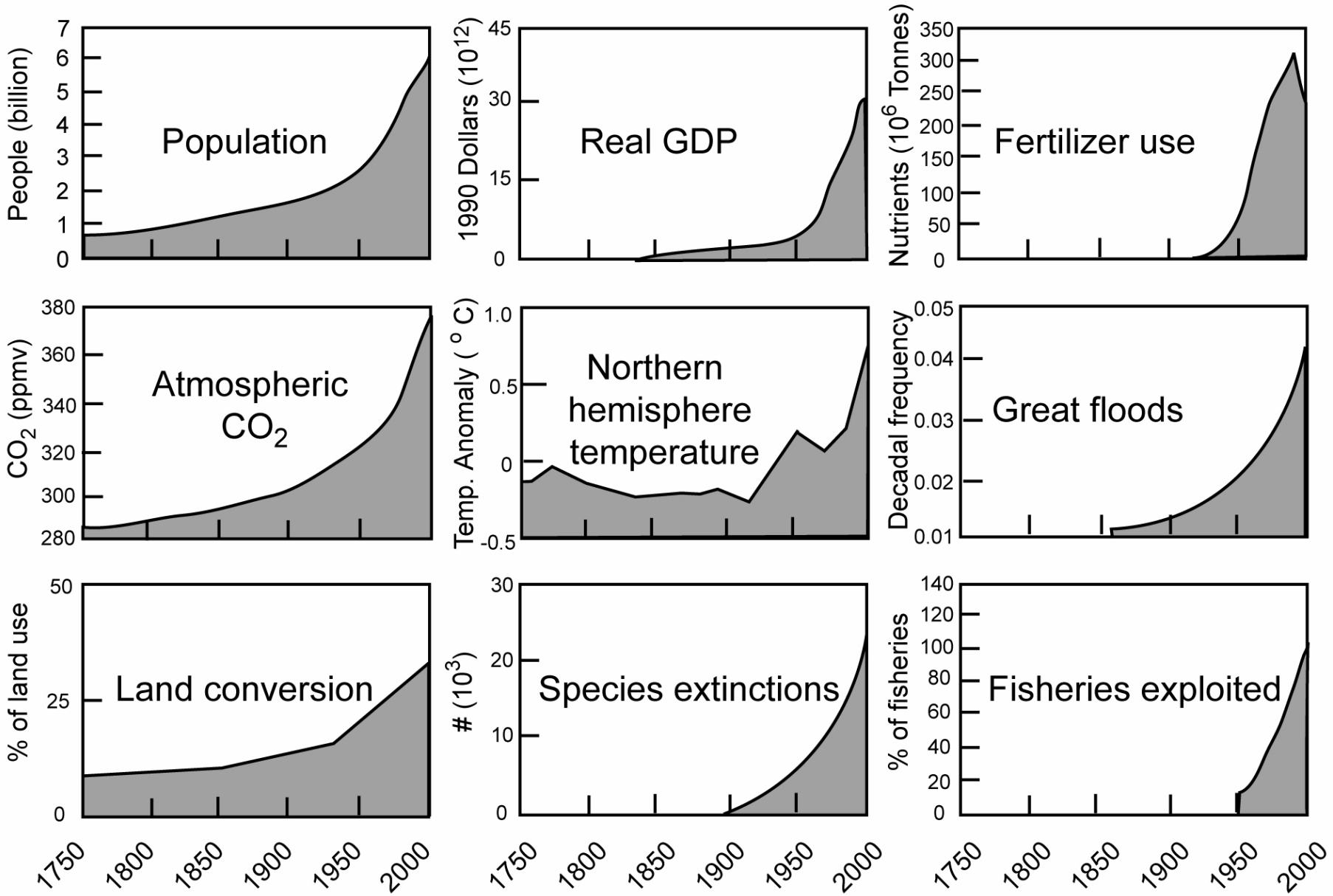


The Economist September 10th 2011

Antropocene: only in 5 decades was the mayor destruction



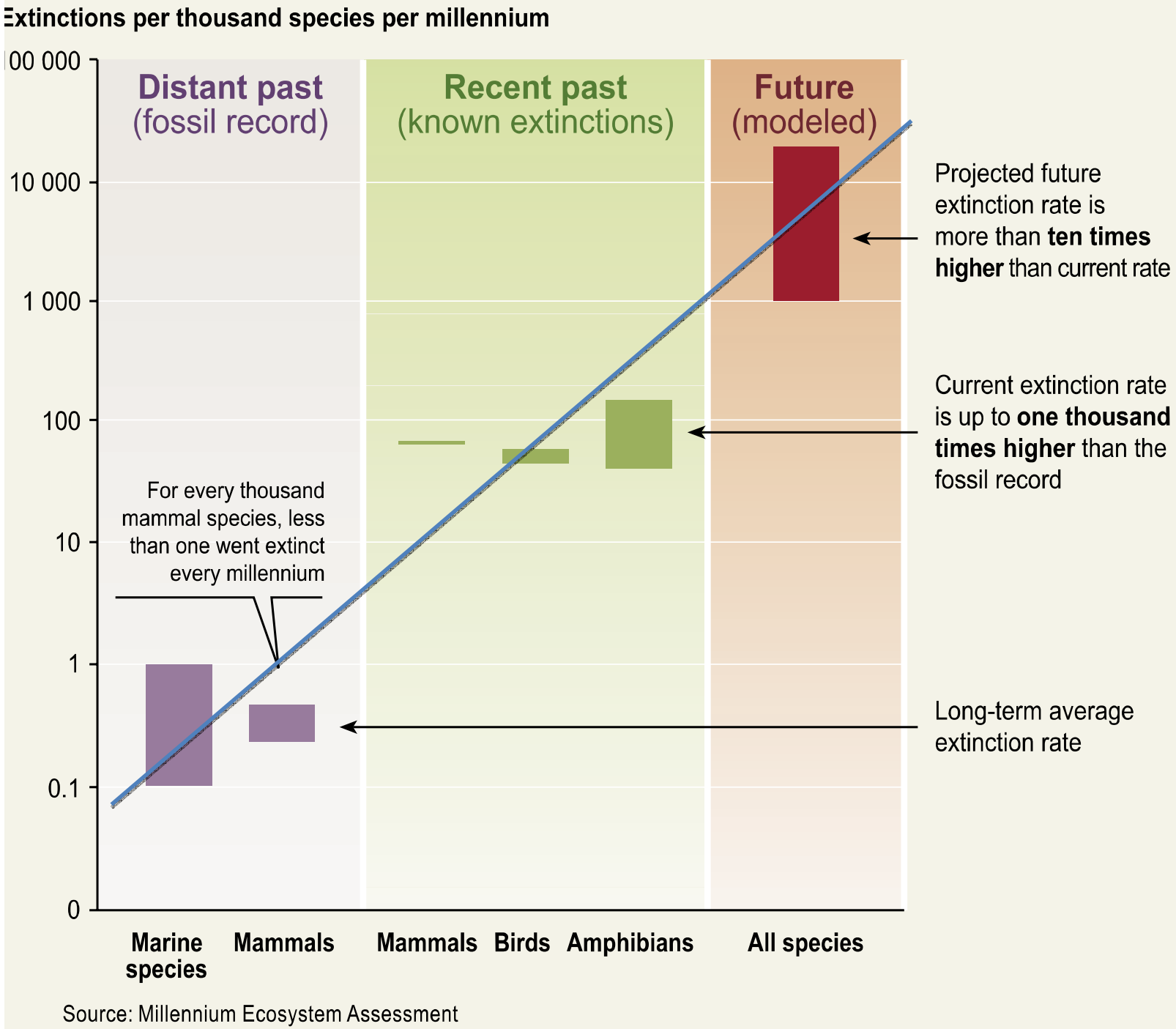
Effects of GEC on nature and humans



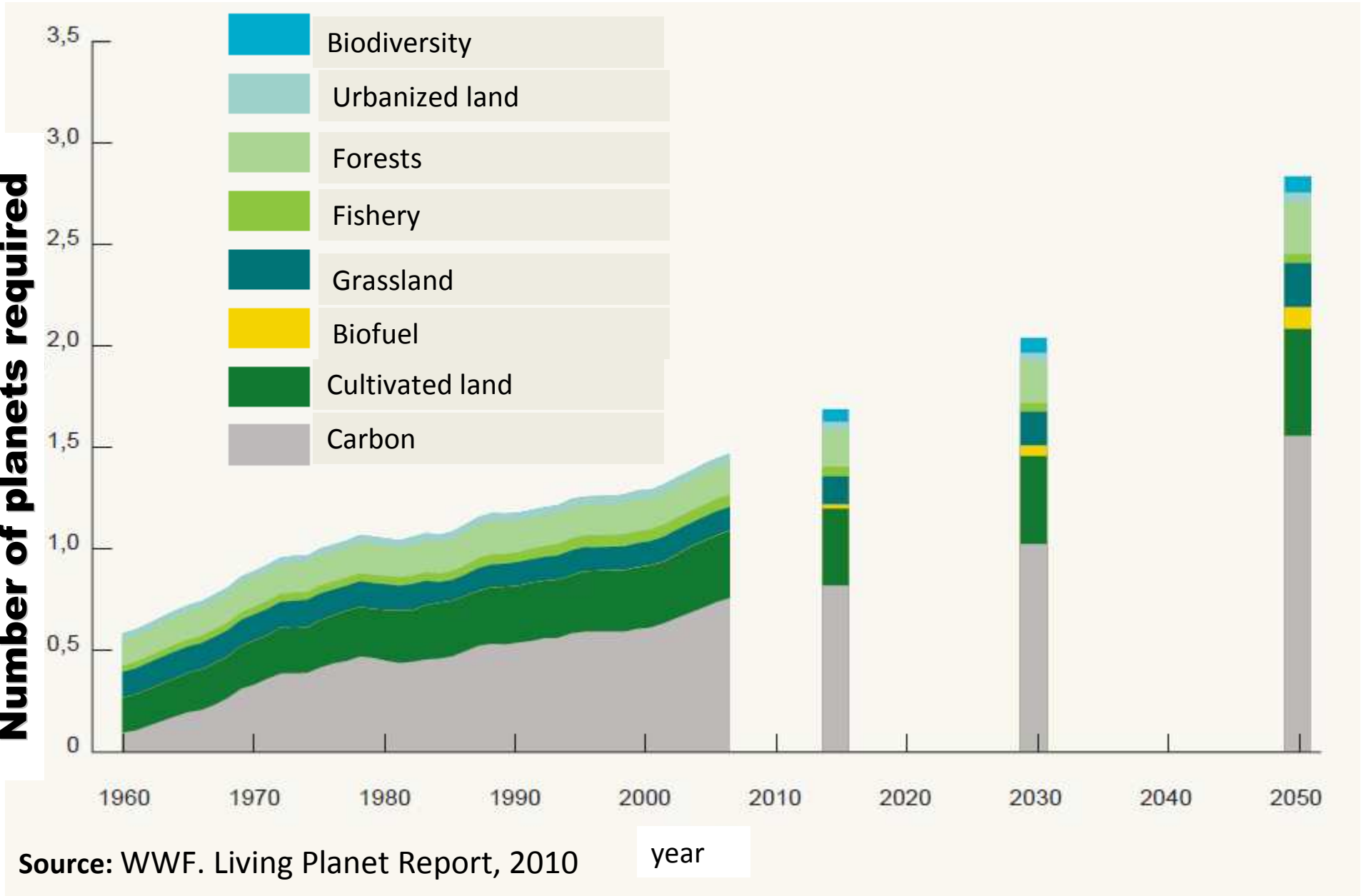
Source: MA (2005)

GEC paradox & implications on sustainability

1. Global environmental change and climate change are **increasing** biodiversity **loss, risks and hazards**, creating dangerous feedbacks and potential tipping points.
2. Hydrometeorological extreme events are getting stronger, affecting humans, infrastructure and ecosystems, and in some regions more frequent.
3. On the one hand we have **declaratory goals by the G-8** to reduce the impacts of GEC, especially greenhouse gases by 50% to 80% by 2050; on the other hand real emissions are rising at the highest level of established scenarios by IPCC and the implementation of the commitments of UNFCCC (1992) and the Kyoto protocol (1997) are uncertain.
4. Recent **financial and economic crises are delaying further a legally binding regime** and the dominant business-as-usual approach will not re-establish the equilibrium between nature and human beings.

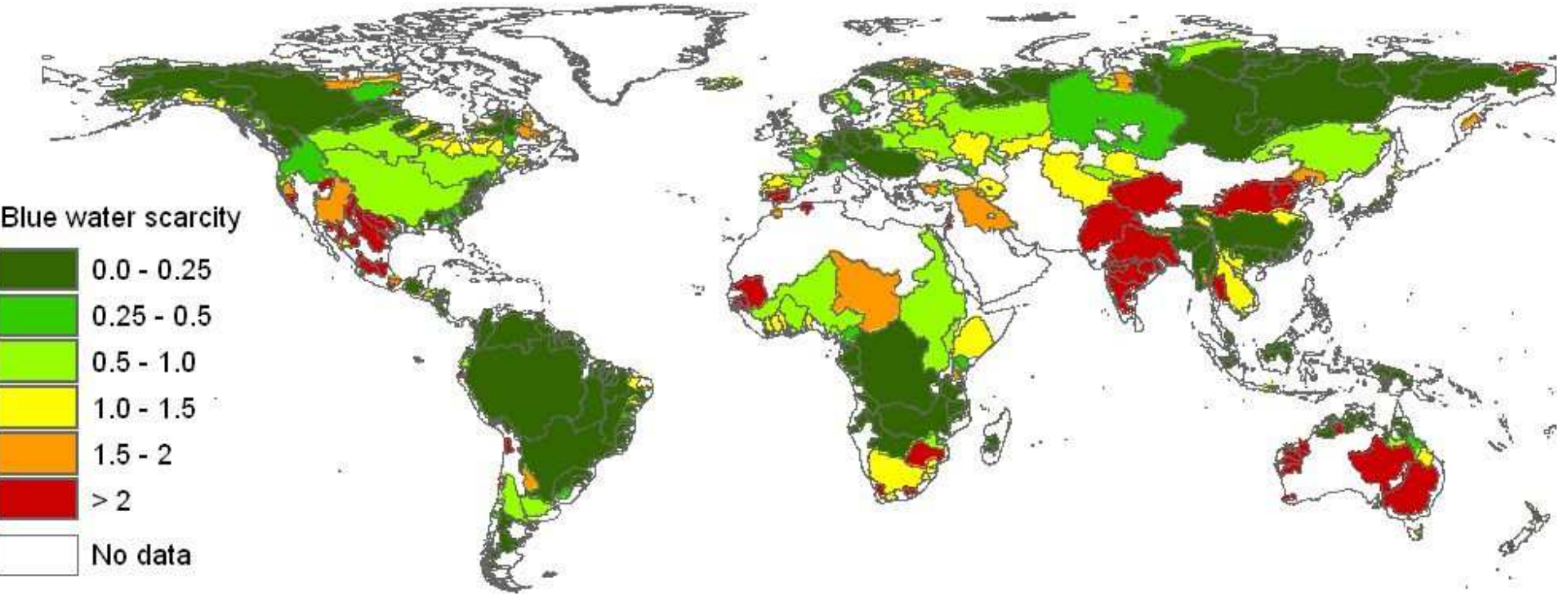

Extinctions per thousand species per millennium
00 000
10 000
1 000
100
10
1
0.1
0
Distant past
(fossil record)
Recent past
(known extinctions)
Future
(modeled)
Projected future extinction rate is more than ten times higher than current rate
Current extinction rate is up to one thousand times higher than the fossil record
For every thousand mammal species, less than one went extinct every millennium
Long-term average extinction rate
Marine species
Mammals
Mammals
Birds
Amphibians
All species
Source: Millennium Ecosystem Assessment

Projections of anthropogenic impacts on the planet



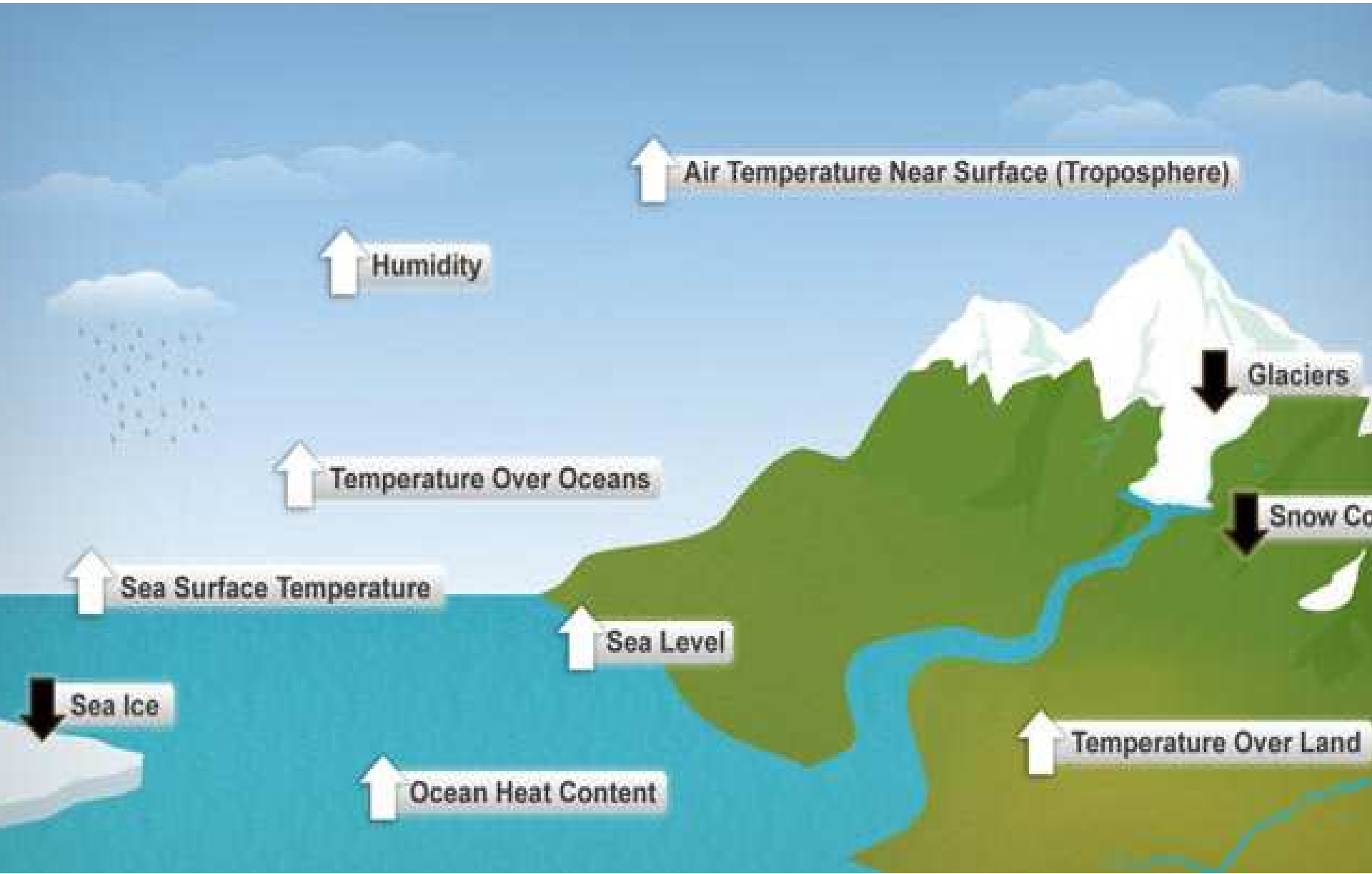
Source: WWF. Living Planet Report, 2010

Blue water availability per month in world basins, 1996-2005



Fuente: Hoekstra and Mekonnen, 2011

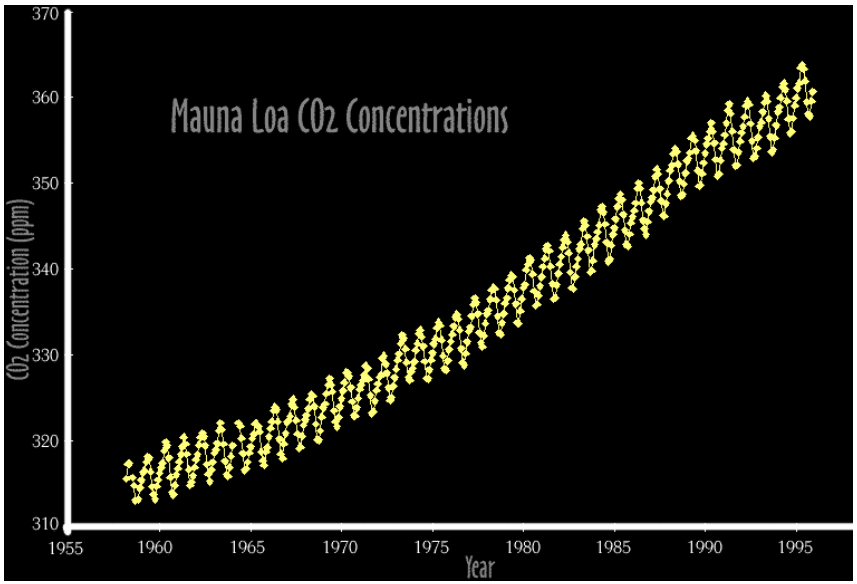
Why & how is climate change impacting?

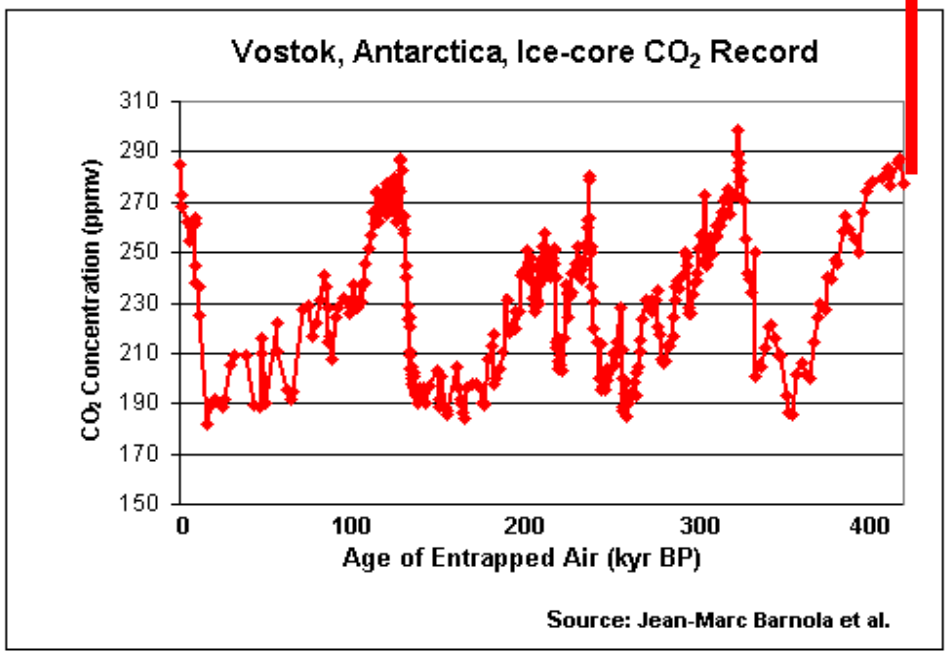


Atmospheric concentration of CO2

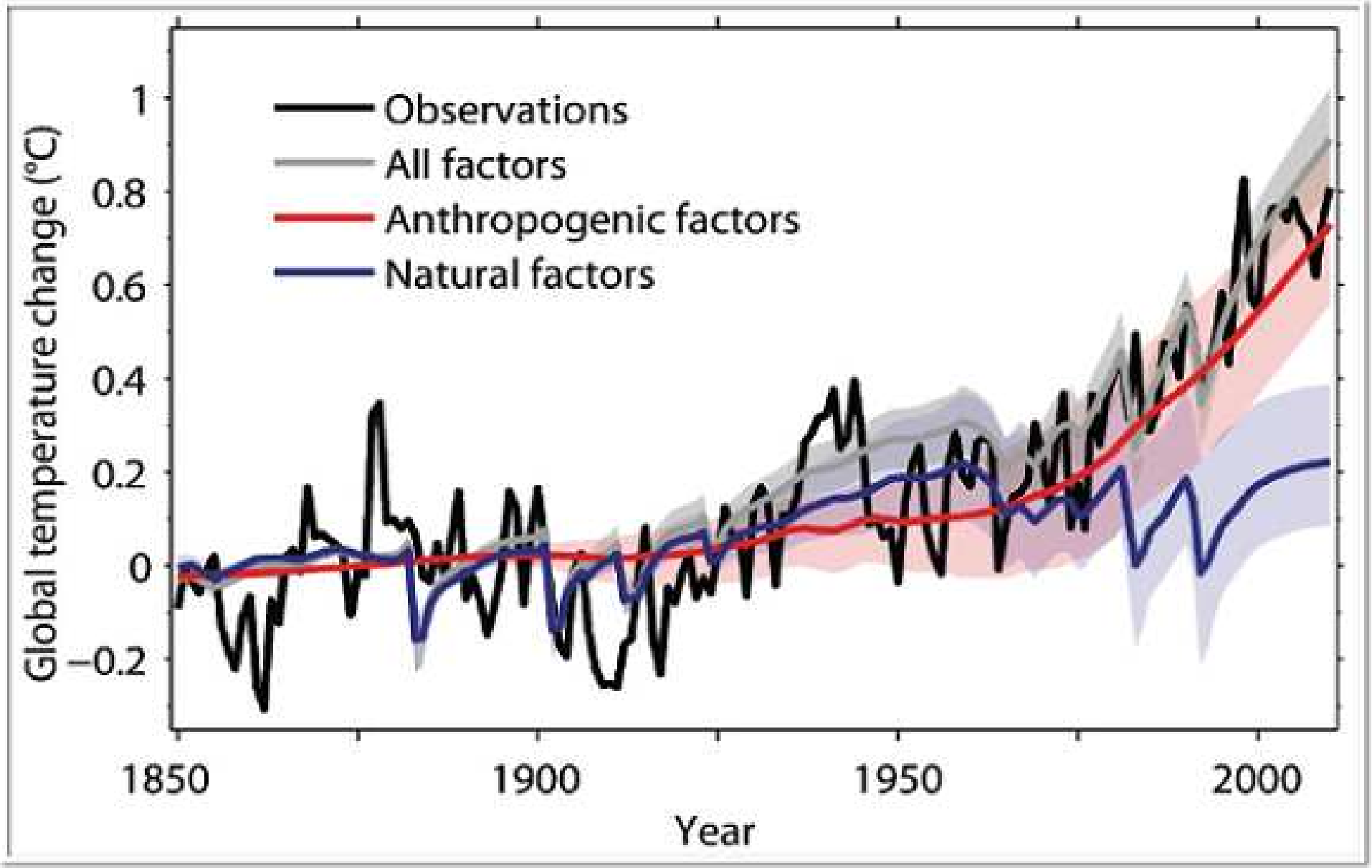
With 90% of confidence global warming in the 20 centuries is due to the increase of anthropogenic green house gases

2011=397 ppm



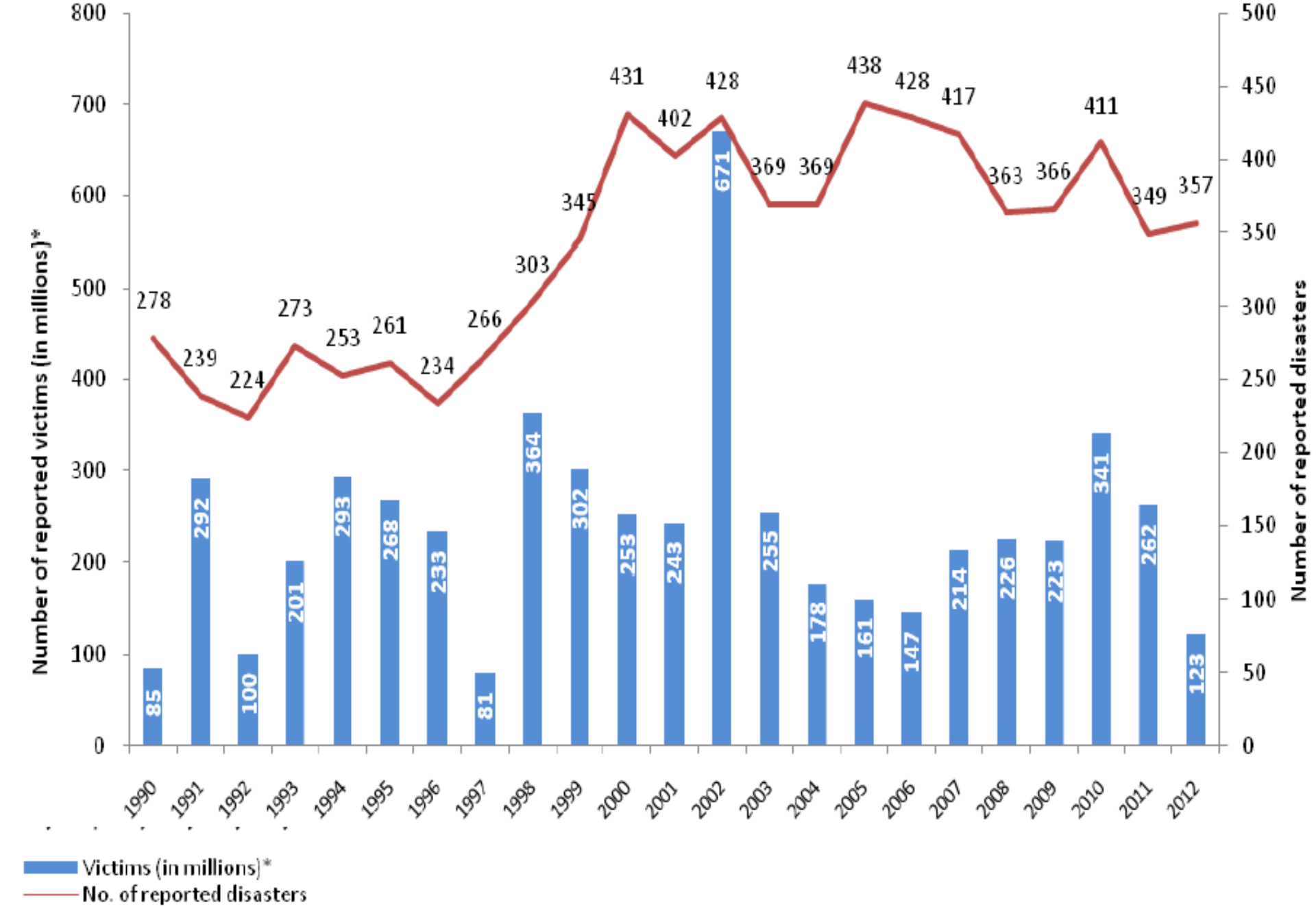


Natural and Human Contributions to Temperature Change

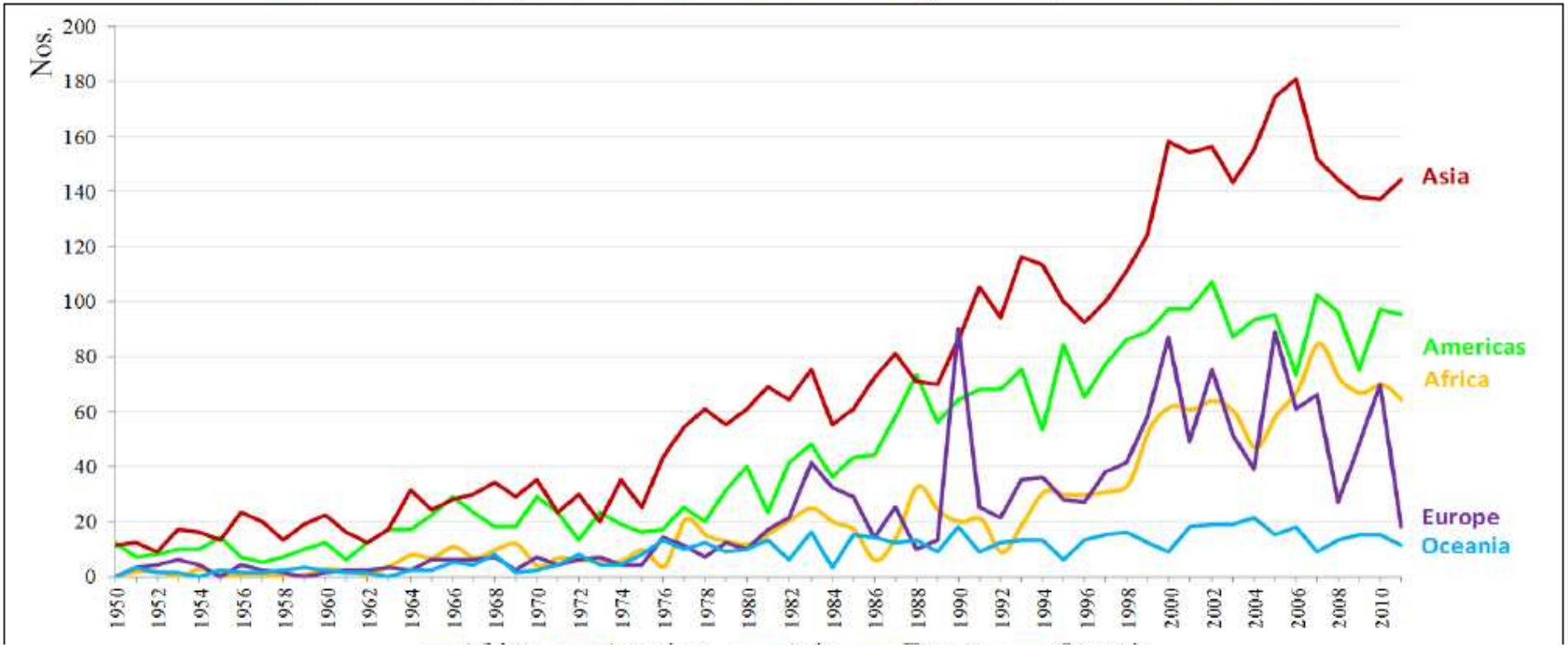


Markus Huber and Reto Knutti, Nature Geoscience, 5, 31-36, 4 December 2011

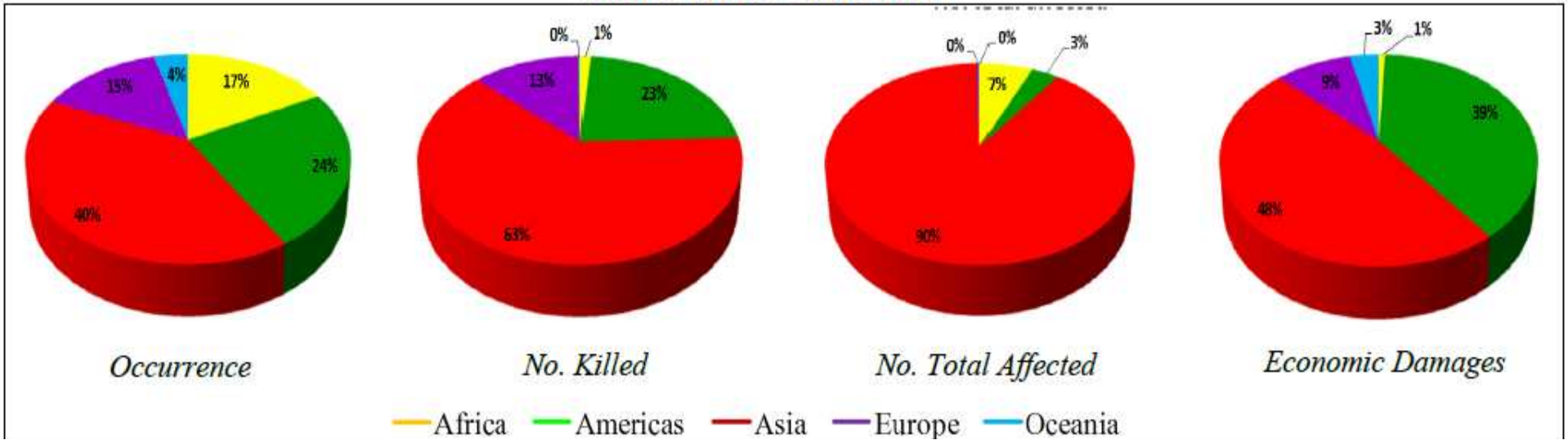
2. Why is climate change threatening humanity and the Earth? Some basic data at glocal (global, national, local) level


Number of reported victims (in millions)*
Number of reported disasters
800
700
600
500
400
300
200
100
0
500
450
400
350
300
250
200
150
100
50
0
278
239
224
273
253
261
234
266
303
345
431
402
428
369
369
438
428
417
363
366
411
349
357
85
292
100
201
293
268
233
81
364
302
253
243
671
255
178
161
147
214
226
223
341
262
123
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
Victims (in millions)*
No. of reported disasters

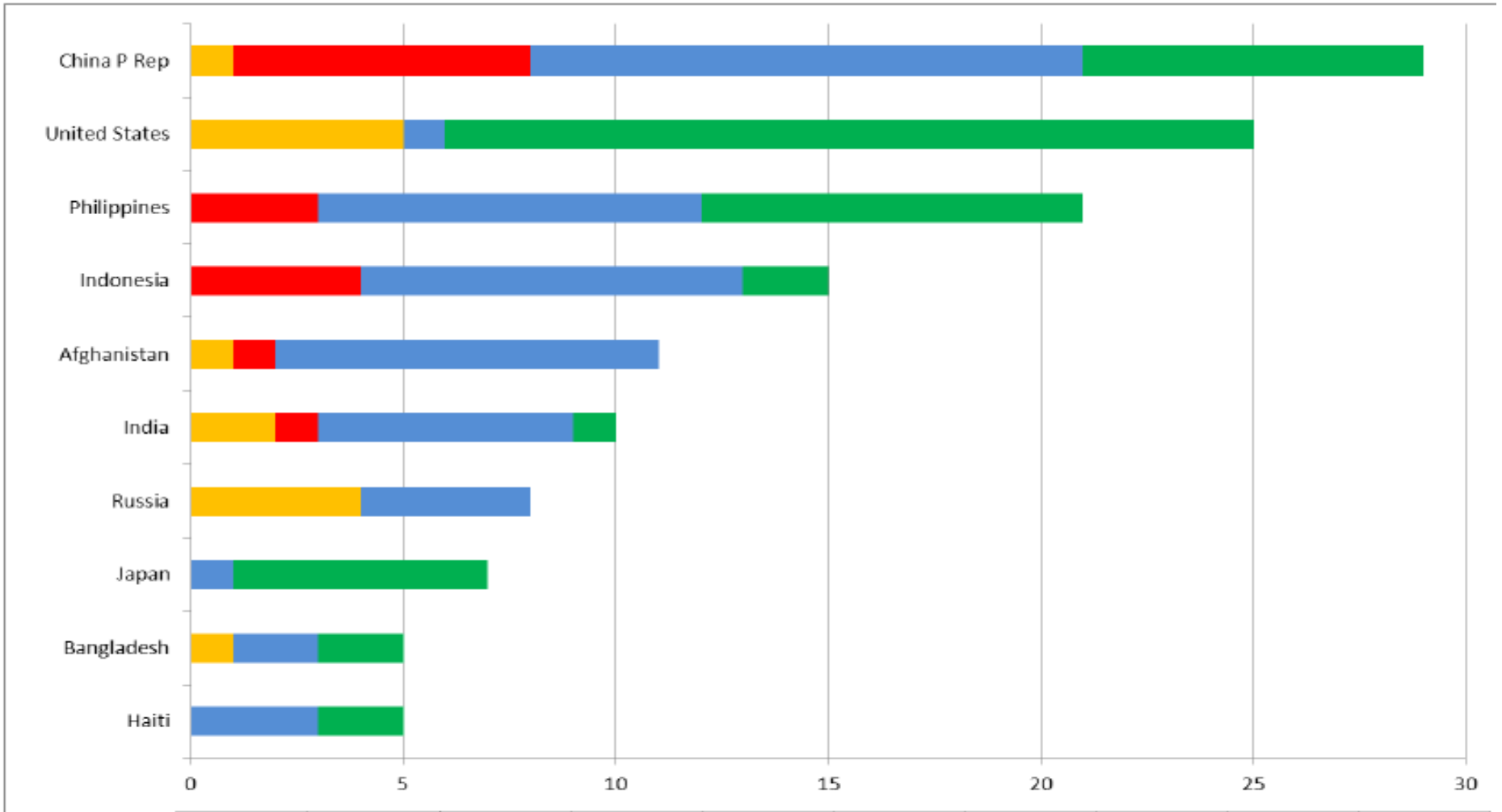
Occurrence of reported natural disasters by continent: 1950 to 2011



Asia's share: 2002-2011



Top ten countries by reported events



	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

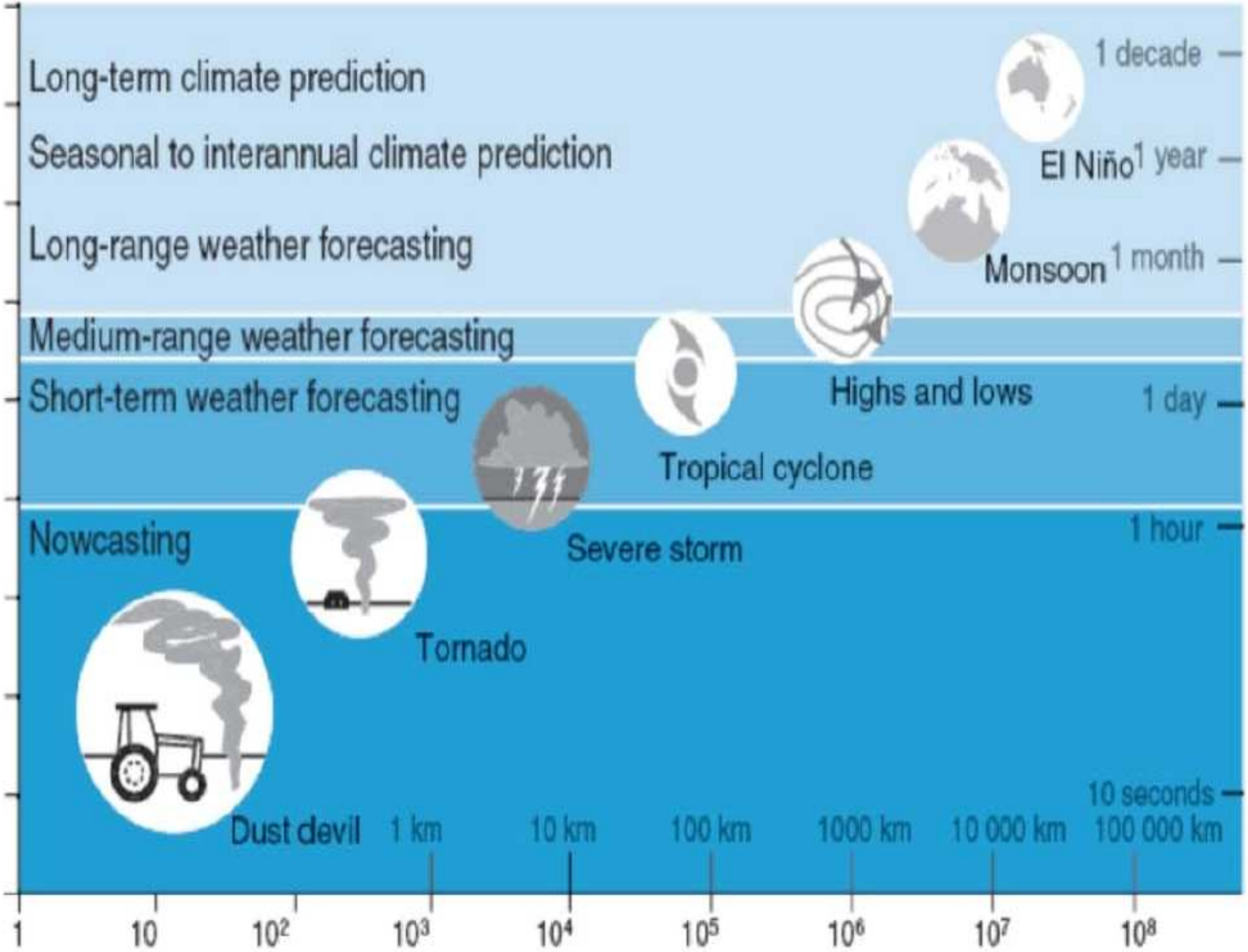
Disaster	Date	No Total Affected
Drought	Apr-2008	10,000,000
Flood	5-Aug-2011	9,500,000
Flood	10-Oct-2010	8,970,653
Drought	Mar-2010	6,482,602
Drought	Jan-1999	6,000,000
Flood	30-Jun-1996	5,000,000
Drought	Feb-2002	5,000,000
Flood	1-Aug-1995	4,280,984
Flood	Oct-2002	3,289,420
Flood	3-Jan-1975	3,000,093

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

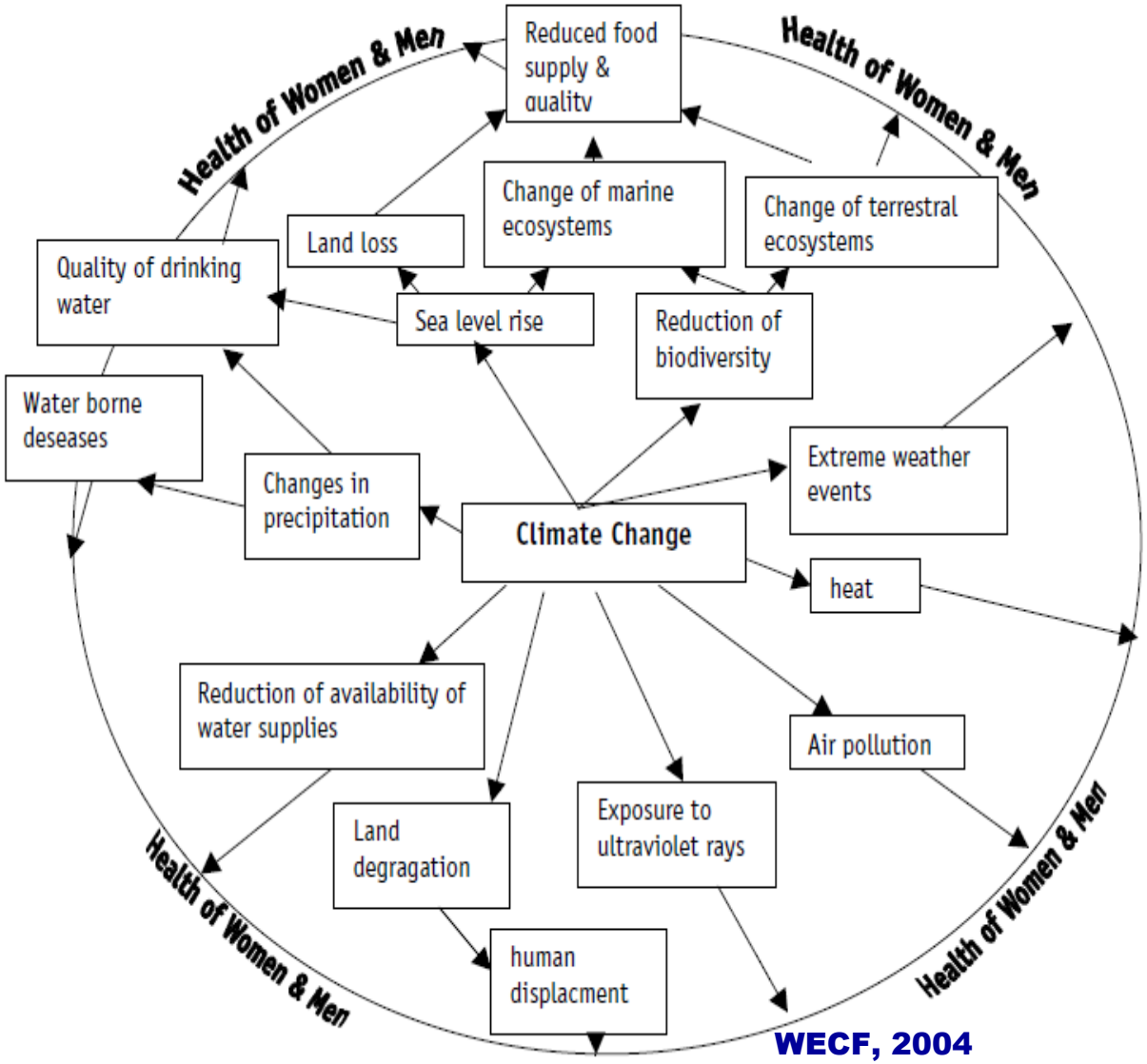
Main Disasters in Thailand: recent & CC-related

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

3. What are the fundamental glocal risks and challenges during the next three decades?: need for a paradigm shift in social sciences


Long-term climate prediction
Seasonal to interannual climate prediction
Long-range weather forecasting
Medium-range weather forecasting
Short-term weather forecasting
Nowcasting
1 decade
El Niño
1 year
Monsoon
1 month
Highs and lows
1 day
Tropical cyclone
Severe storm
1 hour
Tornado
Dust devil
10 seconds
1 km
10 km
100 km
1000 km
10 000 km
100 000 km
1
10
10²
10³
10⁴
10⁵
10⁶
10⁷
10⁸

Direct and indirect effects of climate change on human health: complex interrelations



WECF, 2004

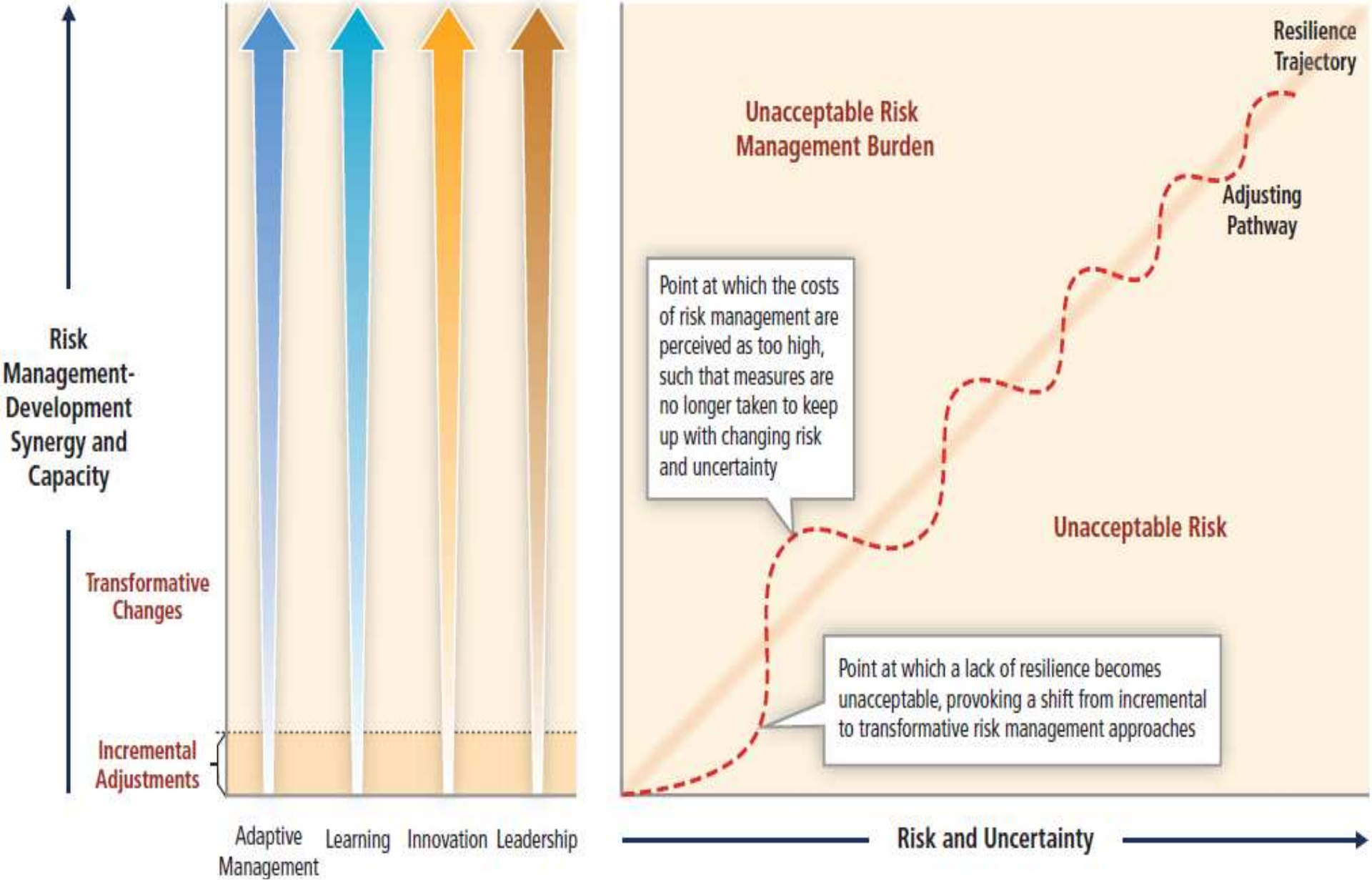
What do we mean with risks, loss & damages: for whom? causes & victims?

- **Risks for whom**
  - Damages for whom and from what?: cause ⟹ nature; ⟹ cost; ⟹ social structure and mindset?
  - Loss for whom and from what?
  - Vulnerability: social and environmental
  - Divided world: due to different impacts and coping capacities
- **Anticipating thresholds from what to what?**
  - weather related hazards and extreme weather events
    - rapid onset hazards
    - slow onset hazards
  - dangerous or catastrophic climate change
  - chaotic consequences in the climate system (tipping points)
  - different world views, mindsets and interests
    - Business-as-usual
    - Sustainability transition

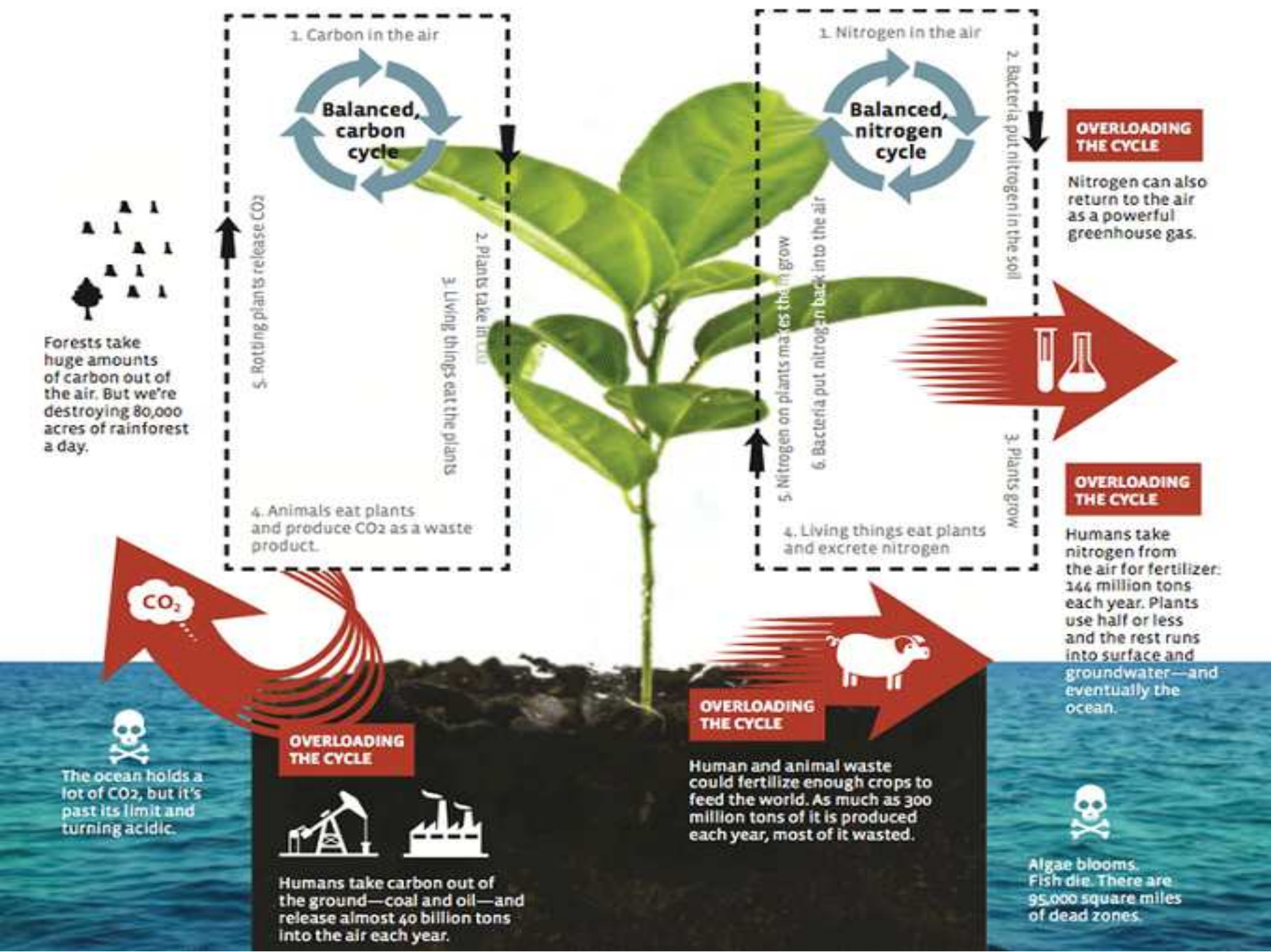
Global Risks (Beck, 2012)

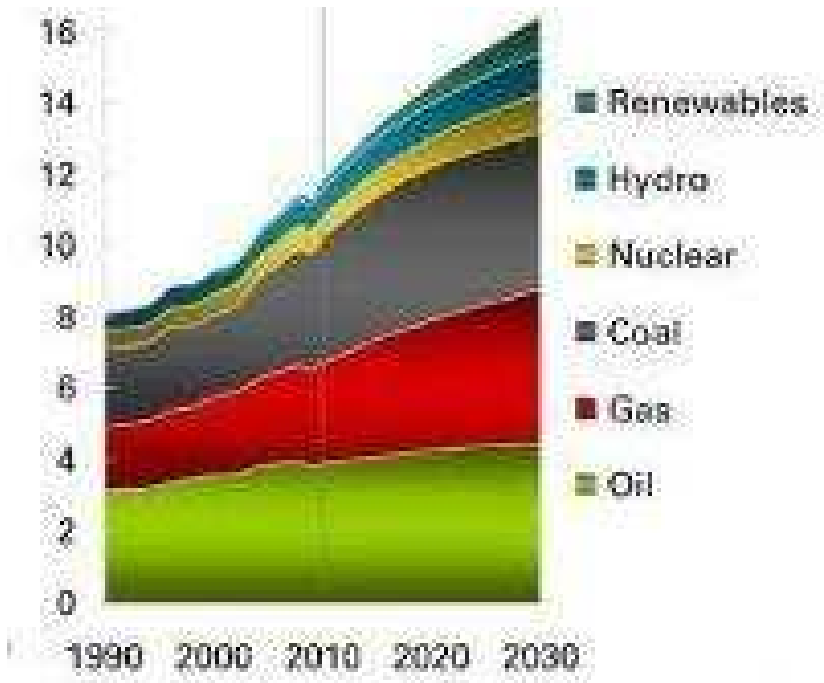
1. **De-localization:** causes and consequences are not limited to one space: they are **omnipresent**. Do not respect borders and nation states and have long latency period (e.g. toxic waste, CC): nation-state is not the frame ⟶ cosmopolitain post-modern authorities
2. **Incalculableness:** unpredictable, complex, non-linear, global with local impacts and impersonal
3. **Uncertainty**: unknown, unpredictable future with cascading effects (Fukushima) or tipping points
4. **Non-compensatibility:** precautionary principle, preventive & proactive instead of reactive behaviour

Social sciences incremental & transformative pathways to resilience

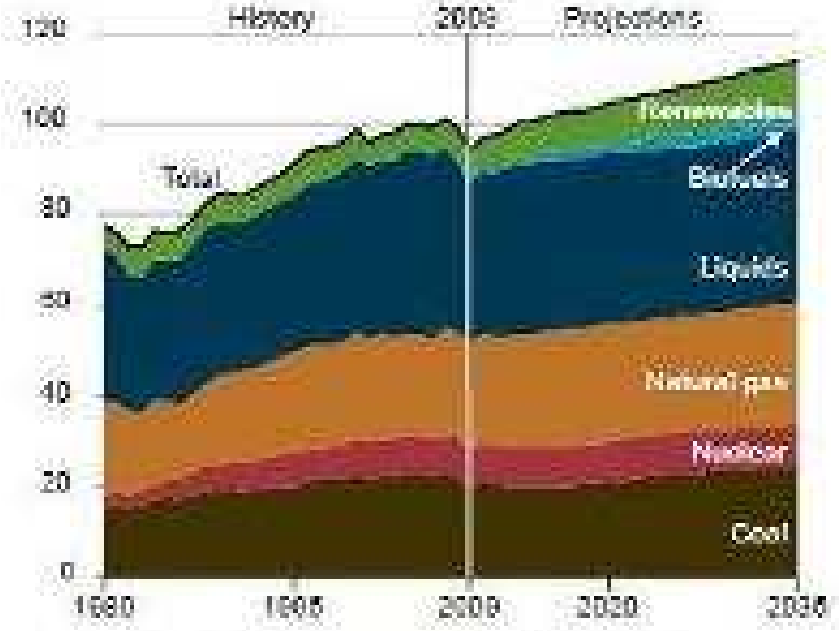


4. What are the crucial obstacles for a different glocal change? Worldview, mind-sets and governance deficiencies

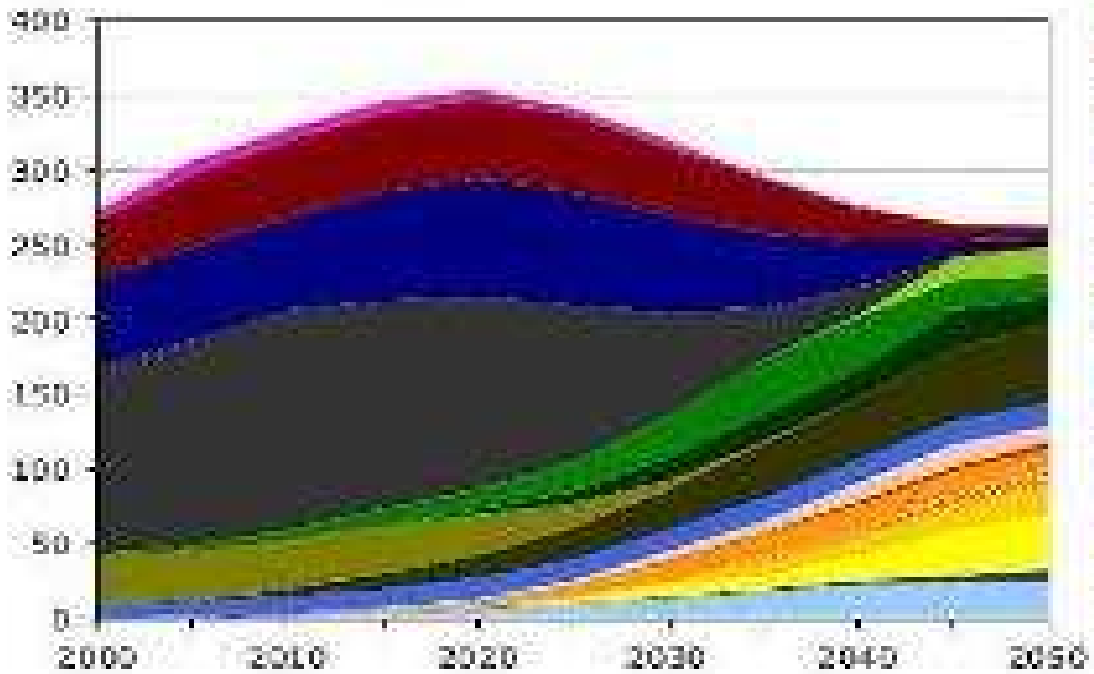

1. Carbon in the air
Balanced, carbon cycle
2. Plants take in CO2
3. Living things eat the plants
4. Animals eat plants and produce CO2 as a waste product.
5. Rotting plants release CO2
Forests take huge amounts of carbon out of the air. But we're destroying 80,000 acres of rainforest a day.
1. Nitrogen in the air
Balanced, nitrogen cycle
2. Bacteria put nitrogen in the soil
3. Plants grow
4. Living things eat plants and excrete nitrogen
5. Nitrogen on plants makes them grow
6. Bacteria put nitrogen back into the air
OVERLOADING THE CYCLE
Nitrogen can also return to the air as a powerful greenhouse gas.
OVERLOADING THE CYCLE
Humans take nitrogen from the air for fertilizer: 144 million tons each year. Plants use half or less and the rest runs into surface and groundwater—and eventually the ocean.
CO2
OVERLOADING THE CYCLE
Humans take carbon out of the ground—coal and oil—and release almost 40 billion tons into the air each year.
OVERLOADING THE CYCLE
Human and animal waste could fertilize enough crops to feed the world. As much as 300 million tons of it is produced each year, most of it wasted.
The ocean holds a lot of CO2, but it's past its limit and turning acidic.
Algae blooms. Fish die. There are 95,000 square miles of dead zones.



BP Outlook 1990-2030: 16



Energy Information Agency Outlook 1980-2035: 63



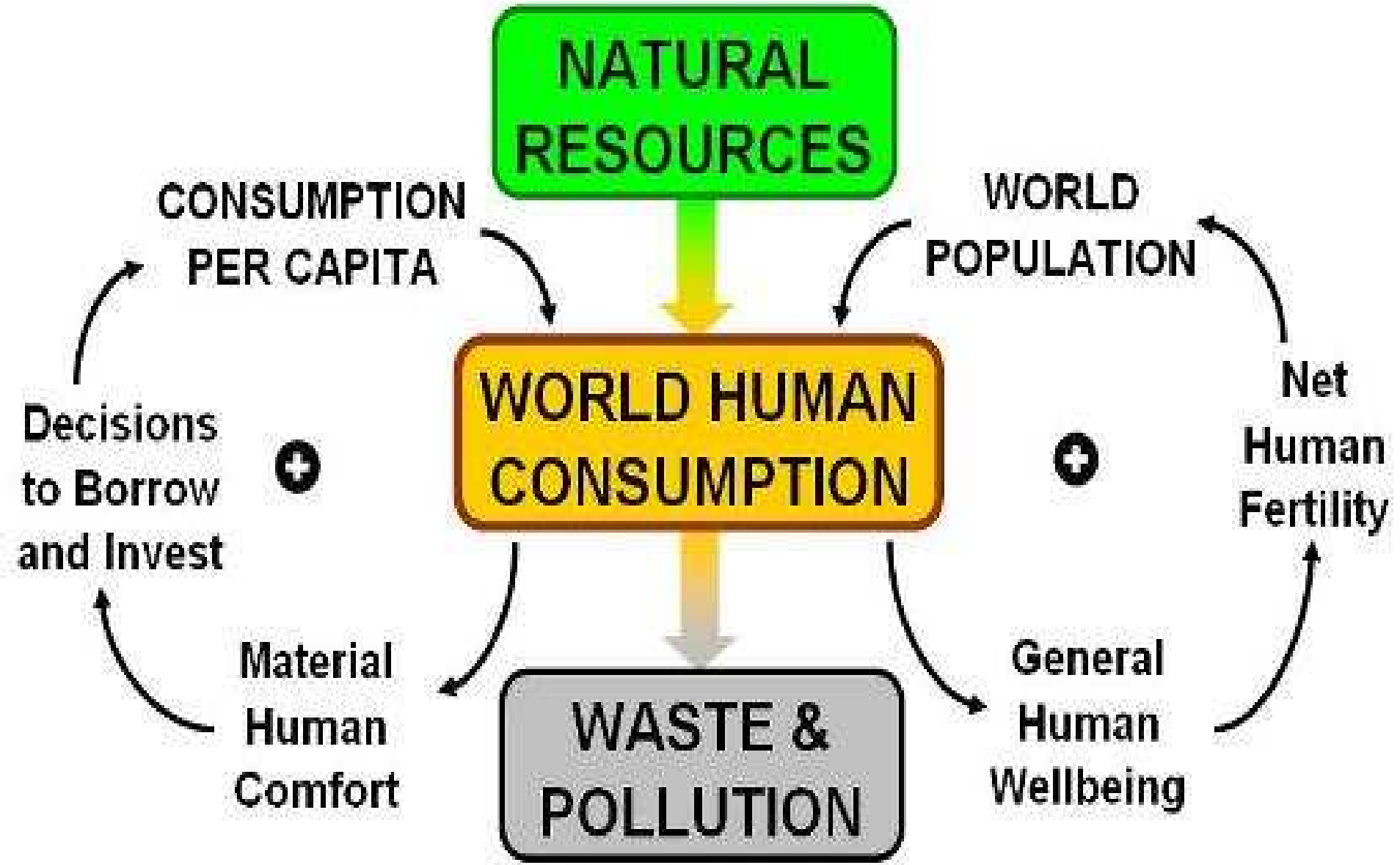
Different mindsets: interest-driven

WWF Outlook 2000-2050: 92

Mindset

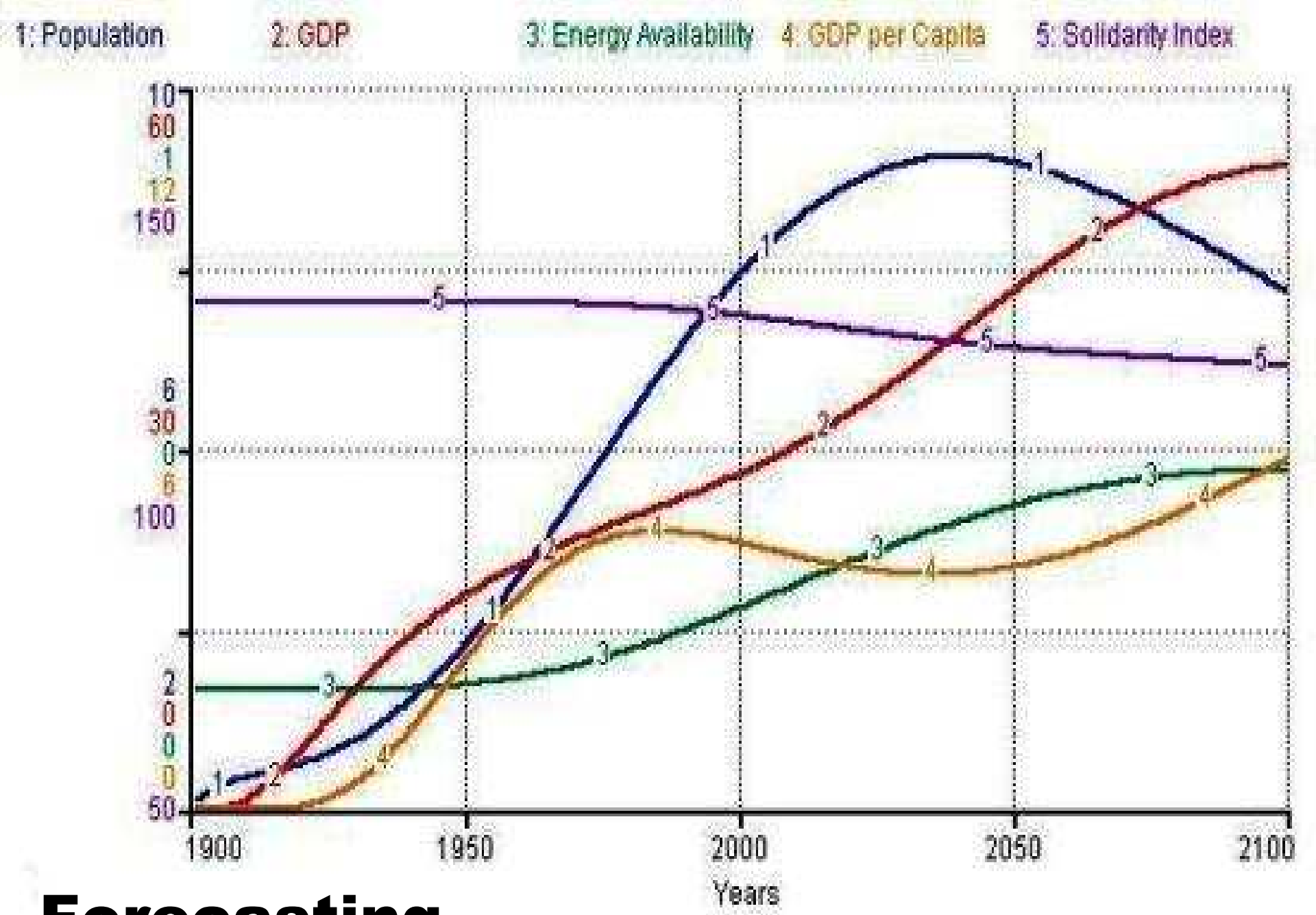
- Includes a **fixed mental attitude** or disposition that predetermines a person's responses to and interpretations of situations by referring to different patterns of perceiving and reasoning.
- Over-coming these deeply ingrained constraints cannot be solved by convenient **technical fixes** but requires much **deeper** and **radical changes** in our **own aspirations** and **consumption patterns** and those of **civil society**, the **business community**, and finally also those of our **governments and international organizations.**

Sustainability Paradox



Willard R. Fey & Ann C. W. Lam, 1999

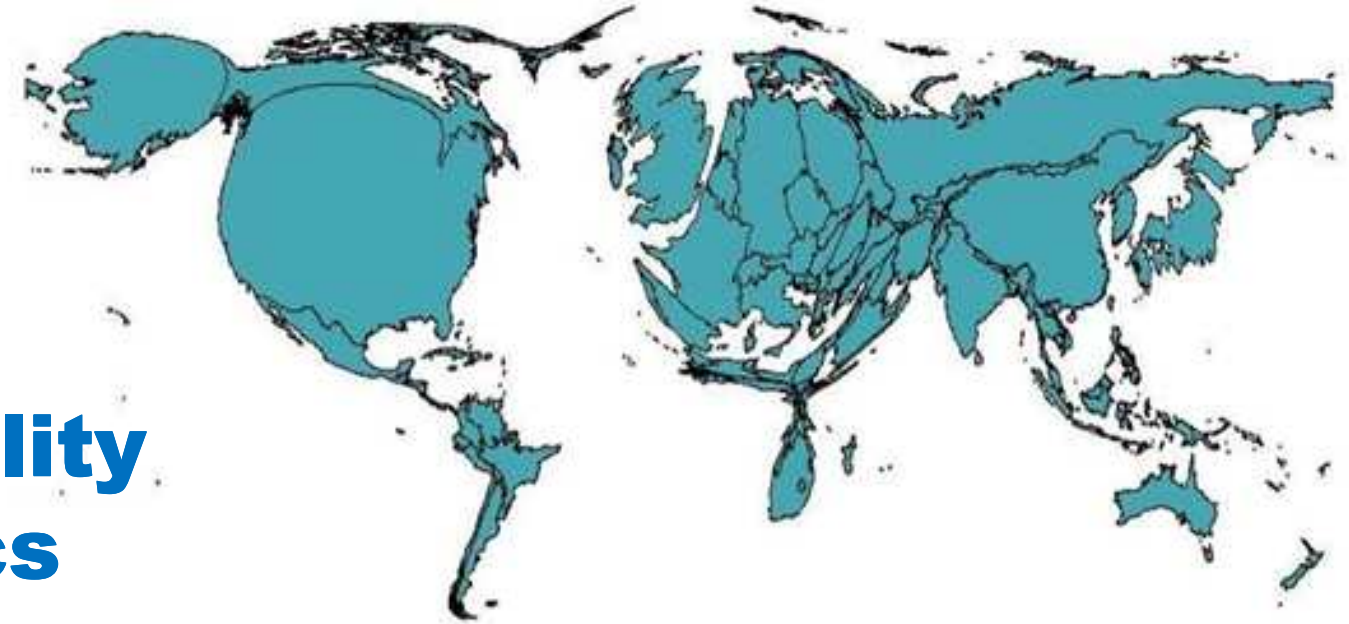
5. How can transformative social sciences lead to a glocal connectedness?

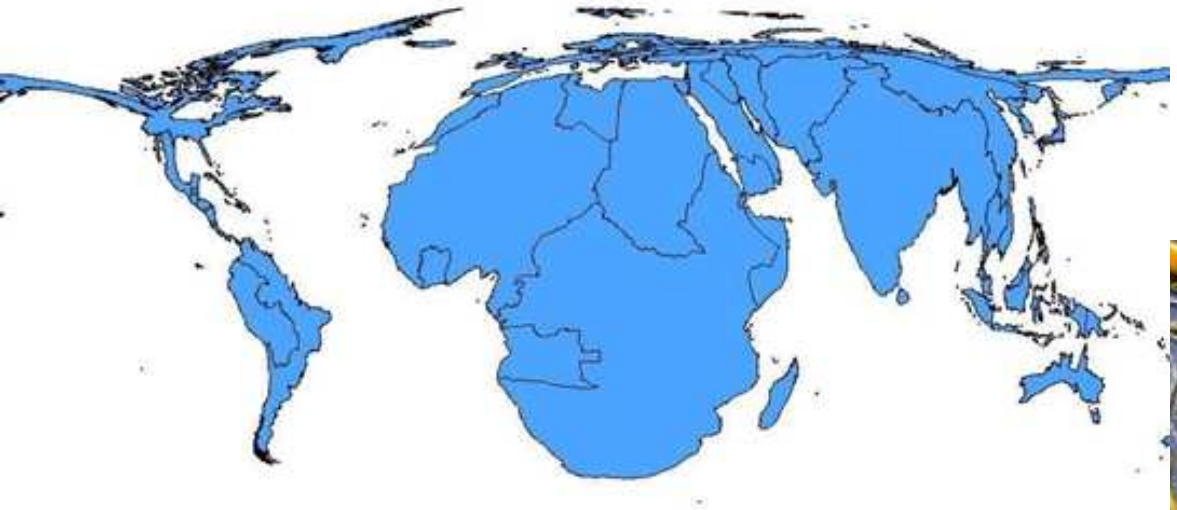


Forecasting

Global responsability and ethics

Cumulative Greenhouse Gas Emissions, 2002





Mortality rate attributable to climate change, 2000

Patz et al., 2007

Why do we need to act?

1. Global environmental change and climate change are **increasing** biodiversity **loss, risks and hazards**, creating dangerous feedbacks and potential tipping points.
2. Hydrometeorological extreme events are getting stronger, affecting humans, infrastructure and ecosystems, and in some regions more frequent.
3. On the one hand we have **declaratory goals by the G-8** to reduce the impacts of GEC, especially greenhouse gases by 50% to 80% by 2050; on the other hand real emissions are rising at the highest level of established scenarios by IPCC and the implementation of the commitments of UNFCCC (1992) and the Kyoto protocol (1997) are uncertain.
4. Recent **financial and economic crises are delaying further a legally binding regime** and the dominant business-as-usual approach will not re-establish the equilibrium between nature and human beings.

Processes of awareness:

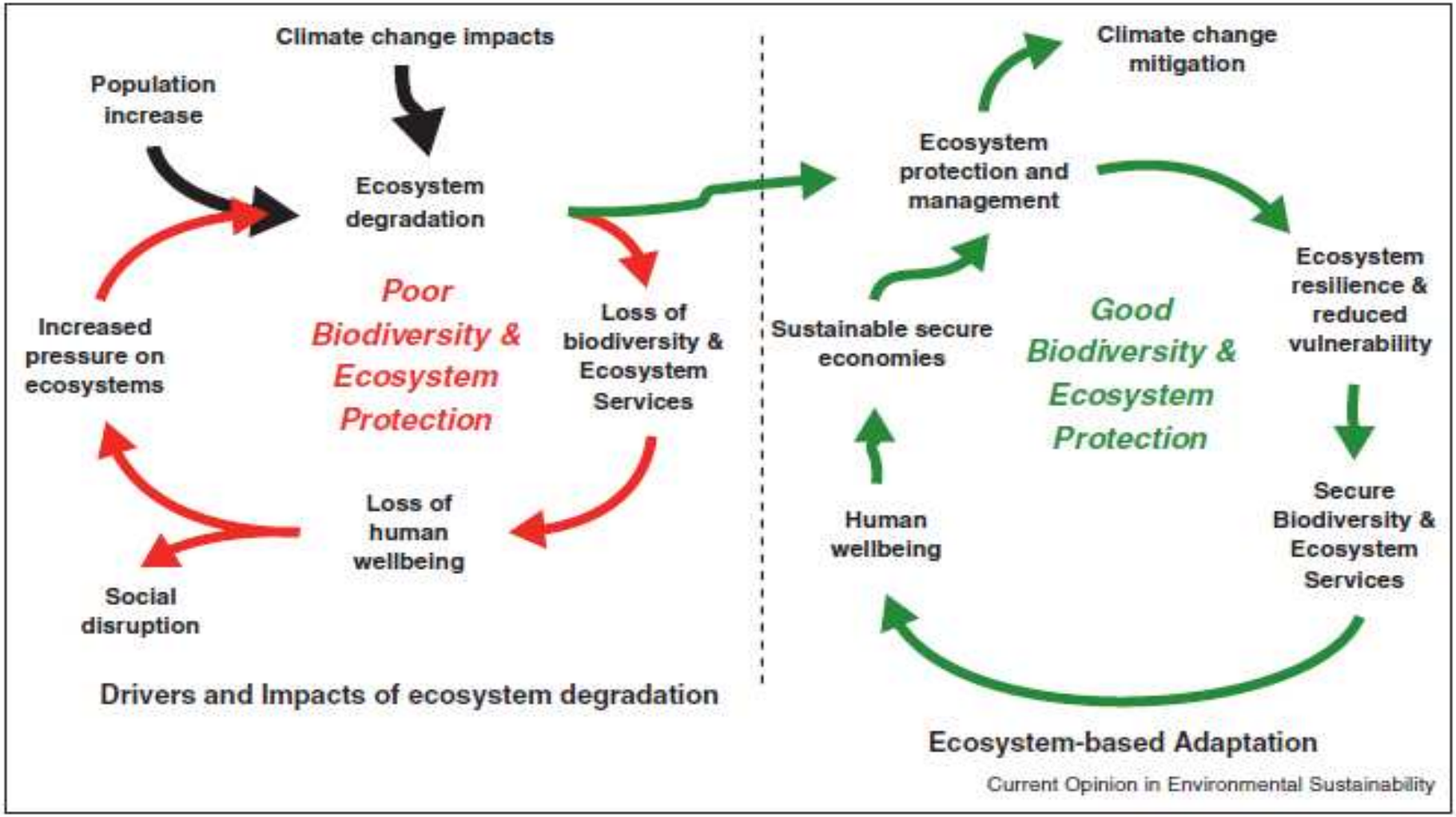
Awareness not of only one fundamental problem: GEC is complex: Climate Change, overpopulation, Peak Oil, chemical pollution, over-fishing, biodiversity loss, corporatism, economic instability, sociopolitical injustice. People become ardent activists for their chosen cause; very vocal; blind to any others.

Awareness of many problems: of complexity grows; committed to fighting for social justice; against climate change, resource depletion participative governance.

Awareness of the interconnections between the many problems: a solution in one domain may worsen a problems in another (fracking): requires large-scale system-level thinking with *sets of problems;* dialogue is essential & depth of exploration, because few people who have understood the interrelations.

Awareness that the predicament encompasses all aspects of life: our relationships with each other, with biosphere and the physical planet; no problem is exempt from consideration or acceptance.

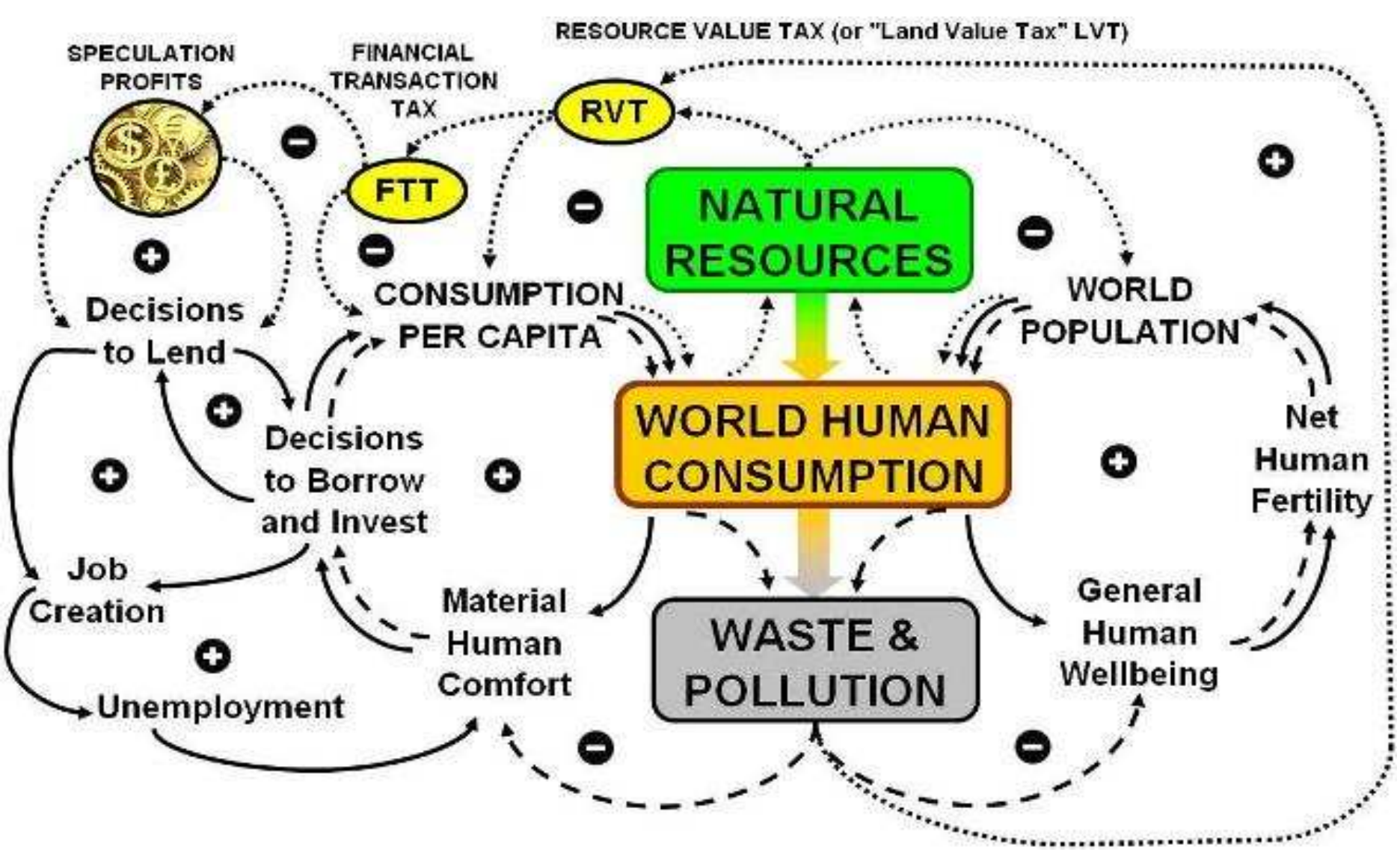
Ecosystem-based adaptation



Climate change and Ecosystem-based Adaptation: a new pragmatic approach to buffering climate change impacts

Richard Munang[1], Ibrahim Thiaw[1], Keith Alverson[1], Musonda Mumba[1], Jian Liu[2] and Mike Rivington[3]

Current Opinion in Environmental Sustainability 2013: 2



THE SUSTAINABILITY PARADIGM WITH ENVIRONMENTAL & FINANCIAL LOOPS

The positive signs indicate positive (self-reinforcing) feedback loops
The negative signs indicate negative (self-correcting) feedback loops
Resource Value Taxes (RVT) are a function of natural resource depletion/deterioration
Financial Transaction Taxes are a function of RVT and the volume of non-real financial assets
RVT and FTT serve to reinforce job creation and employment opportunities

Challenges: glocal connectedness

A **post-carbon & dematerialized society** where **solidarity, equity, and social justice** are key drivers instead of the maximization of profits and the exploitation of the Earth, without caring about the **next generations** and of the collapse of the **ecosystems and ecosystem services**.

A scientific challenge for an **interdisciplinary** collaboration among sociology, psychology, politics, anthropology, demography, economy, ecology, ethics, philosophy, arts and religions to achieve human, gender and environmental security: a **HUGE security.**

6. Local sustainable transition: overcoming patriarchal mindset with social transformative sciences

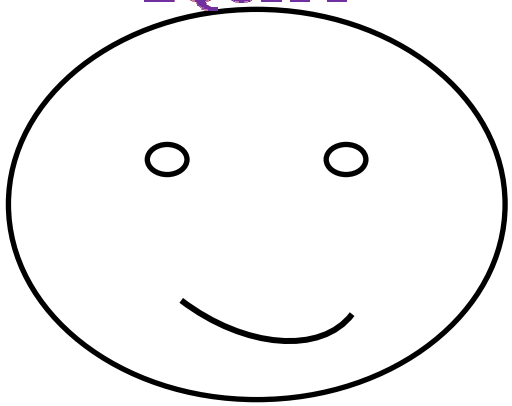
¿How to avoid that the same social structures are reproduced again ?

Adapted from Kavita Ratna

HIERARCHY
AUTHORITARISM
DISCRIMINATION

COLABORATION
EQUITY

PARTICIPATIVE
DEMOCRACY

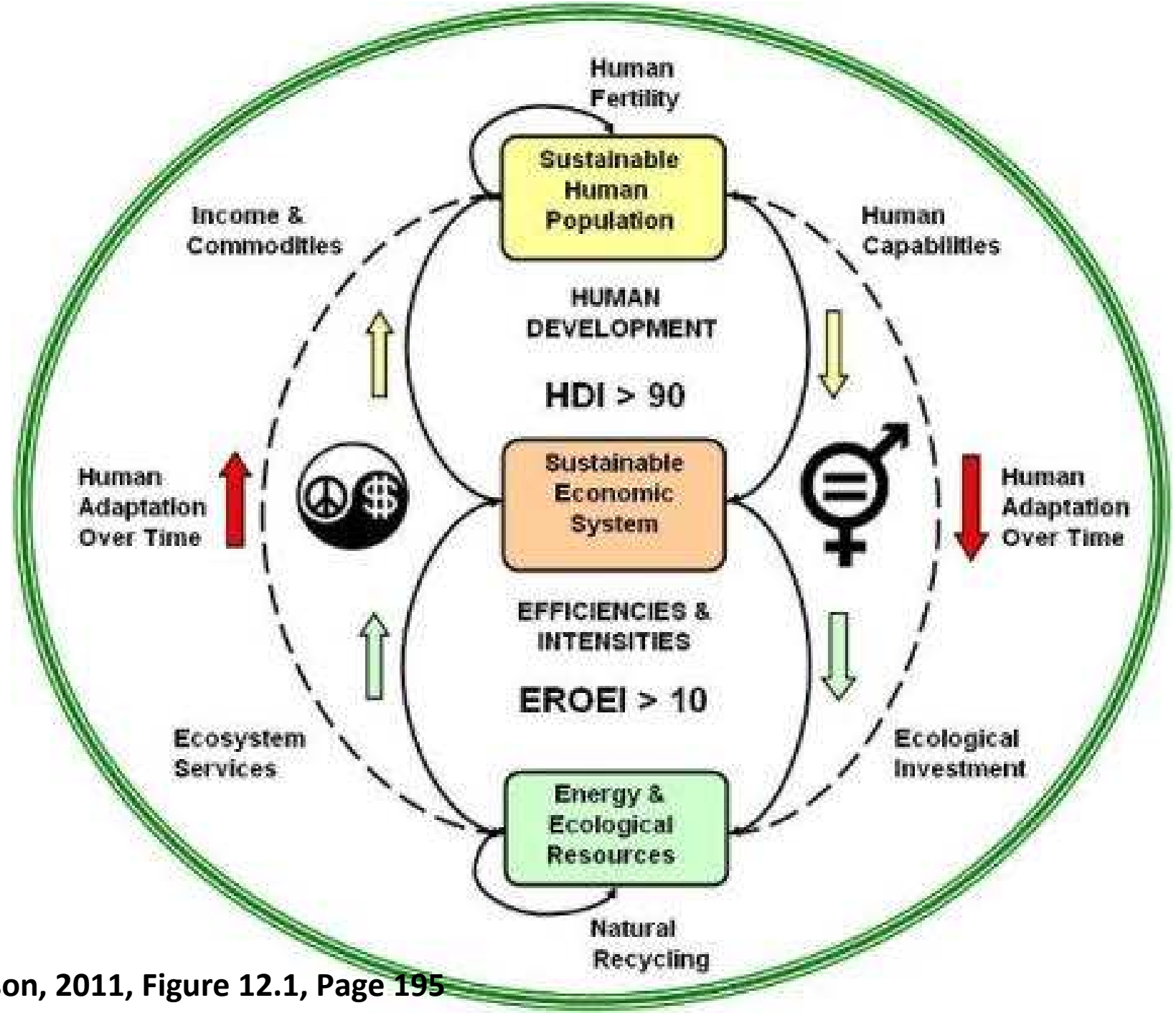


DEPENDENCY
VIOLENCE

CIRCULAR
INTERDEPENDENCY

INDEPENDENCY
CARING FOR
HUMANS AND
NATURE

- **The first phase is concientization to enable incentivation**. The objective is to create widespread popular support for the required revisions of tax codes and energy subsidies. In other words, the first phase is about creating a collective mindset of global citizenship and social responsibility, strong enough to translate into political will to face the inevitable transition and implement required reforms. Gender equity is key.
- **The second phase is incentivation to enable redistribution**. The objective is to reform tax codes and energy subsidies to expedite the transition from fossil fuels to clean energy. Applicable reforms include shifting taxes from earned income to the usage (extraction) of unearned resources and the release of pollution, as well as taxing financial transactions of dubious social value. Gender equality is key.
- **The third phase is redistribution to enable democratization**. The objective is to institutionalize democracy with gender balance and distributive justice. This may entail adopting a Universally Guaranteed Personal Income (i.e., a basic minimum income rather than a minimum wage) and a Maximum Allowable Personal Wealth (i.e., an upper limit on financial wealth accumulation) democratically adjusted periodically, Happiness Index
- **The fourth phase is worldwide democratization**. The objective is participative democratization of global, national and local governance with deeply ingrained gender balance and widely institutionalized implementation of the **solidarity, subsidiarity, and sustainability** principles. Decisions at the lowest level must increase governance capabilities and care about the common good of humanity.



Tim Jackson, 2011, Figure 12.1, Page 195

Social sciences produce a paradigm shift in worldview and mind-set

Perception, ideas and beliefs of the world through which people interpret and interacts with the world in different ways:

1. in *ontology* (how should look the new descriptive world model?)
2. in *explanation* (how should this model function?)
3. in cognitive orientation of a society (what are its values, emotions, and ethics; Palmer, 1996: 114)
4. in *praxeology* or the theory of action: how should our goals be attained (what should we do for changing?)
5. in v*alues* (how will it be achieved and what are the obstacles?)
6. in *epistemology* or in the theory of knowledge (what is true and false & what are the underlying processes and obstacles for change?)
7. in *etiology* or constructed worldview (what is the critical account of our own building blocks, origins and constructions; Aerts, Apostel, De Moor, Hellemans, Maex, Van Belle and Van der Veken, 1994).
8. in *futurology* (how should it look for in 1 decade & 1 century)

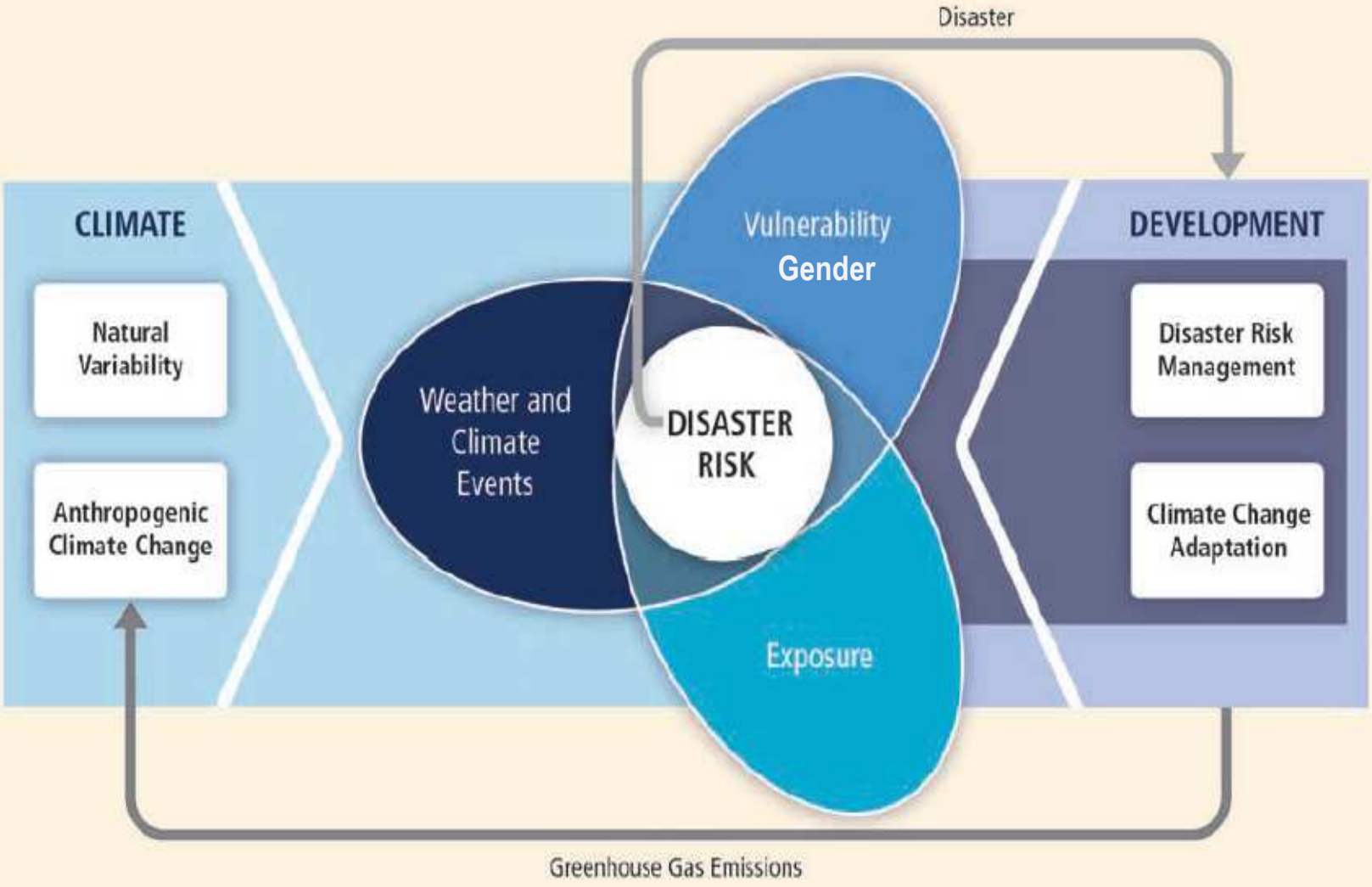
Participative governance

- A radical change to a **Sustainability Revolution** require participative governance: combining processes of policy initiation and adoption (**bottom-up**) and the implementation of the required fundamental transformations (**top down**) with **peaceful negotiation** processes based on diversity and tolerance.
- Moving towards the vision of a sustainable peace with human security requires **overcoming the Hobbesian obsession of a militarization** of the climate change impacts for national security and working globally for **human, gender and environmental security: a HUGE security**.

A deep cultural change: a new cosmovision

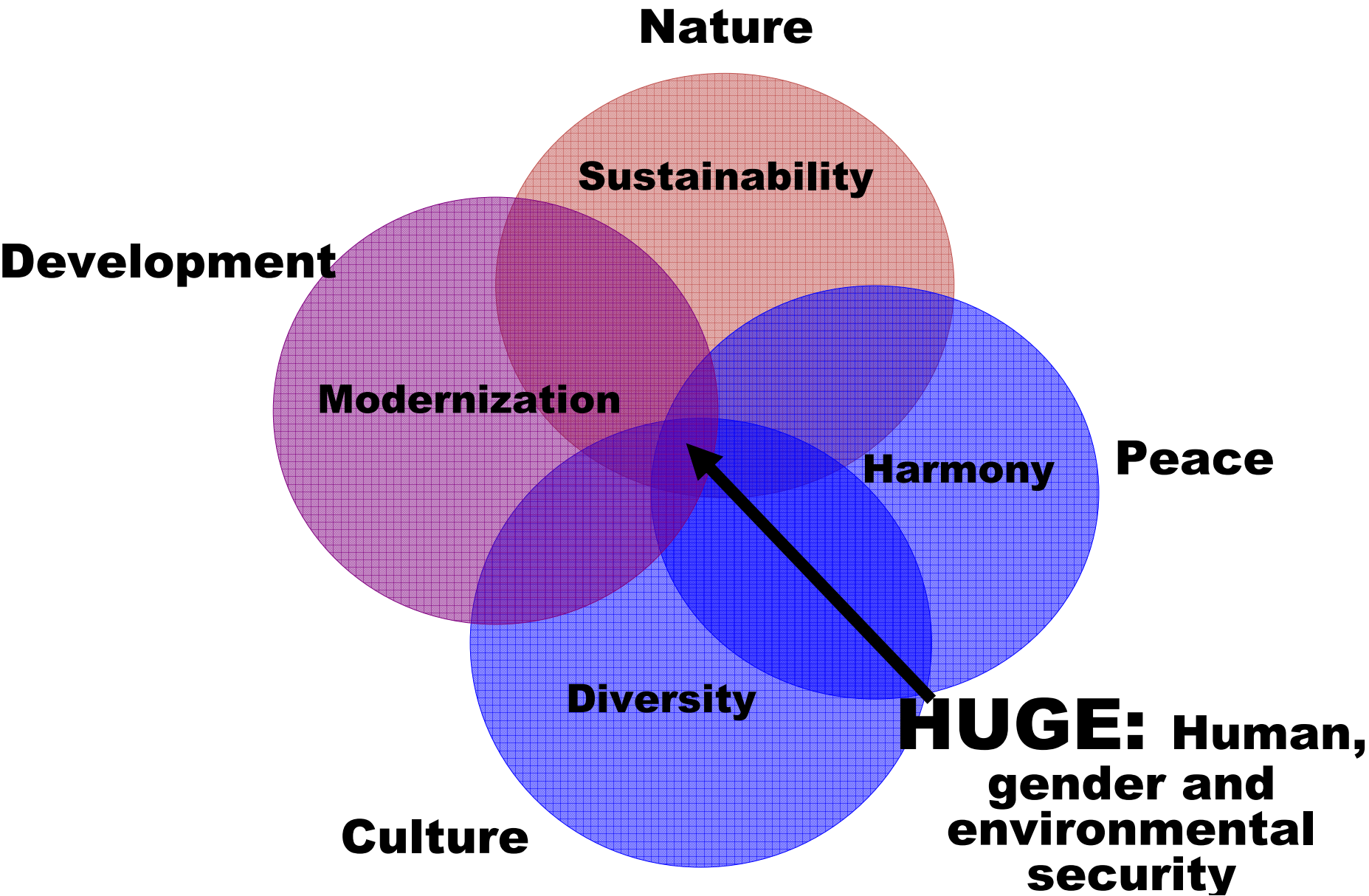
- is a **globally organized way of life based on values,** norms, beliefs, institutions and productive processes including the development of science and technology, but **locally diverse**
- is **transmitted from generation to generation** by formal and informal processes
- is a **learning process** which includes acculturation and enculturation
- **not based on natural laws** but socially constructed: interests maintain and reinforce structures of power and mechanisms of control
- is so **deeply internalized** and **legitimized** structures of beliefs and behavior of complex relationship, interdependence between progressive destruction of natural - human systems
- individual/ social actors, institutions, regimes, and worldviews require **fundamental change from cornucopian view to complex and sustainable biological-human system.**

7. Some preliminary conclusions: glocal connectedness with equity and sustainability



Integration of three epistemic communities (IPCC-SREX, 2012)

Sustainable development with peace



Goals of HUGE security

Goal of a global average increase of temperature of **2 °C by 2099**, through:

a) enhanced energy efficiency, a shift towards renewables and a gradual dematerialization and decarbonization of the economy

b) ecosystem recovery and restoration to maintain environmental services

c) integrated **water** basin management, rain harvesting, providing safe water, sewage facilities (including recycling and reuse), enhancing irrigation efficiency and substitution with less water demanding plants

d) combating **soil** erosion, degradation and desertification by integrated waste management, composting of organic **waste**; terracing, restoration of salinized and degraded soils, recovery of soil fertility by crop rotation

e) changes in our 'ways of life' and '**lifestyles**' by changing meat-intensive diets to vegetarian **food** (food culture)

f) reduction of advertisements for a **consumerist waste economy** and of individual demand for non-essential goods and enhancement of intellectual and spiritual aspirations possibly leading to a new modesty

g) political reforms of democratic governance to enhance longer-term orientations over short-termism, proactive over reactive policies.

International obligations for HUGE

International and peace community must take bold action :

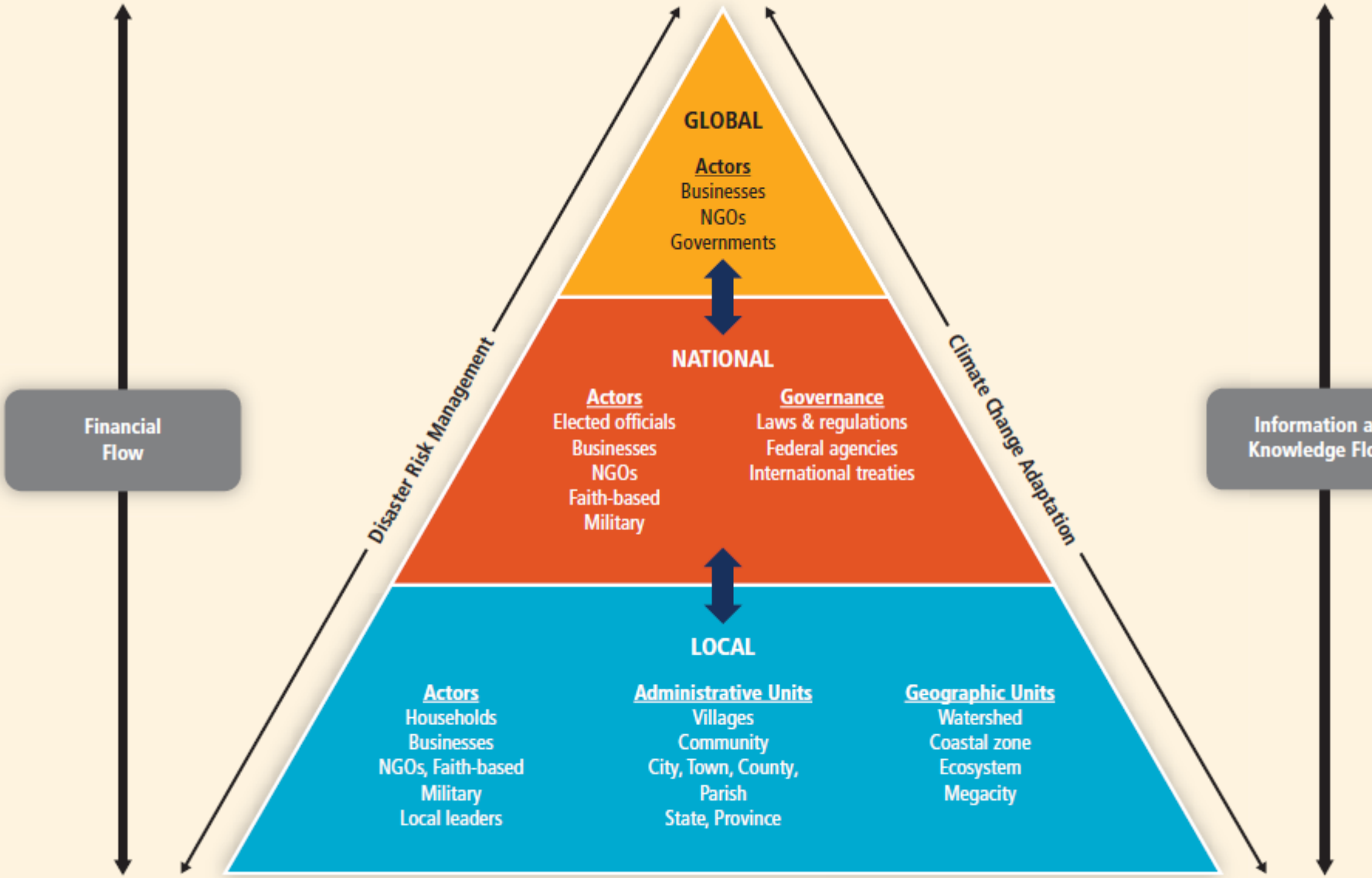
1. on **climate change mitigation** to avoid an intensification of security threats to human well-being;
2. provide support to climate change **adaptation in developing countries** through investments in capacity building on water management, food security, agricultural resilience, and public health systems to deal with increased disease incidence and risk;
3. **disaster prevention**, preparedness and response, early warning systems for various climate change impacts
4. redouble its efforts for **sustainable and equitable development** through development assistance, sustainable economic growth, financial and technological support towards a low-carbon path
5. **anticipate and prepare for unprecedented challenges** beyond existing mechanisms
6. support **climate-induced displacement and migration** beyond existing legal protective regimes ('statelessness' of citizens of SIDS and impacts on sovereignty, claims over marine resources, and rights and relocation of their citizens);
7. **water scarcity and stress** for millions due to melting of glaciers and snow pack
8. competition over newly accessible **Arctic** natural resources and trade routes

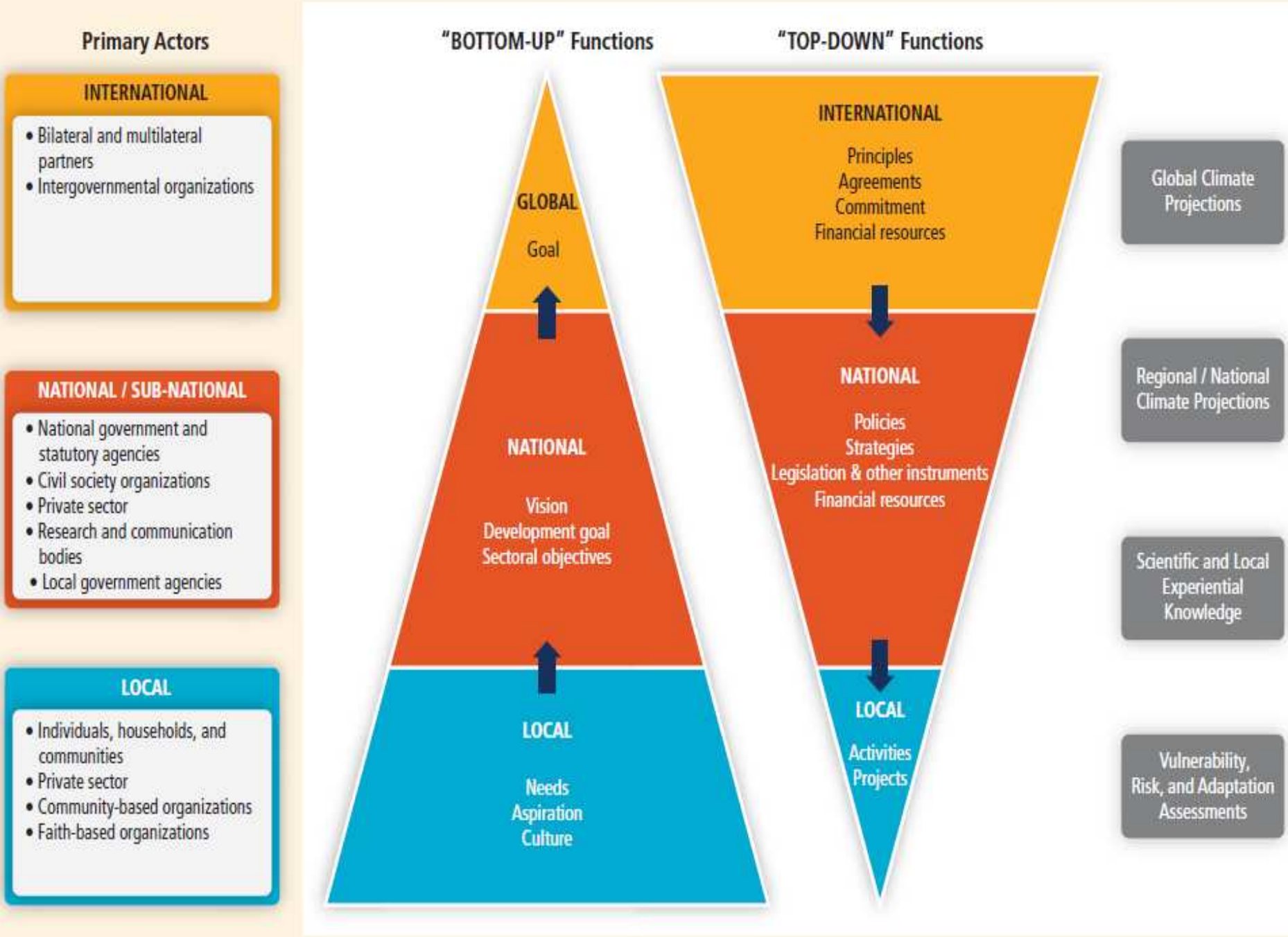
8. Interlinks from global to local and from local to global: arenas of social and environmental vulnerability

Some ideas for a research agenda

- Review and analysis of sustainable development concepts and trends with local experiences
- Review and analysis obstacles of MDG projects and trends
- Review and analysis human behavior in response to growth-sustainability trade offs and explain obstacles
- Use system dynamics (causal-loop diagrams and computer simulation) to analyze sustainable development scenarios
- Use mimetic theory to analyze scapegoating behavior and promote cross-gender analysis: from violence to nonviolence; from patriarchy to partnership of solidarity and sustainability
- Use of inter-dependency matrices to understand precedence relations.
- Sacred scriptures from various religious traditions are used as a point of reference, but understand underlying mimetic violence in patriarchal religions.

Linking local to global actores and responsabilities




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

Thank you very much for your attention

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