McPlanet.com
Game over. Restart!

UNITED NATIONS UNIVERSITY
UNU-EHS
Institute for Environment and Human Security

UNIVERSIDAD NACIONAL AUTONOMA DE MEXICO
POR MI RAZA HABLARA EL ESPIRITU

CRIM

Climate change as a security risk

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MRF Chair UNU-EHS
Berlin, 25th of April, 2009

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2. What is a security risk?
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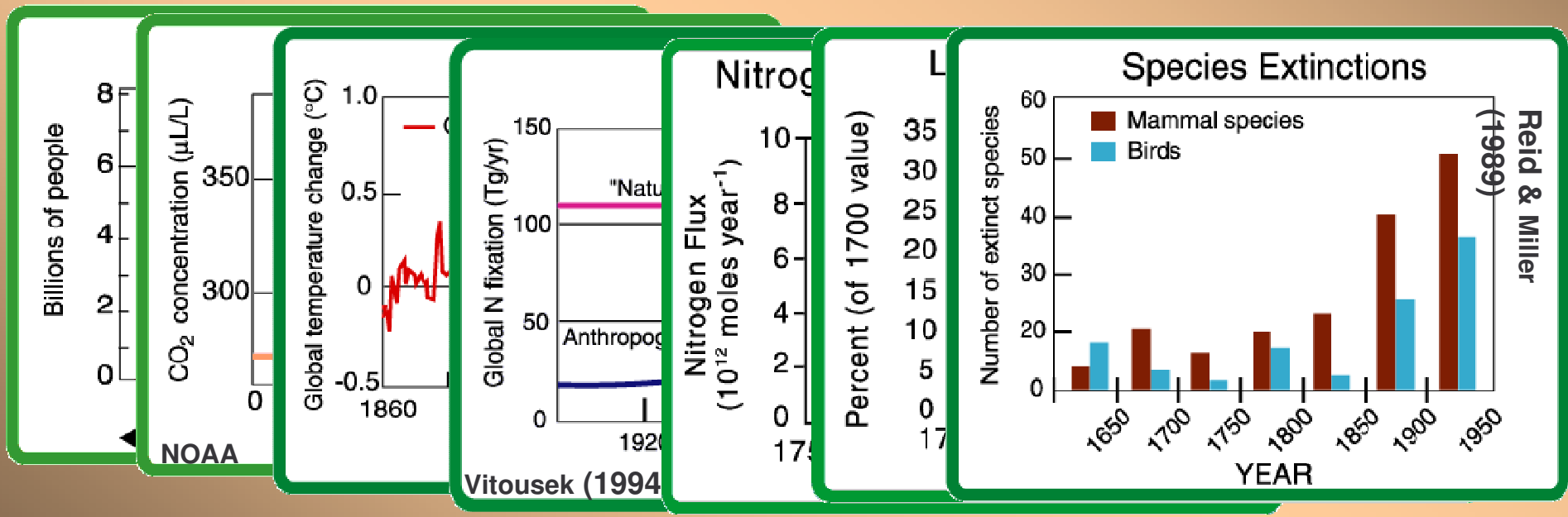
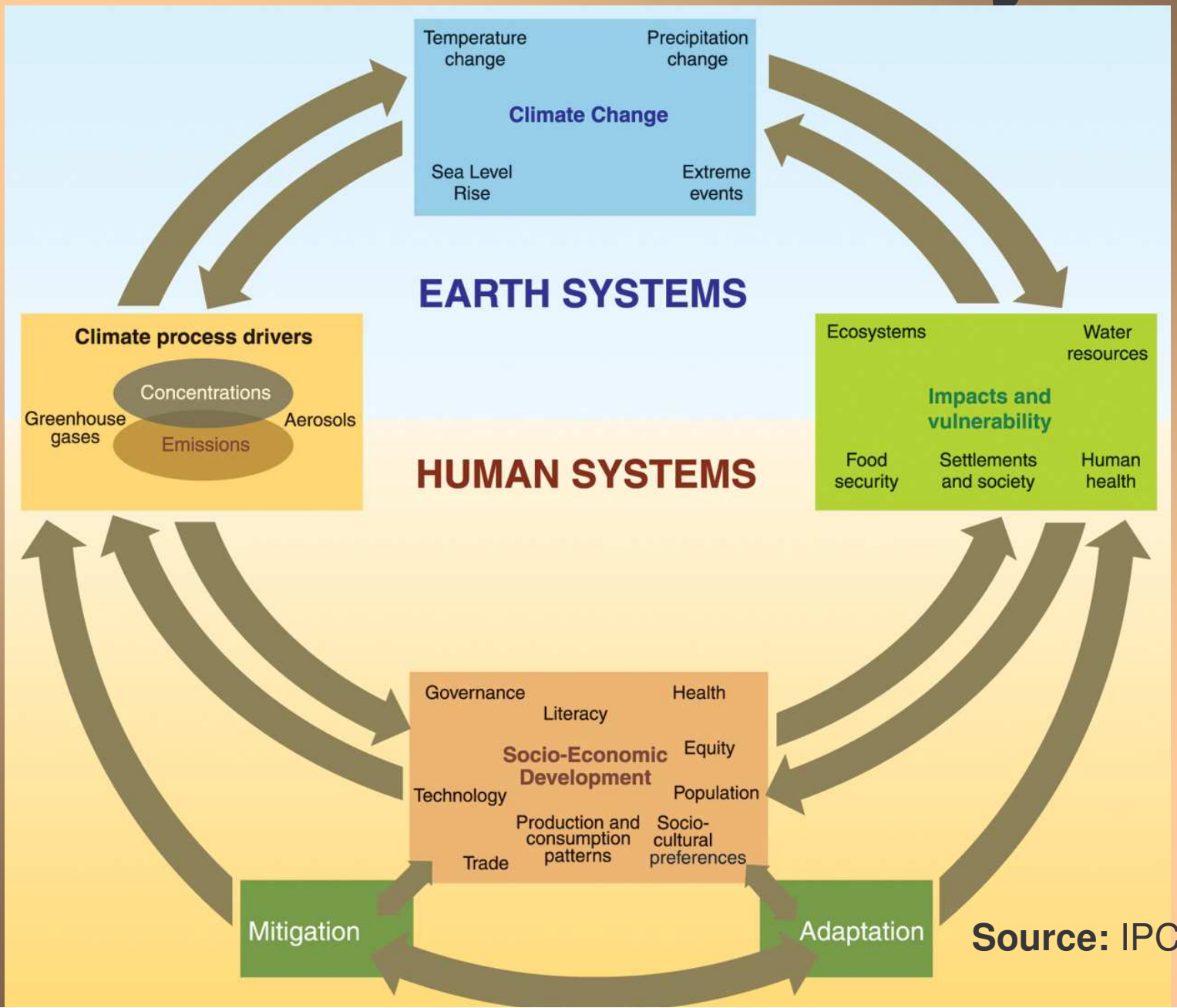
7. Future scenarios and policy

1. What is Global Environmental Change

- GEC is more than climate change
- Includes natural **plus** human components
- It is a constelation of changes in different spheres, such as:



GEC: Earth and Human Systems

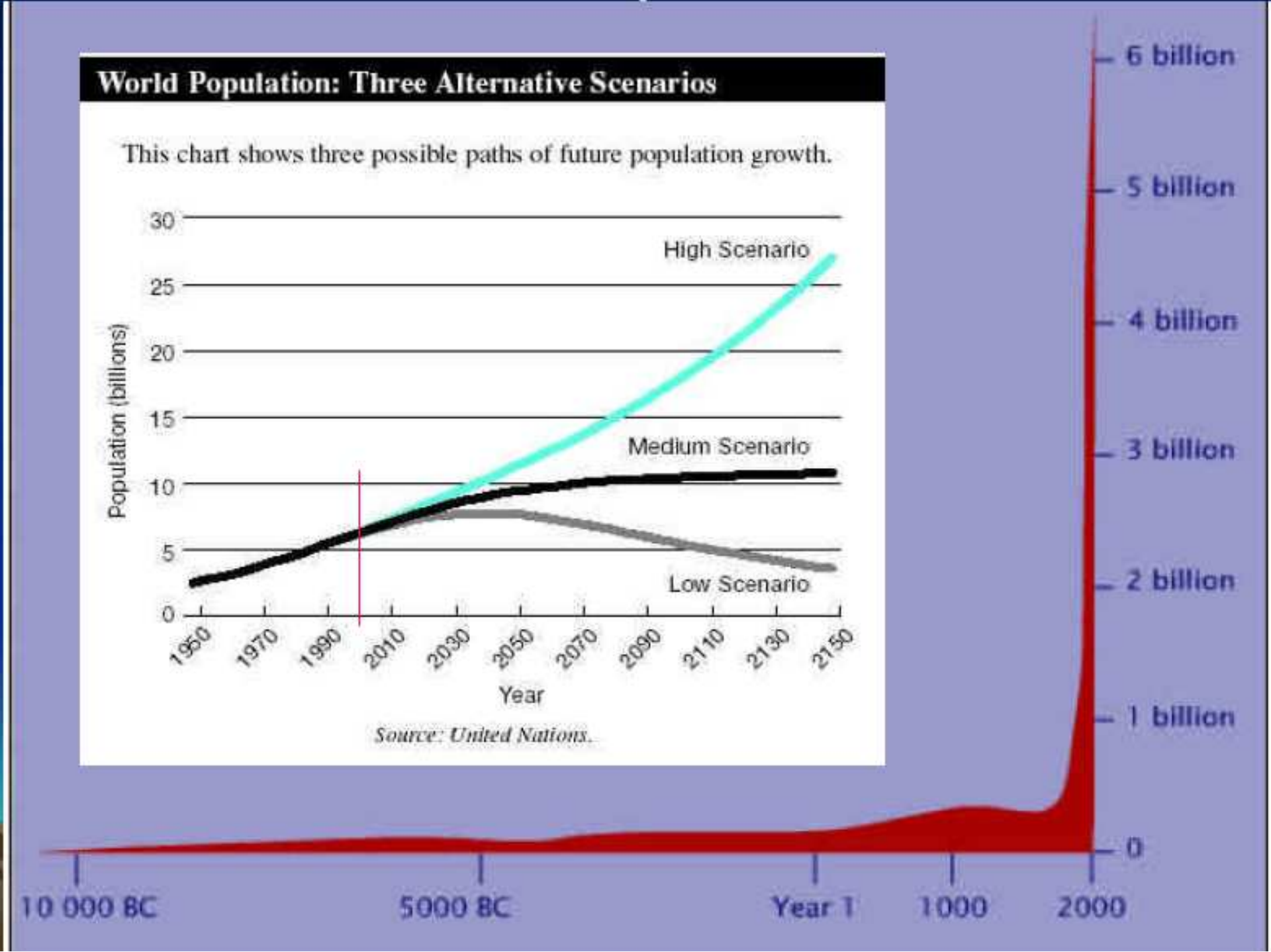


Source: IPCC, 2007

World Population: Three Alternative Scenarios

This chart shows three possible paths of future population growth.

Source: United Nations.



Globalization

1. Global financial networks
2. Instant communication (internet)
3. Global trade system
4. Global multilateral system of negotiations within the UN, the UN Security Council & the NATO
5. Global agreements on human rights and their reinforcement
6. International Council/ Court of Justice
7. Consolidation of democratic political systems
8. Increase of social gaps within countries and between North and South

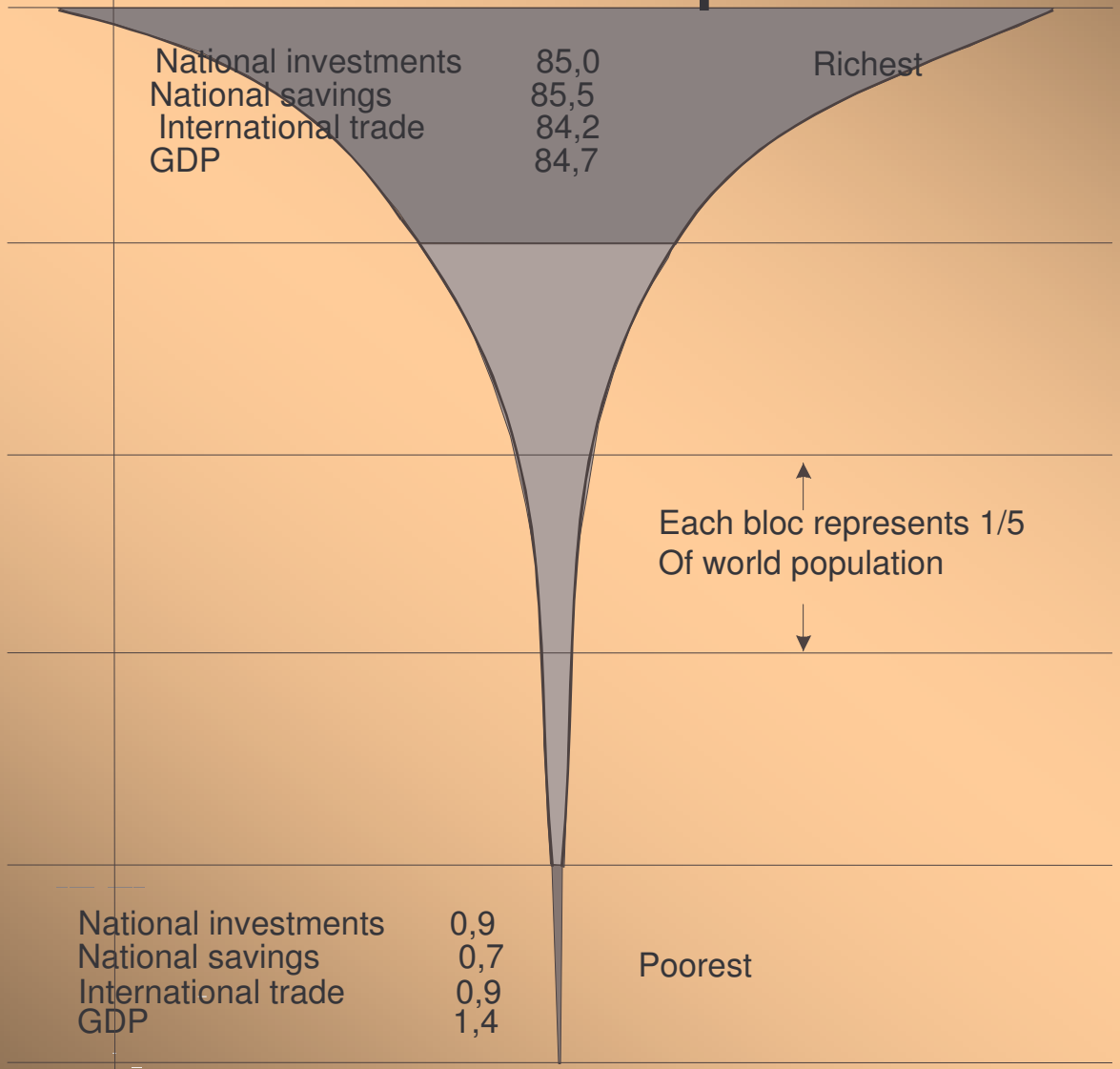
Threats of globalization and GEC

1. *Economic crisis:* **most severe financial crisis** since 1929 (collapse of private banks, insurance companies and enterprises), reduction of economic growth, increased unemployment and decline of remittances from migrants.
2. *Population Growth:* The world population has tripled during the 20th century from 2 to 6 billion and it is projected to **grow to 9 billion** until 2050.
3. *Climate Change:* global temperature is projected to rise between **1.1 and 6.4°C by 2100**; sea-level between **18 cm and 2.4 metres**; precipitation patterns change significantly, climate related **hazards** will increase in number and intensity affecting more people and economies.
4. *Water Security:* during the 20th century population **tripled** and water consumption increased **six fold**. By 2025, more than 2.8 billion people in 48 countries are projected to face water stress, most of them in Asia and Africa.
5. *Food Crises in 2008:* **963 million people are hungry**; 40 million more due to food price increase; more than 24,000 people die daily due to hunger-related causes.

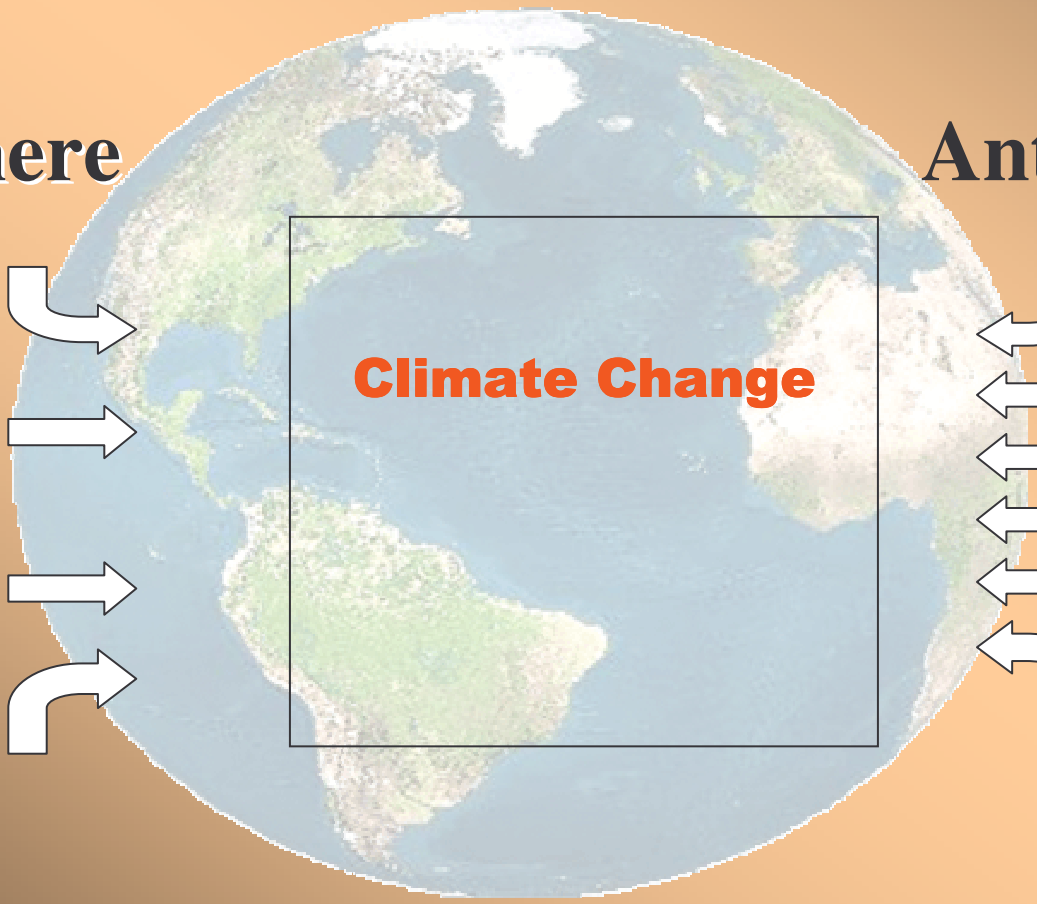
Regressive globalization

- Strategy of groups and governments that favor a globalization only to the extent to benefit them.
- Administrative unilateralism makes use of global strategies of pre-emption and counter-proliferation in a clearly expression of national interest. This could create isolationism and an anarchic global system of governance.
- The rise of nationalist and religious fundamentalist groups, which favored a new geopolitical terrorism. These groups depend on a global infrastructure such as internet, global funding, global financial system, communication, propaganda and technology.

Globalization created unequal access to goods and crises



Climate Change (CC) and Security



Ecosphere

- Atmosphere
- Hydrosphere
- Biosphere
- Lithosphere
  Pedosphere

Anthroposphere

- Urbanization
- Economy
- Transportation
- Population Growth
- Science & Technology
- Culture and Gender Identity

2. What is a security risk? Securitization of CC

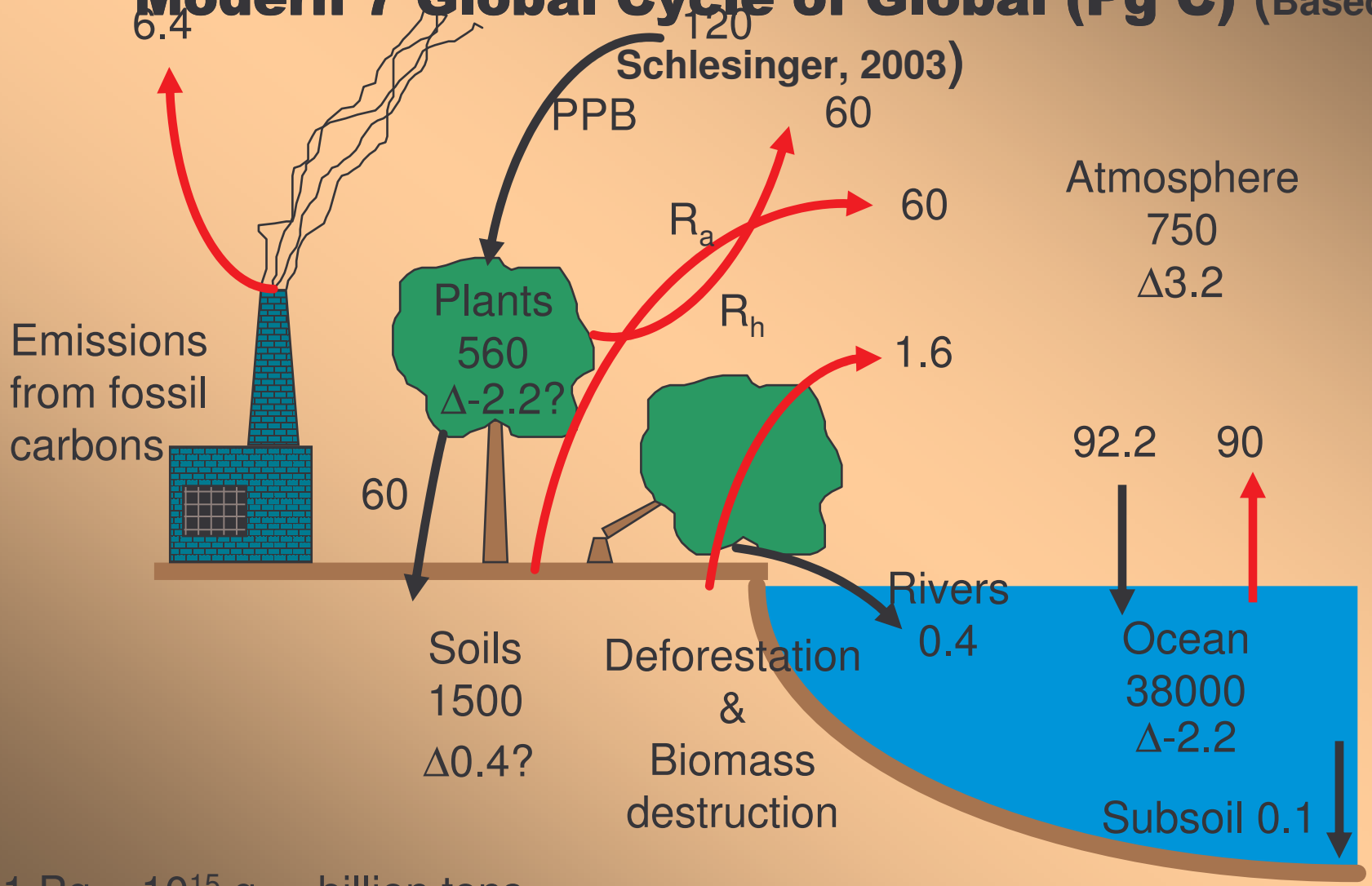
- **Not necessary to define here what security is.**
- **Securitization**: as an **inter-subjective** understanding is constructed through discursive & political processes to transform something into an existential threat that calls for and legitimates the use of extraordinary measures to deal with the threat.
- **Asking: Which security** (determination); security of whom or for whom (reference object); security of what (values at risk); security from what of from whom (sources of threats)
- **'Referent object': that** is **threatened** such as the human being, the state, the survival.
- **Values at risk: free-market values, identity, biodiversity**
- **Sources of threats:** globalization, state(s), GEC, patriarchy
- '**Securitizing actor': that** points to the **existential threat** (speech act) able to legitimize extraordinary measures
- **'Audience':** allowing and supporting **extraordinary measures**
- **What is the shift** from a normal political issue to a 'a matter of security'?
- Source: **Copenhagen School, Brauch et al. 2008, 2009, 2010.**

3.Human, Gender, Environmental Security

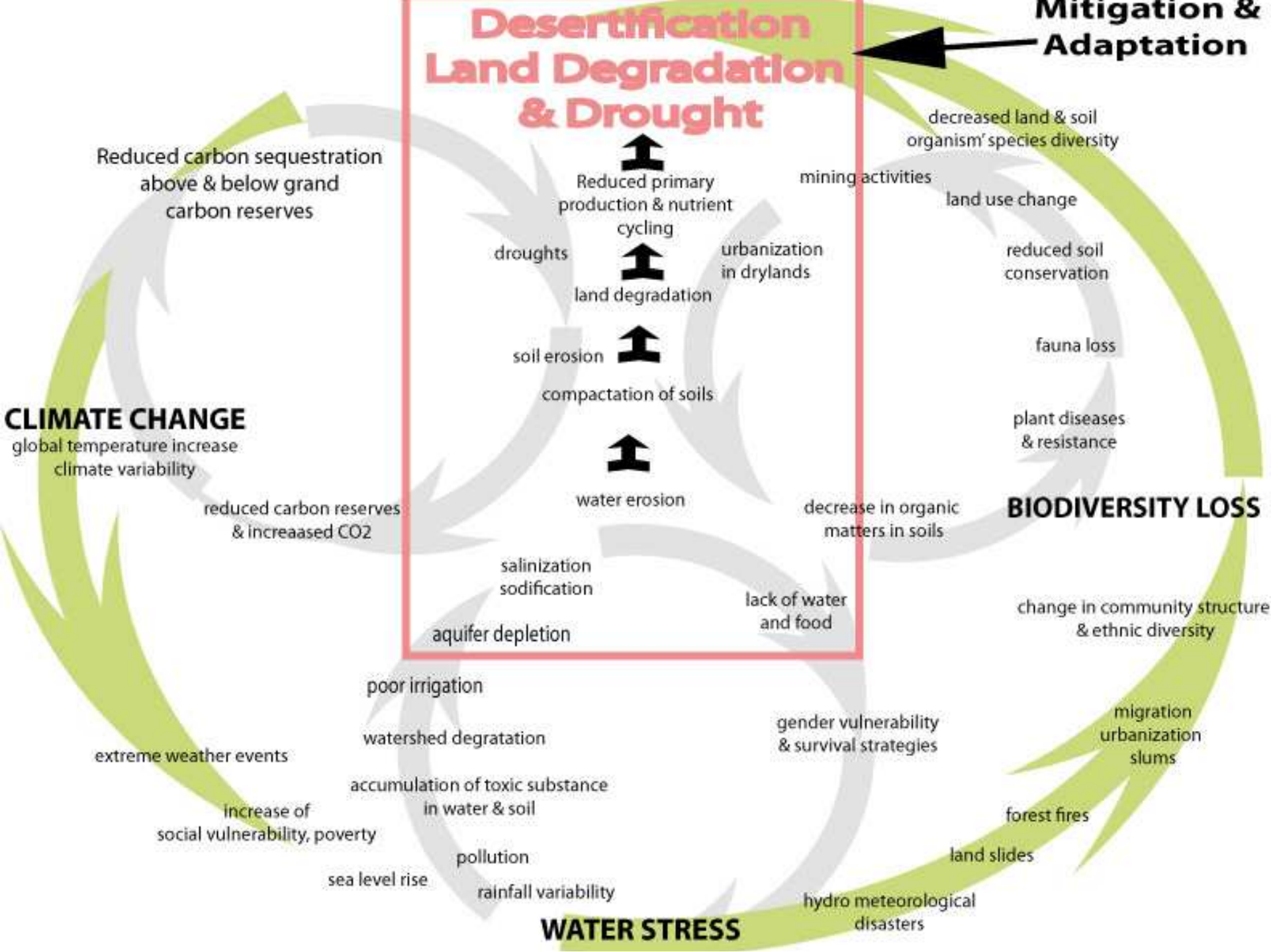
Determination Which security?	Reference object: Security of whom?	Value at risk: Security of what?	Source(s) of threat: Security from whom or what?
National security	The State	Territorial integrity	State, substate actors
Human security	Individual, humankind	Survival of humankind people	Nature, state, globalization
Environmental security	Ecosystems, rural and urban systems, water and food	Sustainability	Humankind, Nature
Gender security	Gender relations, indigenous people, minorities	Equity, identity, social relations, solidarity, tolerance	Patriarchy, totalitarian institutions (élites, governments, religious fundamentalism, dominant cultures), intolerance

4. CC and Disasters

Modern 7 Global Cycle of Global (Pg C) (Based on Schlesinger, 2003)

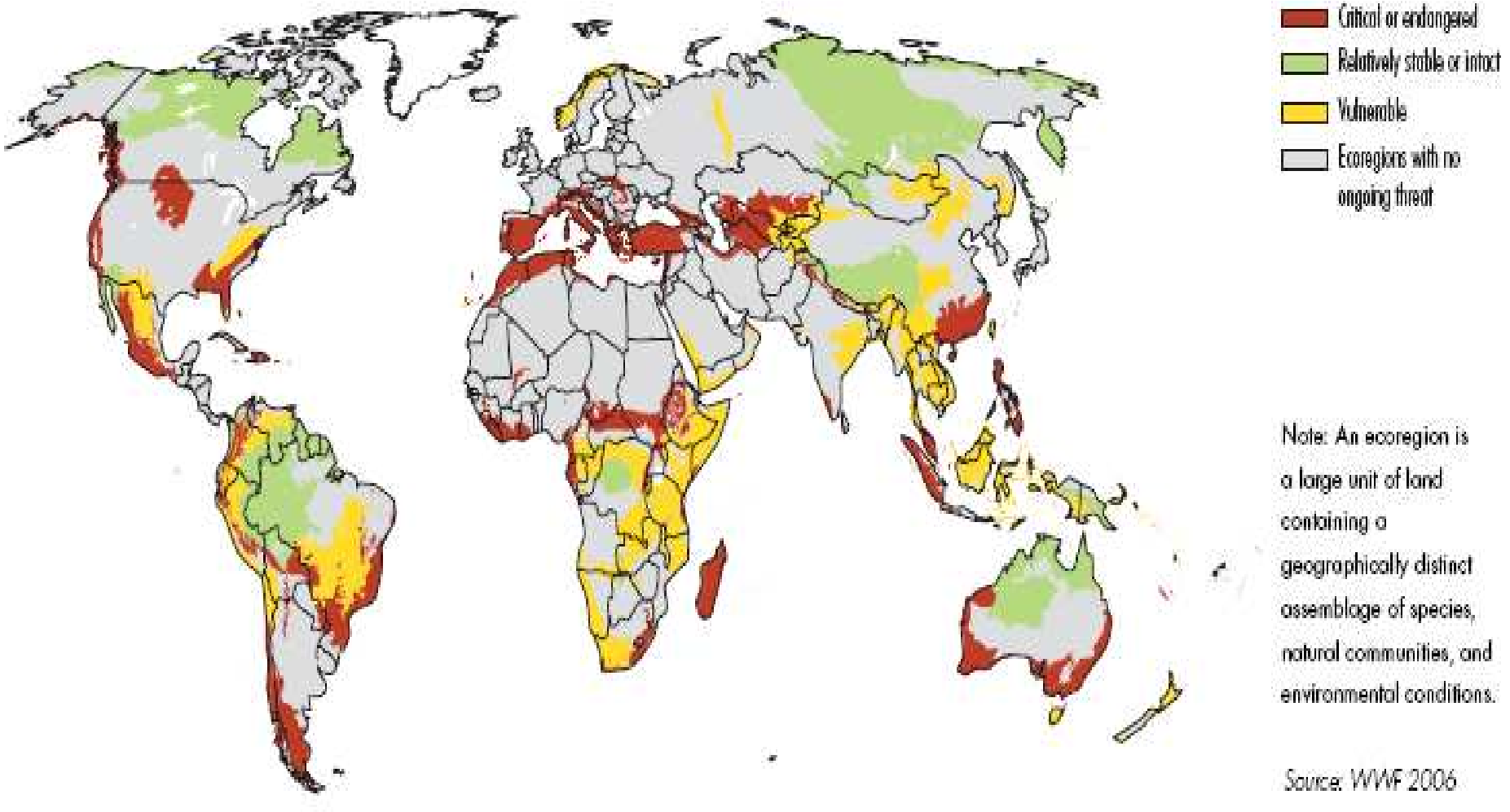


1 Pg = 10^{15} g = billion tons


Desertification
Land Degradation
& Drought
Mitigation &
Adaptation
Reduced carbon sequestration above & below grand carbon reserves
Reduced primary production & nutrient cycling
droughts
urbanization in drylands
land degradation
soil erosion
compactation of soils
water erosion
salinization
sodification
aquifer depletion
decreased land & soil organism' species diversity
mining activities
land use change
reduced soil conservation
fauna loss
plant diseases & resistance
decrease in organic matters in soils
CLIMATE CHANGE
global temperature increase
climate variability
reduced carbon reserves & increaased CO2
BIODIVERSITY LOSS
lack of water and food
change in community structure & ethnic diversity
poor irrigation
watershed degratation
extreme weather events
accumulation of toxic substance in water & soil
increase of social vulnerability, poverty
pollution
sea level rise
rainfall variability
gender vulnerability & survival strategies
migration
urbanization
slums
forest fires
land slides
hydro meteorological disasters
WATER STRESS

Threatened Ecosystems

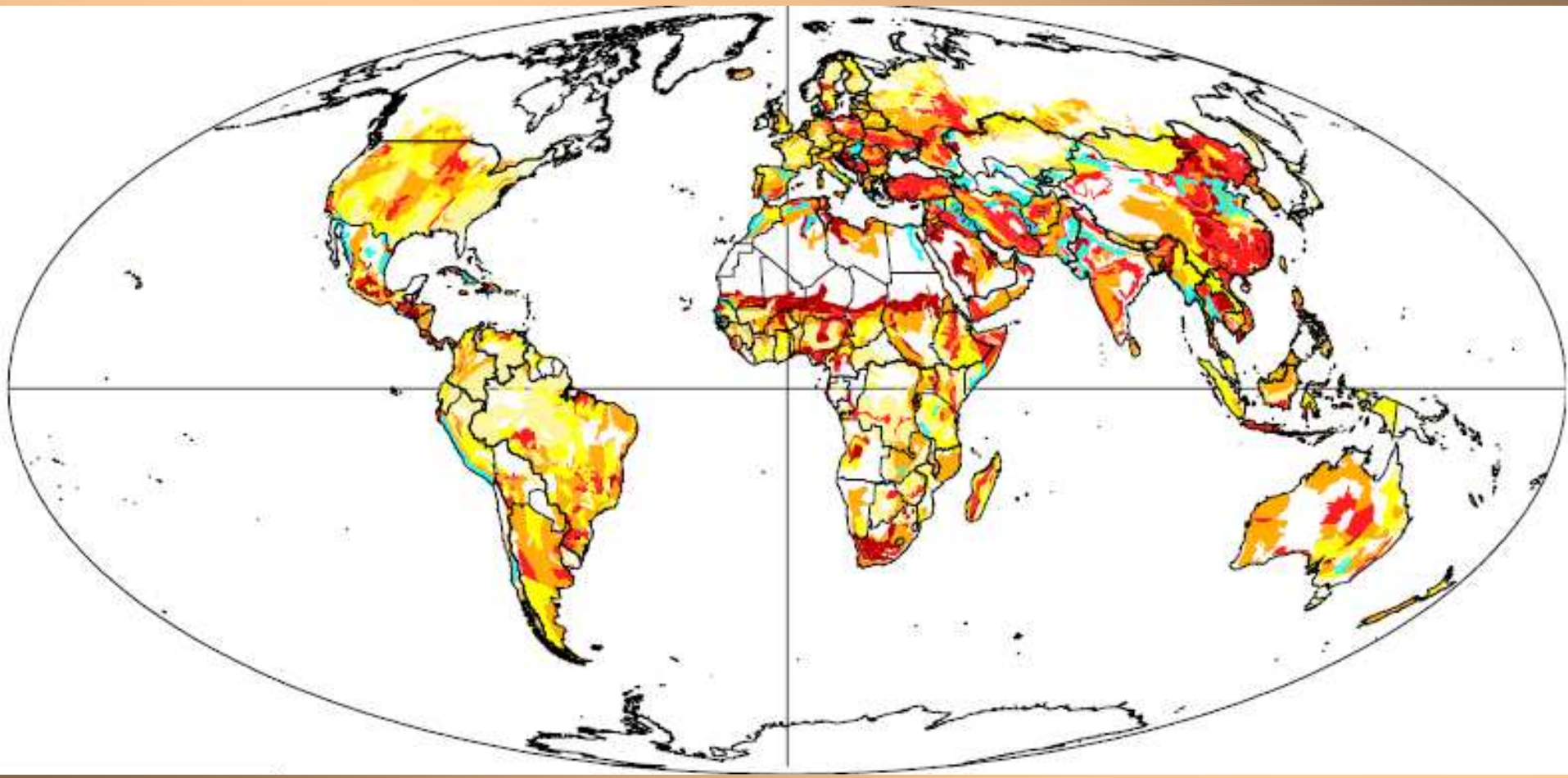
Figure 5.1 Status of terrestrial ecoregions



Drought, desertification, land degradation

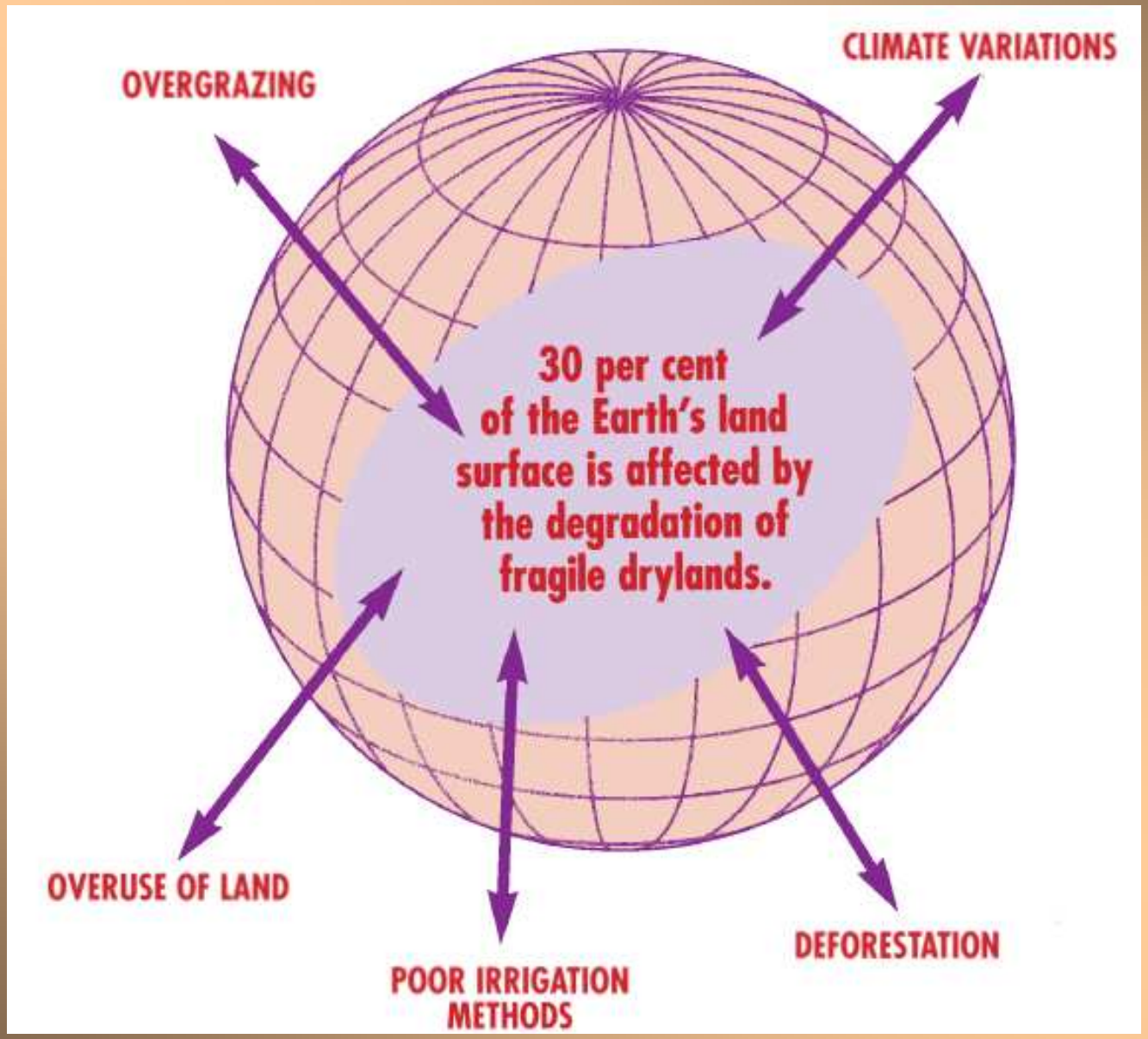
- **110 countries** are potentially at risk. UNEP estimates that desertification costs the world **US$ 42 billion/year**. **Africa** alone looses some **US$ 9 billion/year** (Lean 2008: 10). The continent with the highest proportion of severely or moderately desertified drylands is North America (74%), but also 13 European countries suffer from land degradation/desertification.
- **30% of the earth** is deteriorated due to overgrazing, overuse of land, poor irrigation methods, deforestation, urbanization, climate variability and change, human-induced increase in food, water and soil due to population growth, modernization processes, livelihood changes and waste.
- **Loss of yield productivity**, water and food scarcity, inadequate land management and poverty are key drivers of forced migration of people from drylands to humid regions where new desertification trends surge from an increased **demand on the carrying capacity of the land**.

Global soil degradation (% of affected area)



Source: **WBGU (2006) based on GLASOD (1990).**

Key factors of drylands' degradation

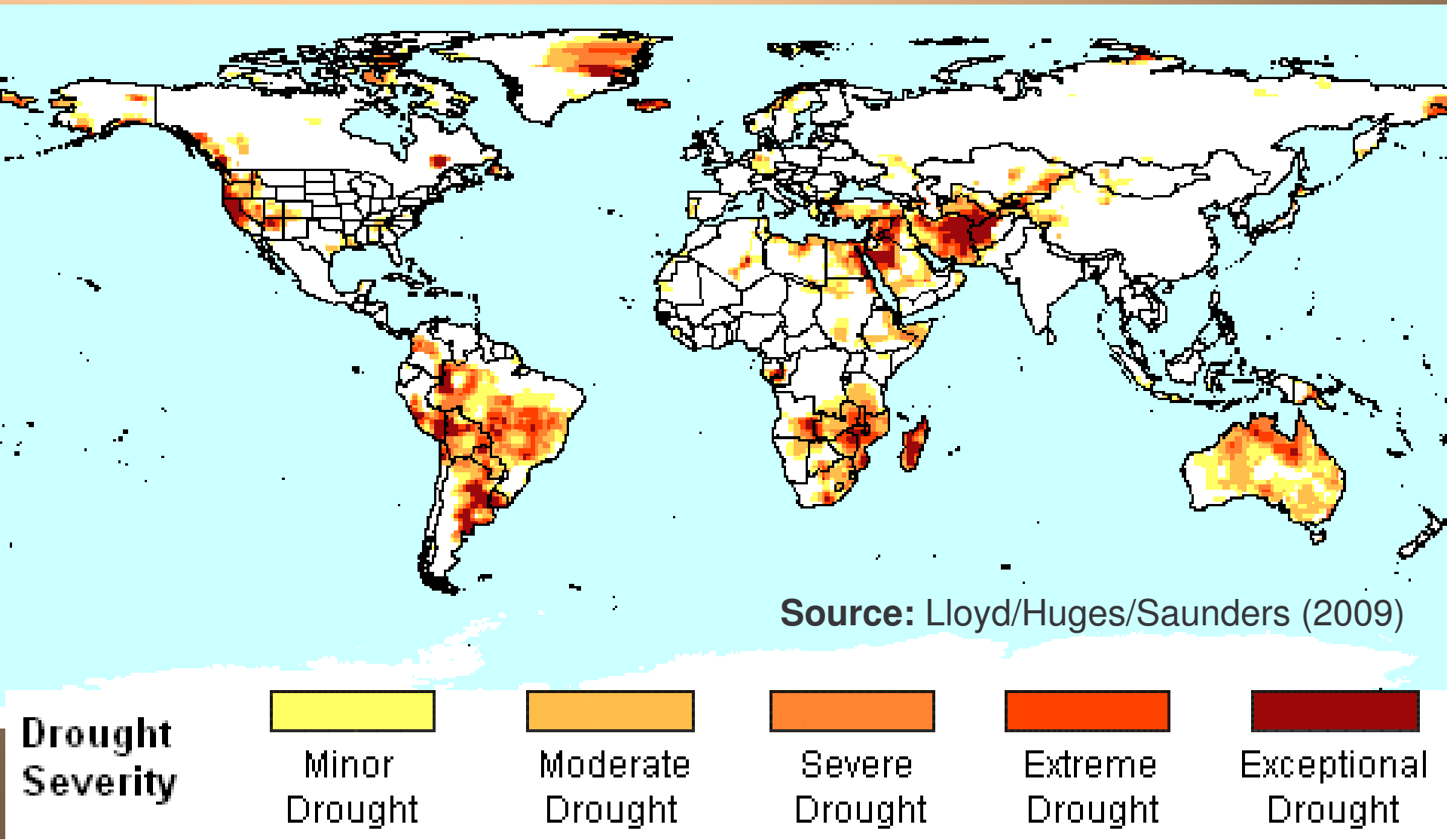


Most severe droughts (1900-2008)

By the number of people killed on the country base			By the number of people affected on the country base		
Country	**Date**	**Killed**	**Country**	**Date**	**Affected (million)**
China P R.	1928	3,000,000	India	1982	300
Bangladesh	1943	1,900,000	India	2002	300
India	1942	1,500,000	India	1972	200
India	1965	1,500,000	India	1965	100
India	1900	1,250,000	India	Jun 82	100
Sov. Union	1921	1,200,000	China P. R.	Jun 94	82
China P R.	1920	500,000	China P. R.	April 2002	60
Ethiopia	May 83	300,000	India	April 2000	50
Sudan	April 83	150,000	China P. R.	June 1988	49
Ethiopia	Dec 73	100,000	China P. R.	Jan. 2003	48

Source: EM-DAT: The OFDA/CRED International Disaster Database, at: < www.em-dat.net> (created on 5 January 2009

Global drought monitor



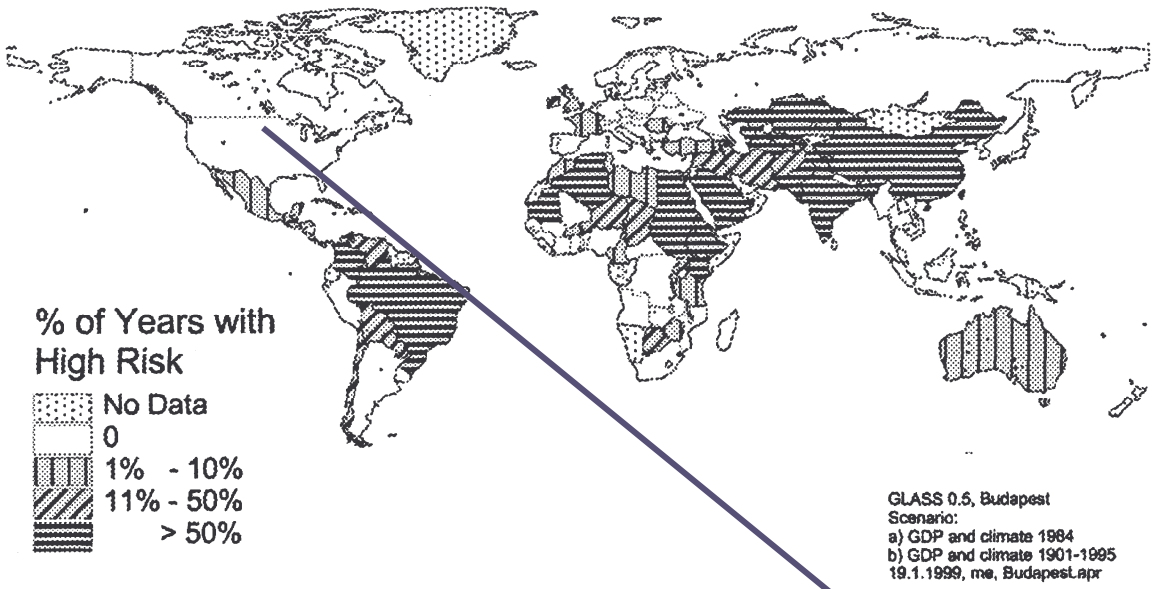


Figure 4. High Potential for Food Crisis 1901-1995.

Food insecurity scenario

Source: Alcamo, 2002

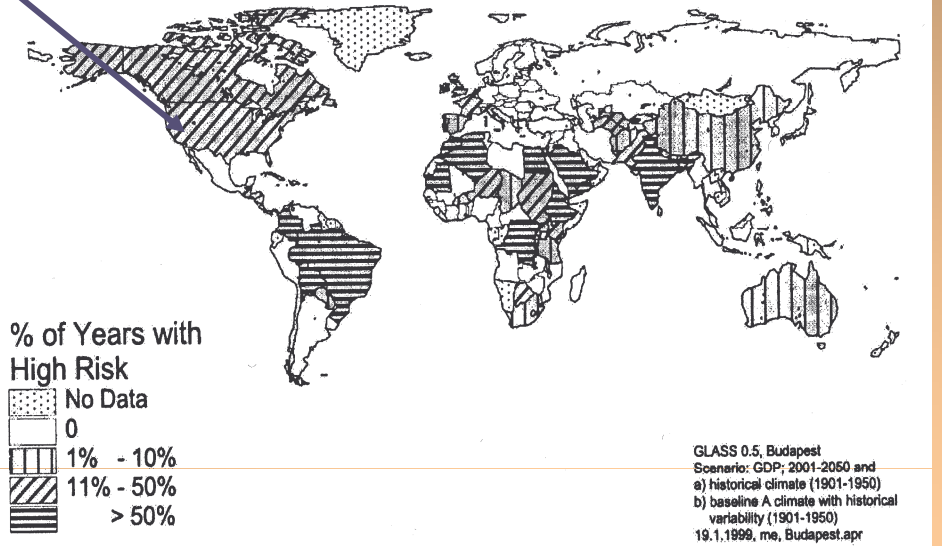


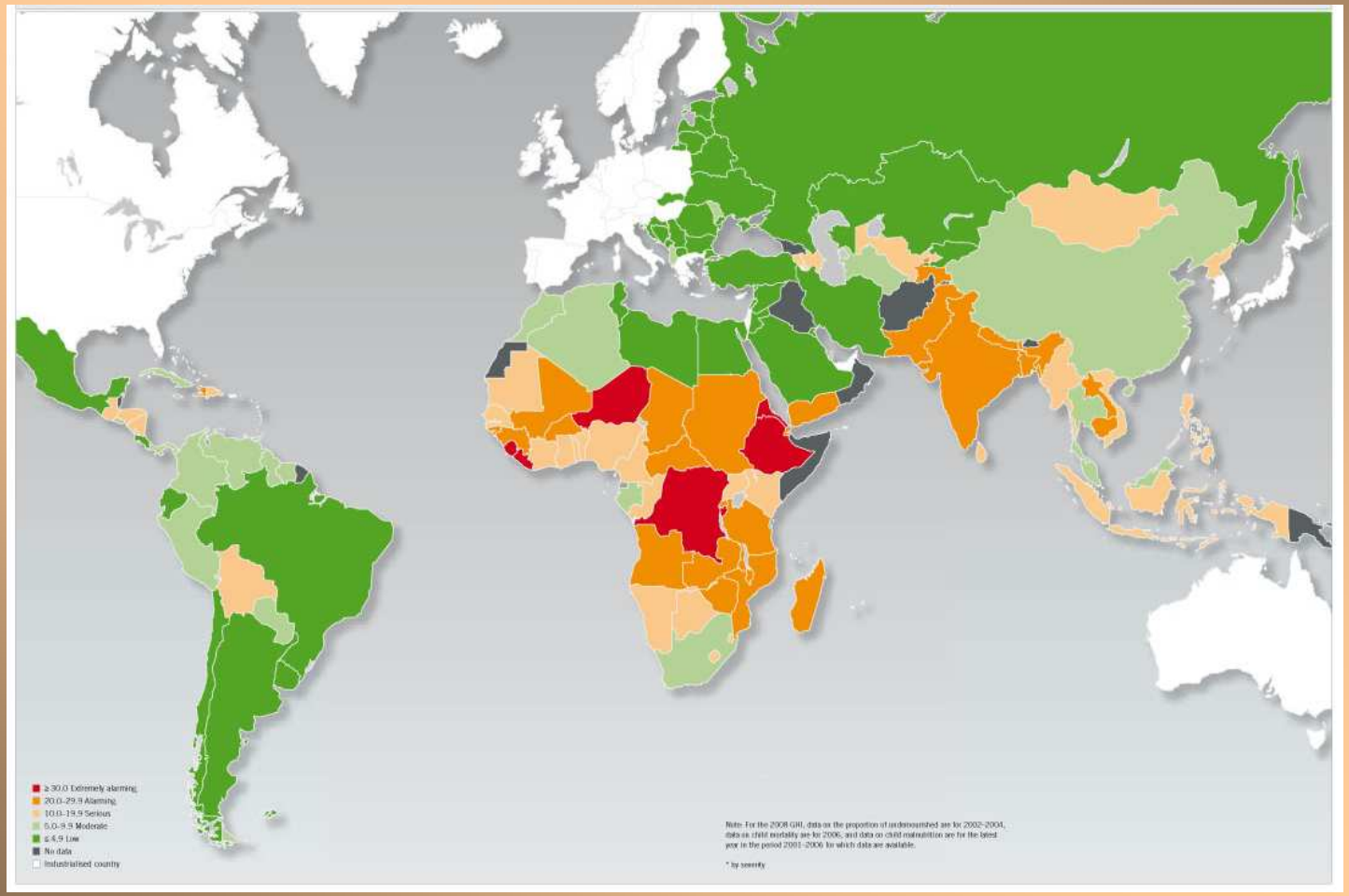
Figure 6. High Potential for Food Crisis 2001-2050 – with GDP Increase and Climate Change.

Annual change in % in world grain yields by decade (3 years average)

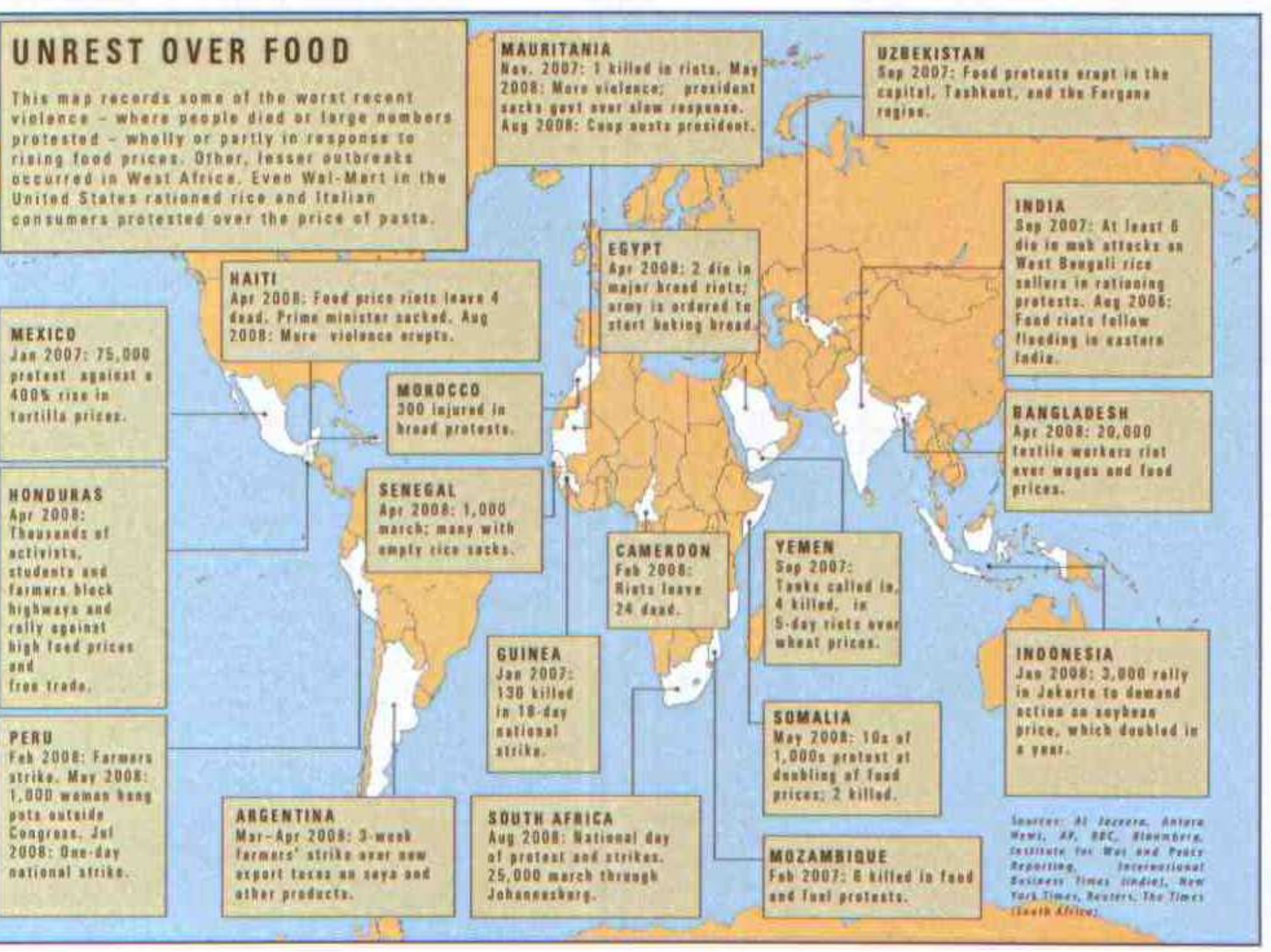
Years	Total Grains	Rice	Wheat	Corn	Other Grains
1950-60	2.0	1.4	1.7	2.6	---
1960-70	2.5	2.1	2.9	2.4	2.3
1970-80	1.9	1.7	2.1	2.7	0.4
1980-90	2.2	2.4	2.9	1.3	1.7
1990-95	0.7	1.0	0.1	1.7	-0.8

Source: **Benton Jones (2003: 44)**

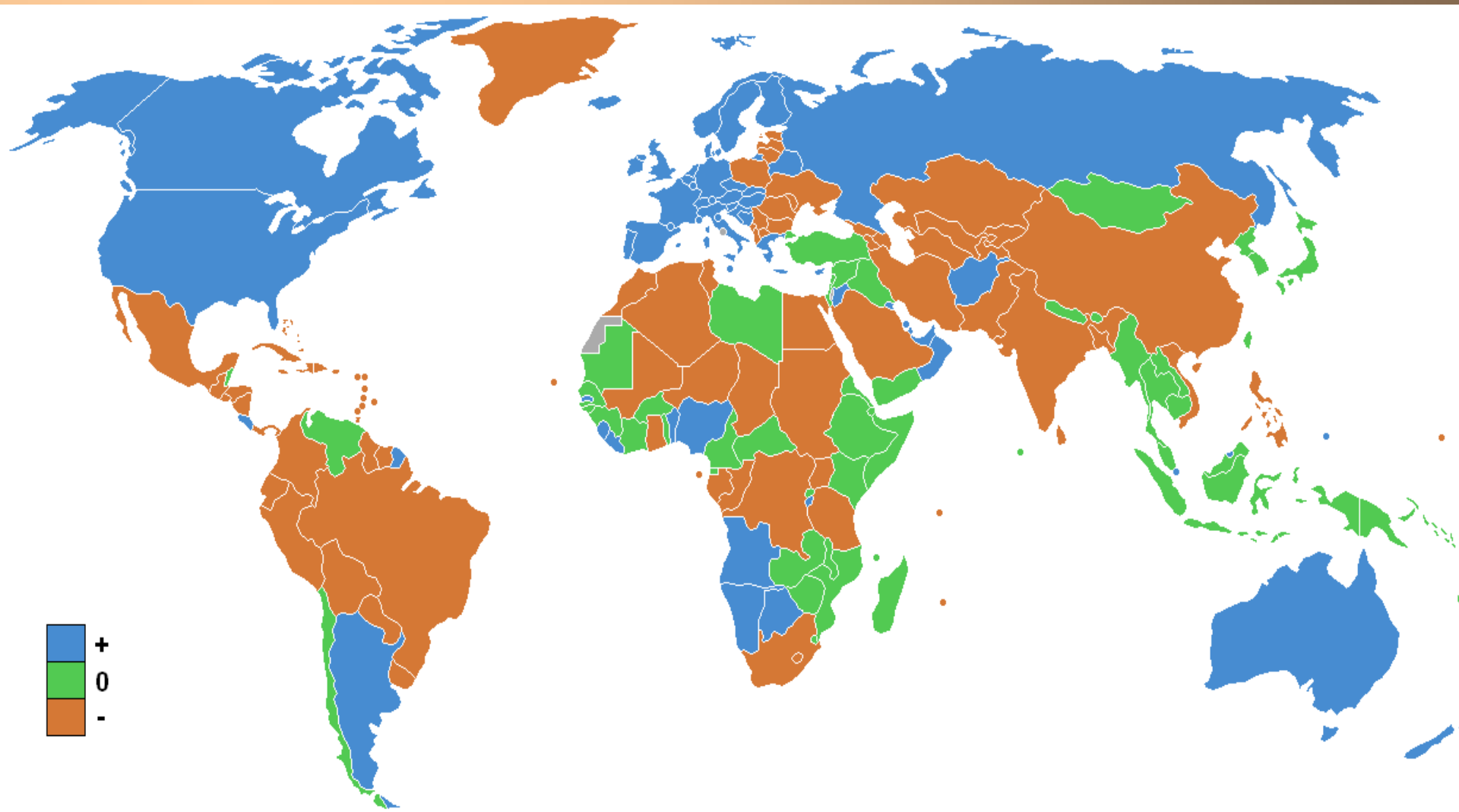
Global Hunger Index 2008



Source: IFPRI (2008). at: <http://www. ifpri.org/media/20081014ghi.asp>

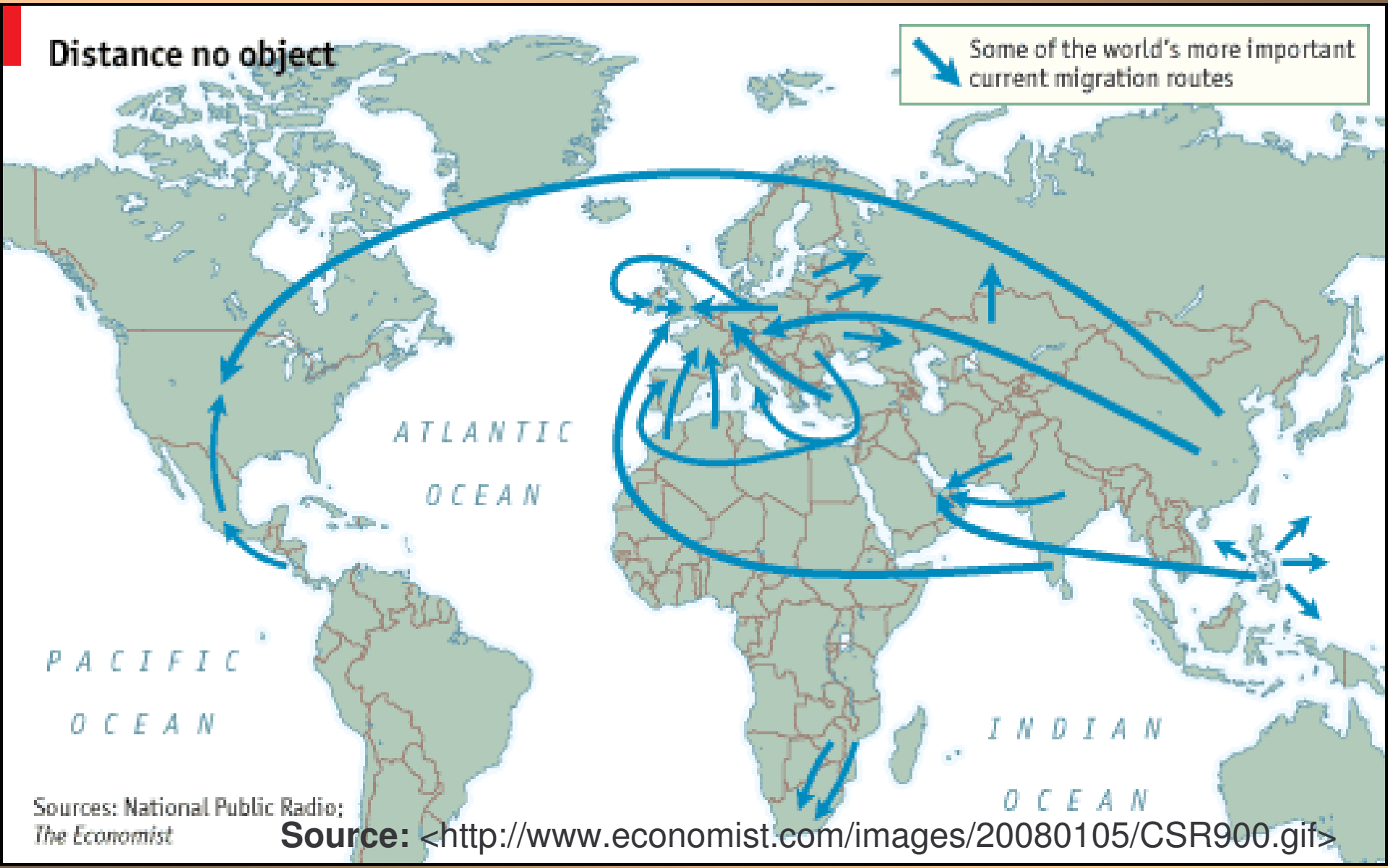

UNREST OVER FOOD
This map records some of the worst recent violence – where people died or large numbers protested – wholly or partly in response to rising food prices. Other, lesser outbreaks occurred in West Africa. Even Wal-Mart in the United States rationed rice and Italian consumers protested over the price of pasta.
MAURITANIA
Nov. 2007: 1 killed in riots. May 2008: More violence; president sacks govt over slow response. Aug 2008: Coup ousts president.
UZBEKISTAN
Sep 2007: Food protests erupt in the capital, Tashkent, and the Fergana region.
INDIA
Sep 2007: At least 6 die in mob attacks on West Bengali rice sellers in rationing protests. Aug 2008: Food riots follow flooding in eastern India.
EGYPT
Apr 2008: 2 die in major bread riots; army is ordered to start baking bread.
HAITI
Apr 2008: Food price riots leave 4 dead. Prime minister sacked. Aug 2008: More violence erupts.
MEXICO
Jan 2007: 75,000 protest against a 400% rise in tortilla prices.
MOROCCO
300 injured in bread protests.
BANGLADESH
Apr 2008: 20,000 textile workers riot over wages and food prices.
HONDURAS
Apr 2008: Thousands of activists, students and farmers block highways and rally against high food prices and free trade.
SENEGAL
Apr 2008: 1,000 march; many with empty rice sacks.
CAMEROON
Feb 2008: Riots leave 24 dead.
YEMEN
Sep 2007: Tanks called in, 4 killed, in 5-day riots over wheat prices.
GUINEA
Jan 2007: 130 killed in 10-day national strike.
INDONESIA
Jan 2008: 3,000 rally in Jakarta to demand action on soybean price, which doubled in a year.
SOMALIA
May 2008: 10s of 1,000s protest at doubling of food prices; 2 killed.
PERU
Feb 2008: Farmers strike. May 2008: 1,000 women hang pots outside Congress. Jul 2008: One-day national strike.
ARGENTINA
Mar–Apr 2008: 3-week farmers' strike over new export taxes on soya and other products.
SOUTH AFRICA
Aug 2008: National day of protest and strikes. 25,000 march through Johannesburg.
MOZAMBIQUE
Feb 2007: 6 killed in food and fuel protests.
Sources: Al Jazeera, Antara News, AP, BBC, Bloomberg, Institute for War and Peace Reporting, International Business Times (India), New York Times, Reuters, The Times (South Africa).

Global net migration



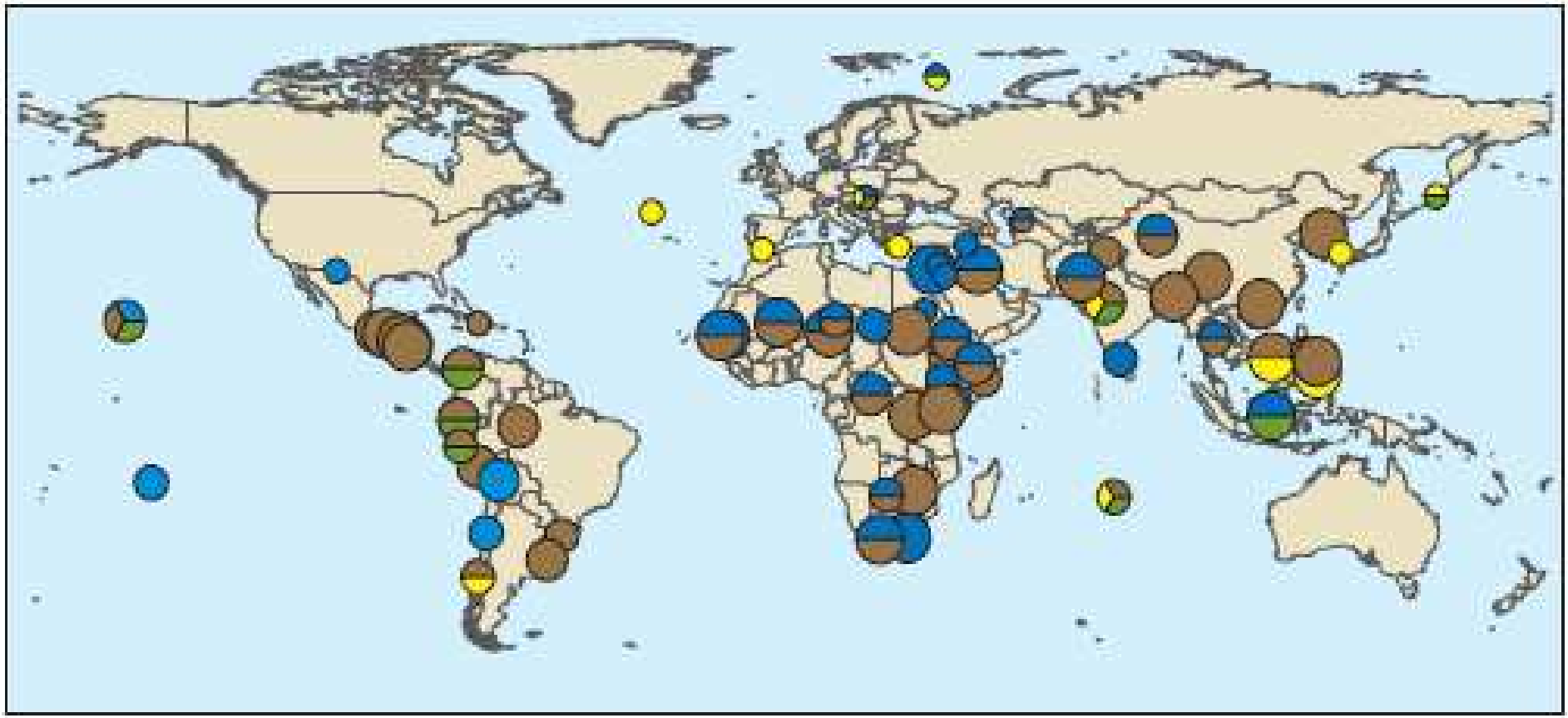
positive (blue), negative (orange). **Source:** Wikipedia, 2009

Migration currents



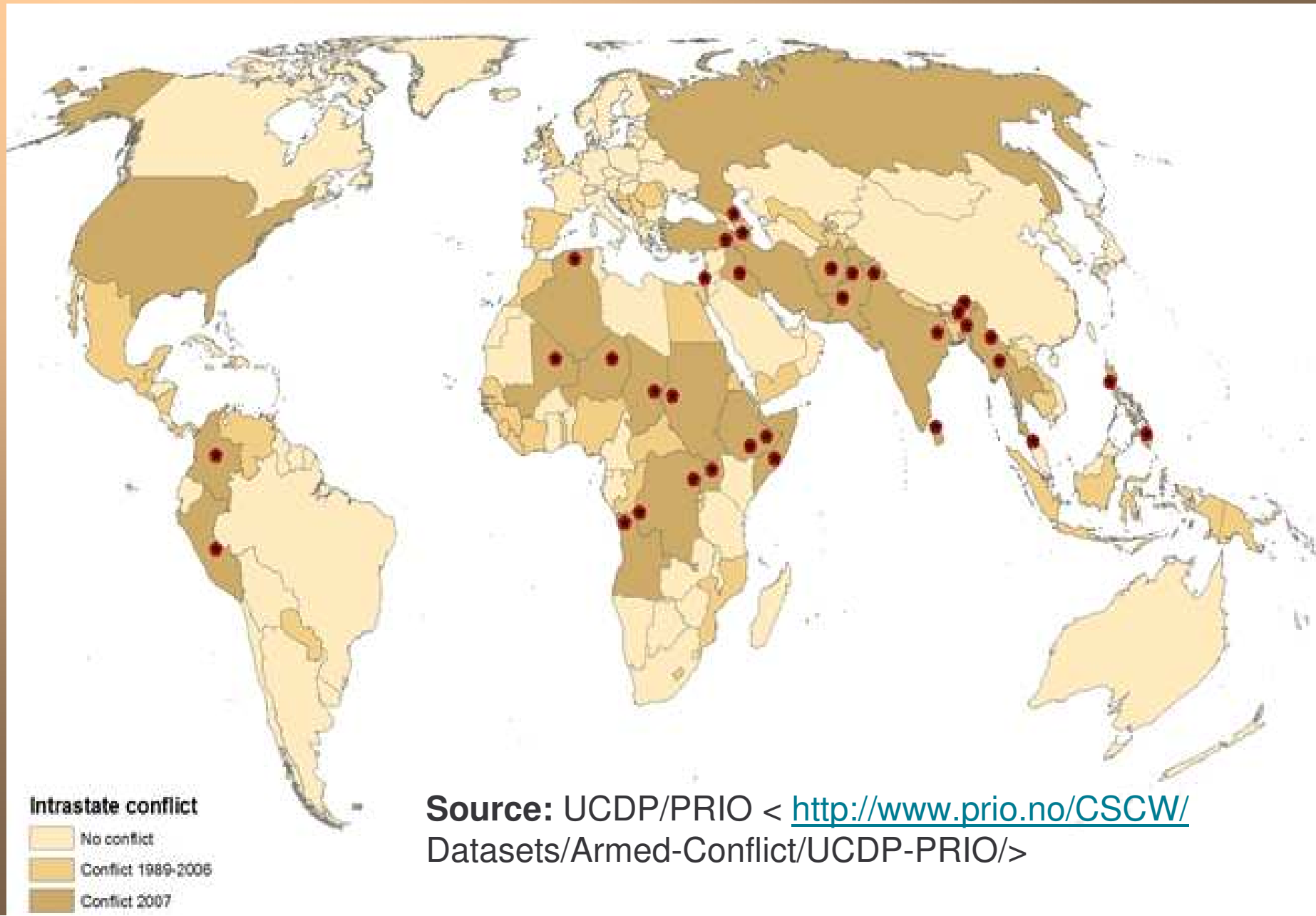
Source: <http://www.economist.com/images/20080105/CSR900.gif>

Environmental conflicts (1980-2006)



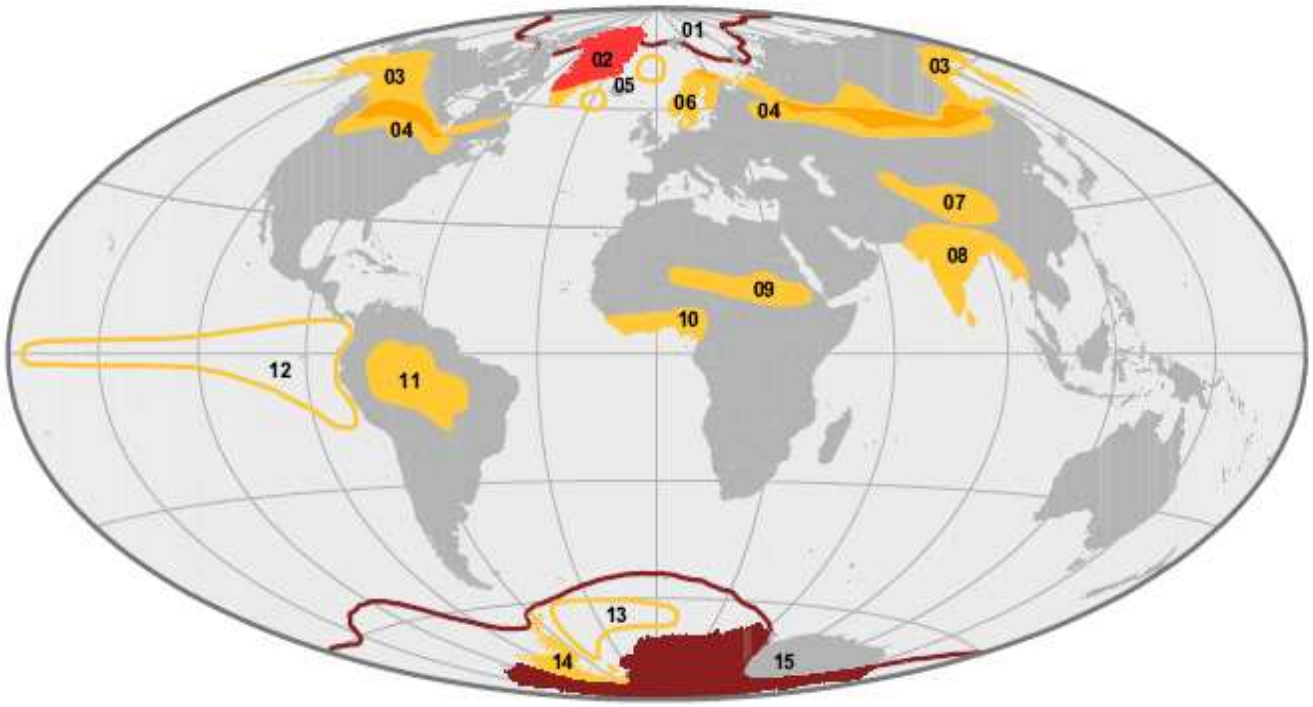
Source: WBGU (2008: 32)

Armed conflicts



Source: UCDP/PRIO < http://www.prio.no/CSCW/Datasets/Armed-Conflict/UCDP-PRIO/>

Potential anthropogenic tipping points in earth system



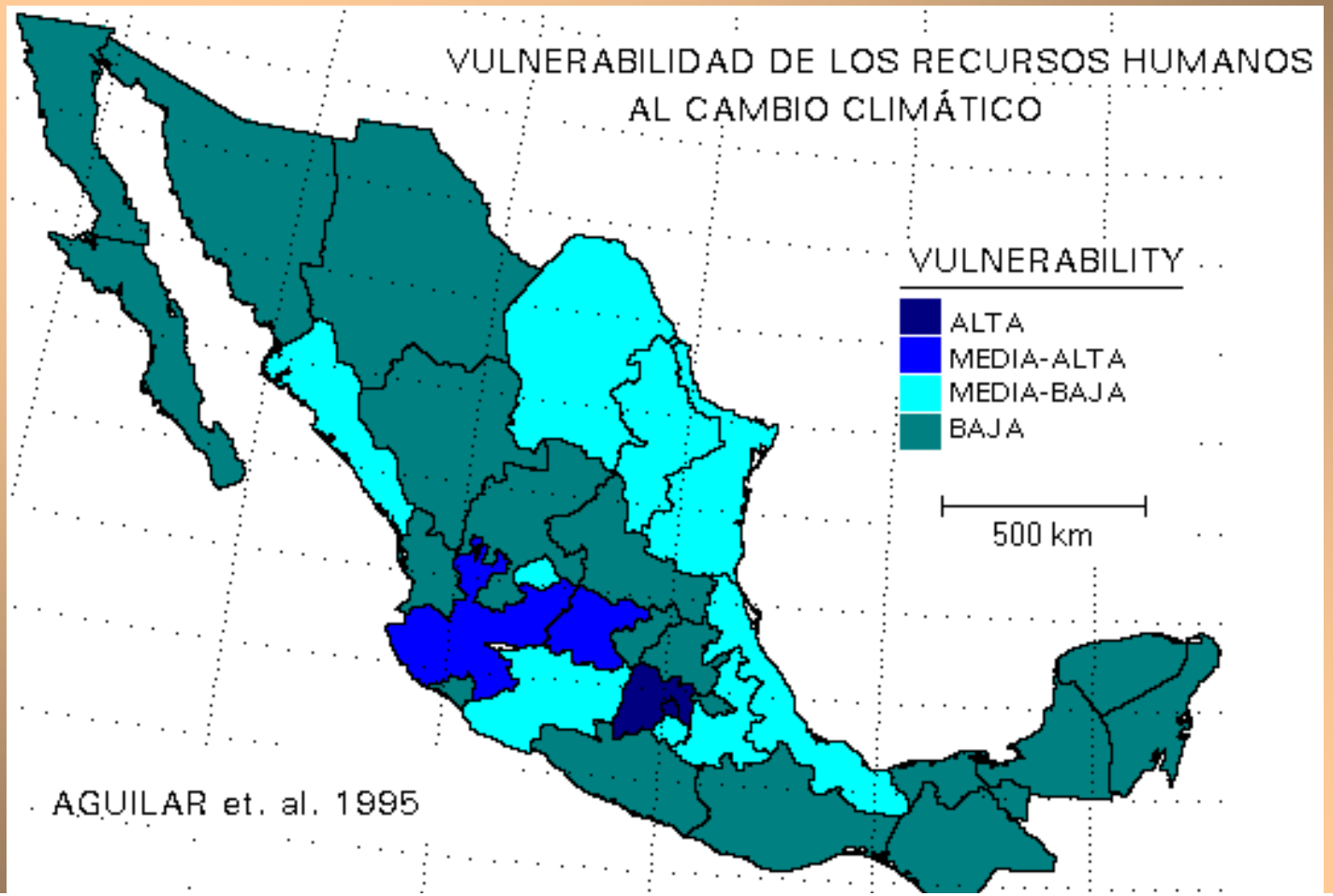
Source: H.J. Schellnhuber (2008)

01 Arctic Sea Ice Loss
02 Greenland Ice Sheet
03 Thawing Permafrost / Methan Escape
04 Boreal Forest Dieback
05 Suppression of Atlantic Deep Water Formation
06 Climatic Change-Induced Ozon Hole over Northern Europe
07 Albedo Tibetan Plateau
08 Indian Monsoon
09 Re-Greening Sahara / Sealing of Dust Sources
10 West African Monsoon
11 Dieback of Amazon Rainforest
12 Southern Pacific Climate Oscillation
13 Antarctic Deep Water Formation / Nutrients Upwelling
14 Westantarctic Ice Sheet
15 Antarctic Ozone Hole

6. Case Study Mexico

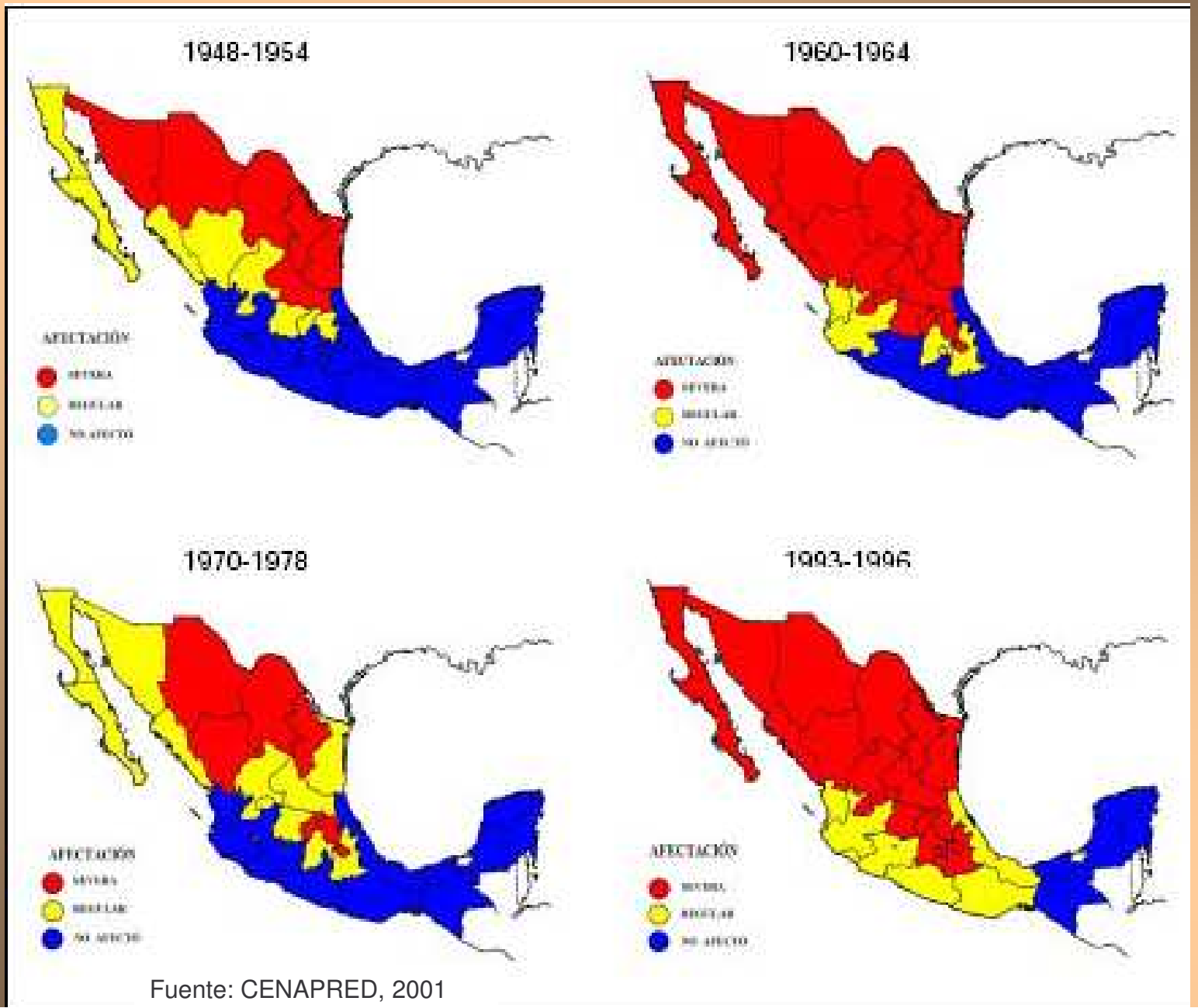
Biodiversity in Mesoamerica

People's Vulnerability and Human Settlements



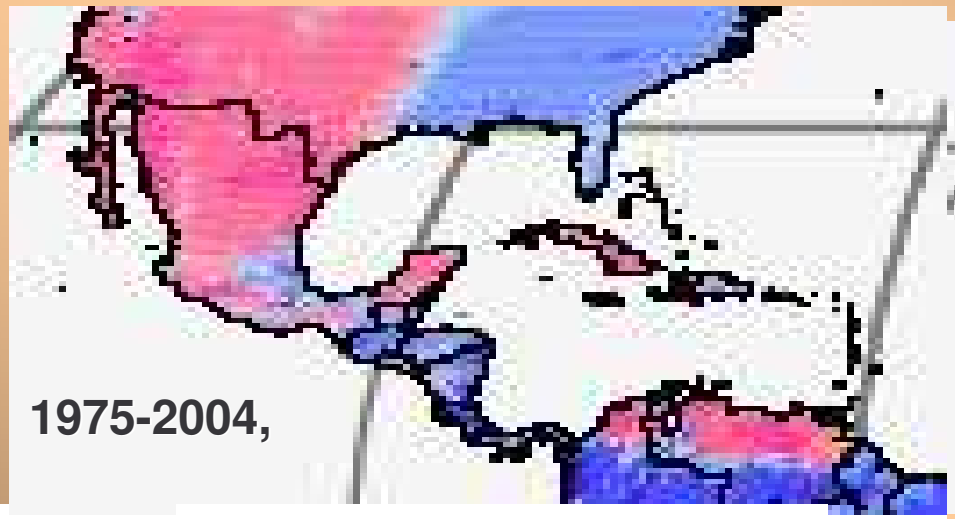
Taking into account distribution, density, growth of population, local mobility, emigration/immigration, consumption of water/person, sewage water and solid waste: the central region of Mexico is the most vulnerable zone due to CAG and its high population density

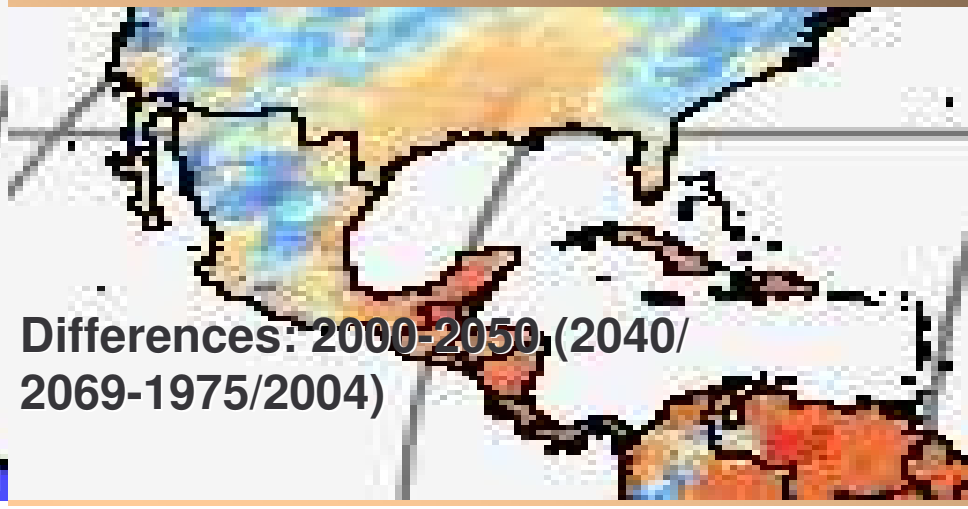
History of Severe Droughts



Fuente: CENAPRED, 2001

Drought Threats 1975-2004 and Projections 2050 and 2080 © PIK



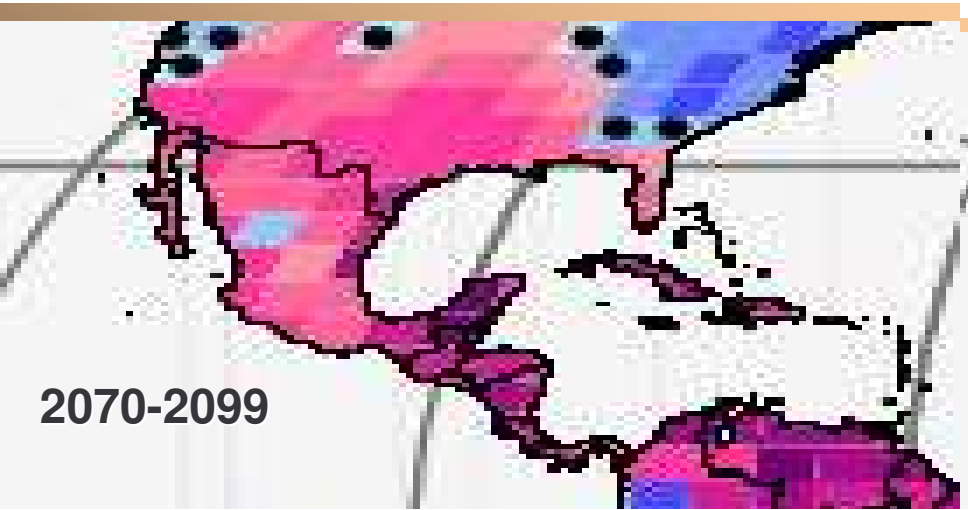


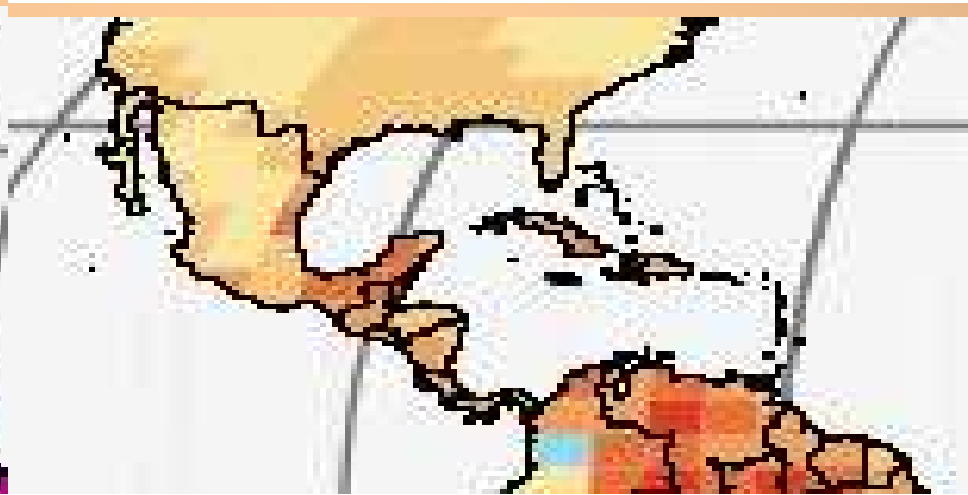
Hydrological balance (mm)

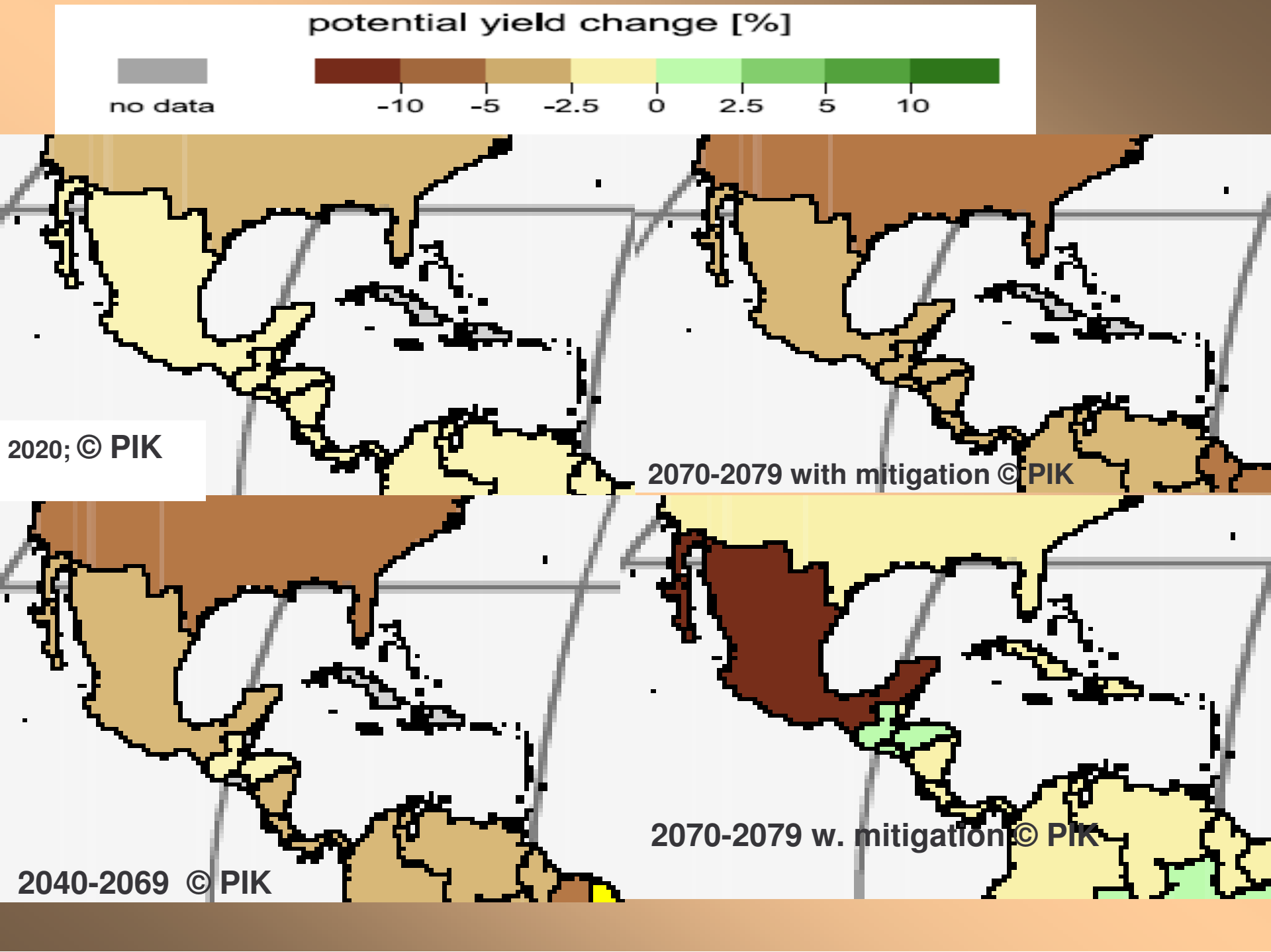
-18 -15 -12 -9 -6 -3 0 3 6 9 12 15 ^ 3

CC and hydrological balance (mm)

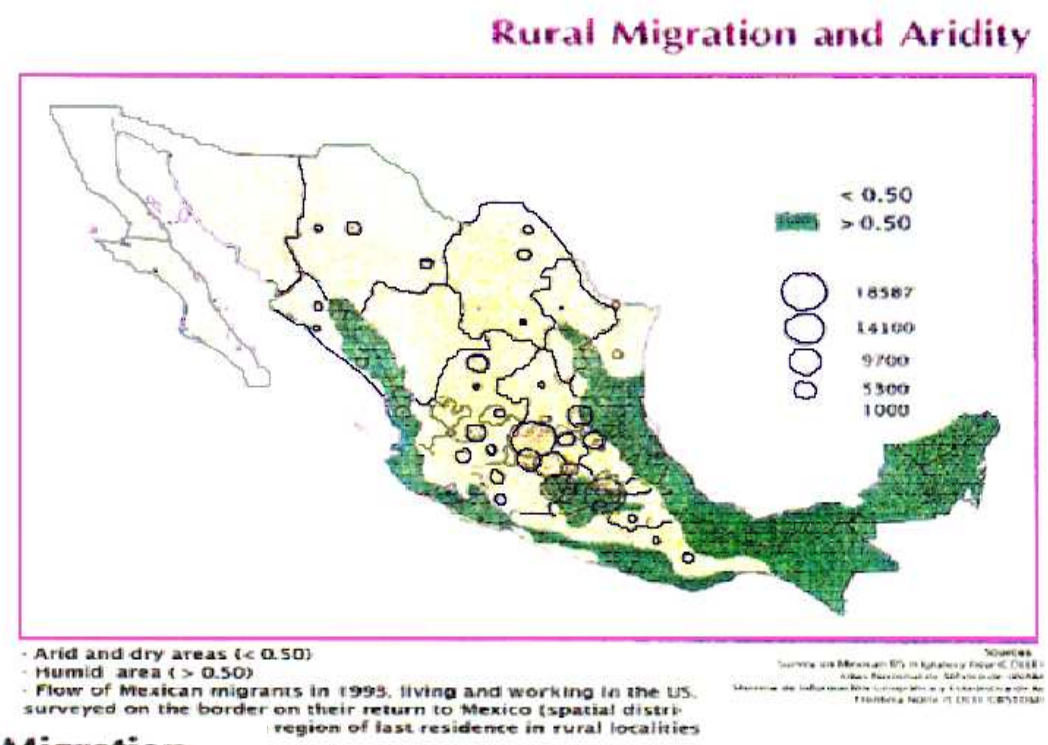
-18 -15 -12 -9 -6 -3 0 3 6 9 12 15 ^ 3

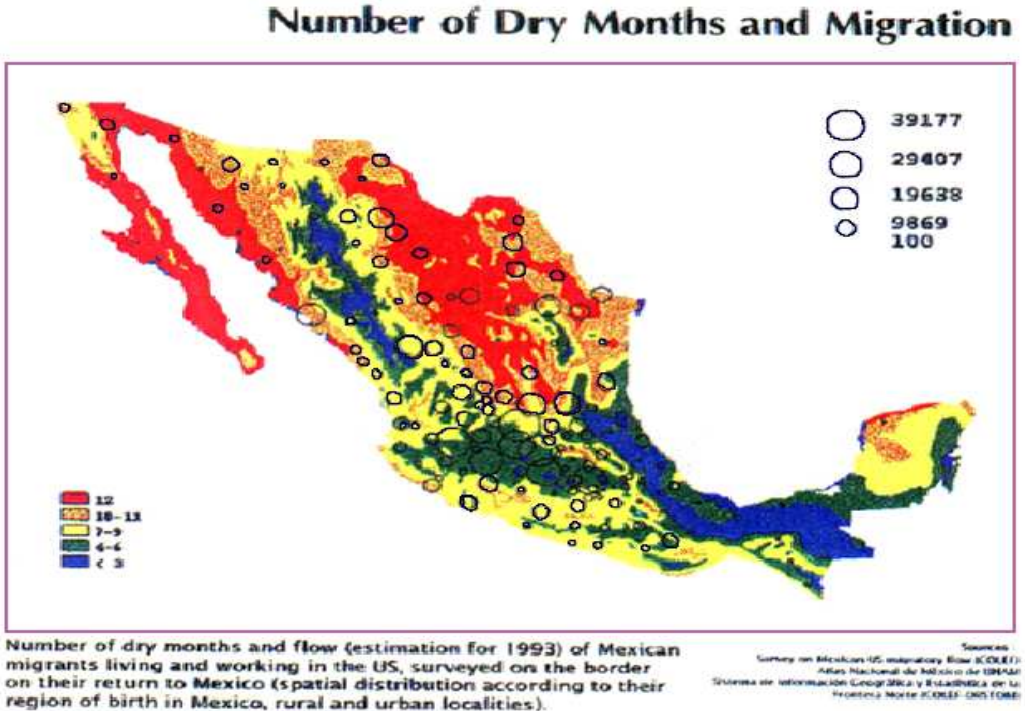





potential yield change [%]
no data
-10
-5
-2.5
0
2.5
5
10
2020; © PIK
2070-2079 with mitigation © PIK
2040-2069 © PIK
2070-2079 w. mitigation © PIK

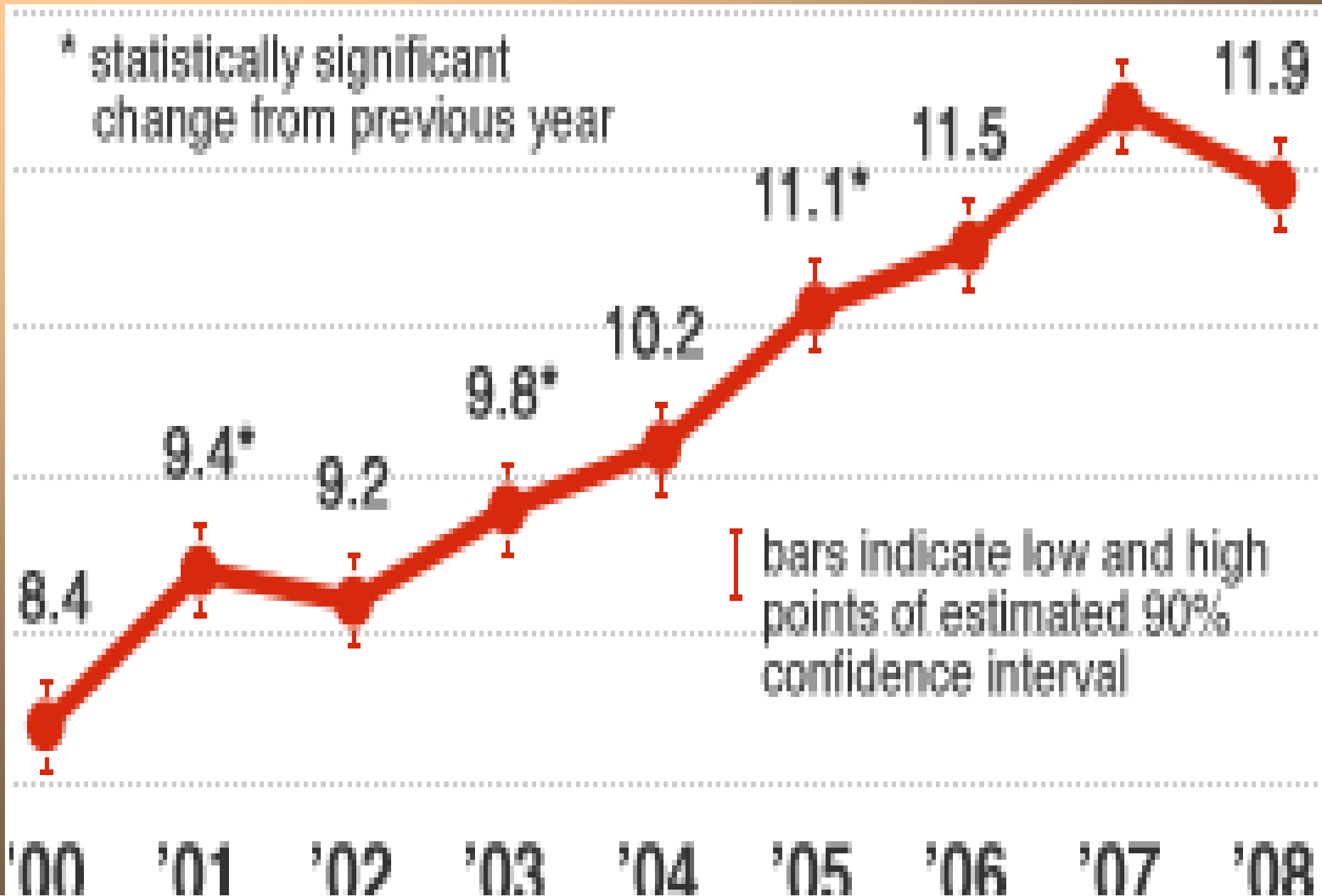
Drought and Migration



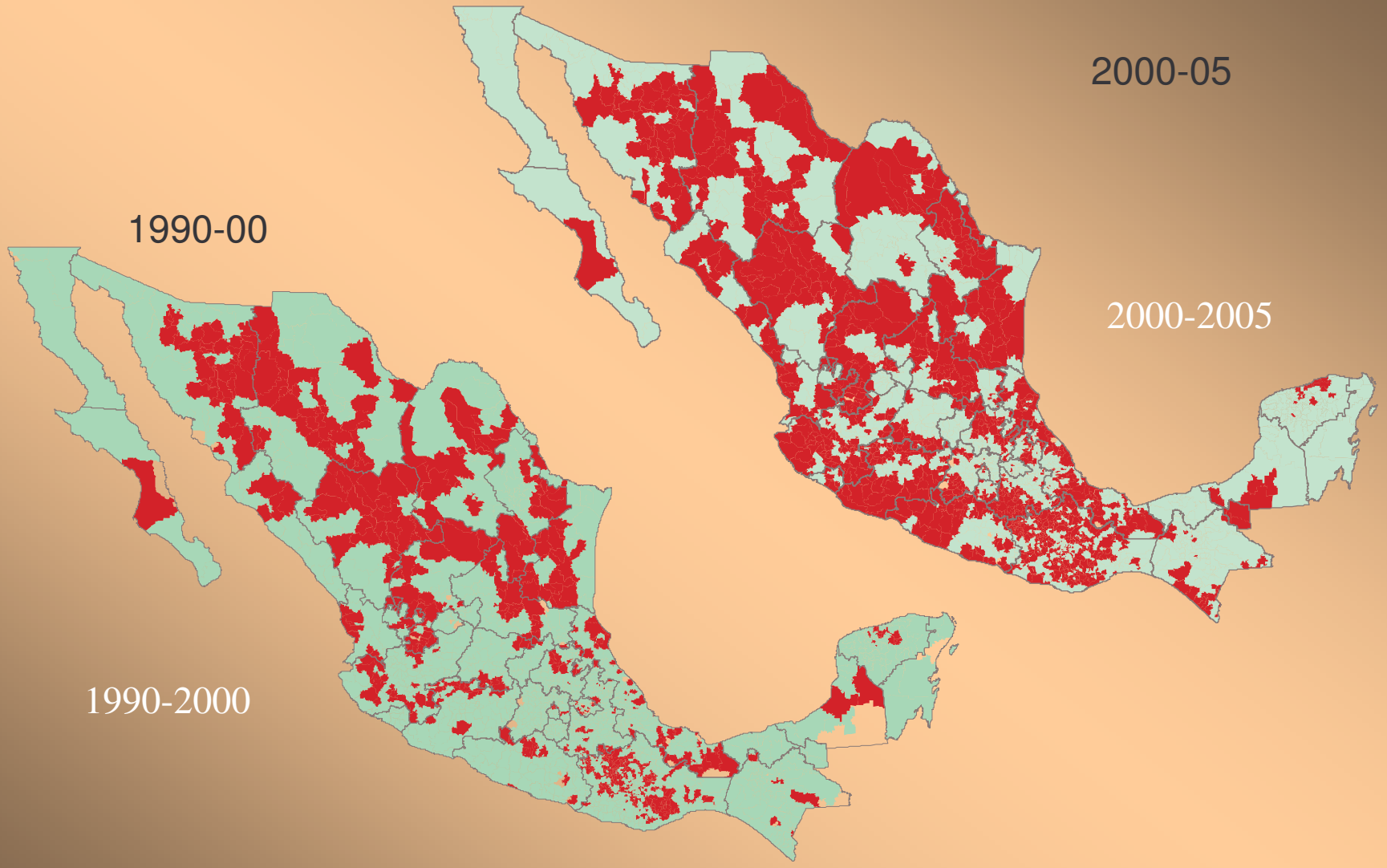


Source: Pew Studies, 2005

Unauthorized immigrants in the USA



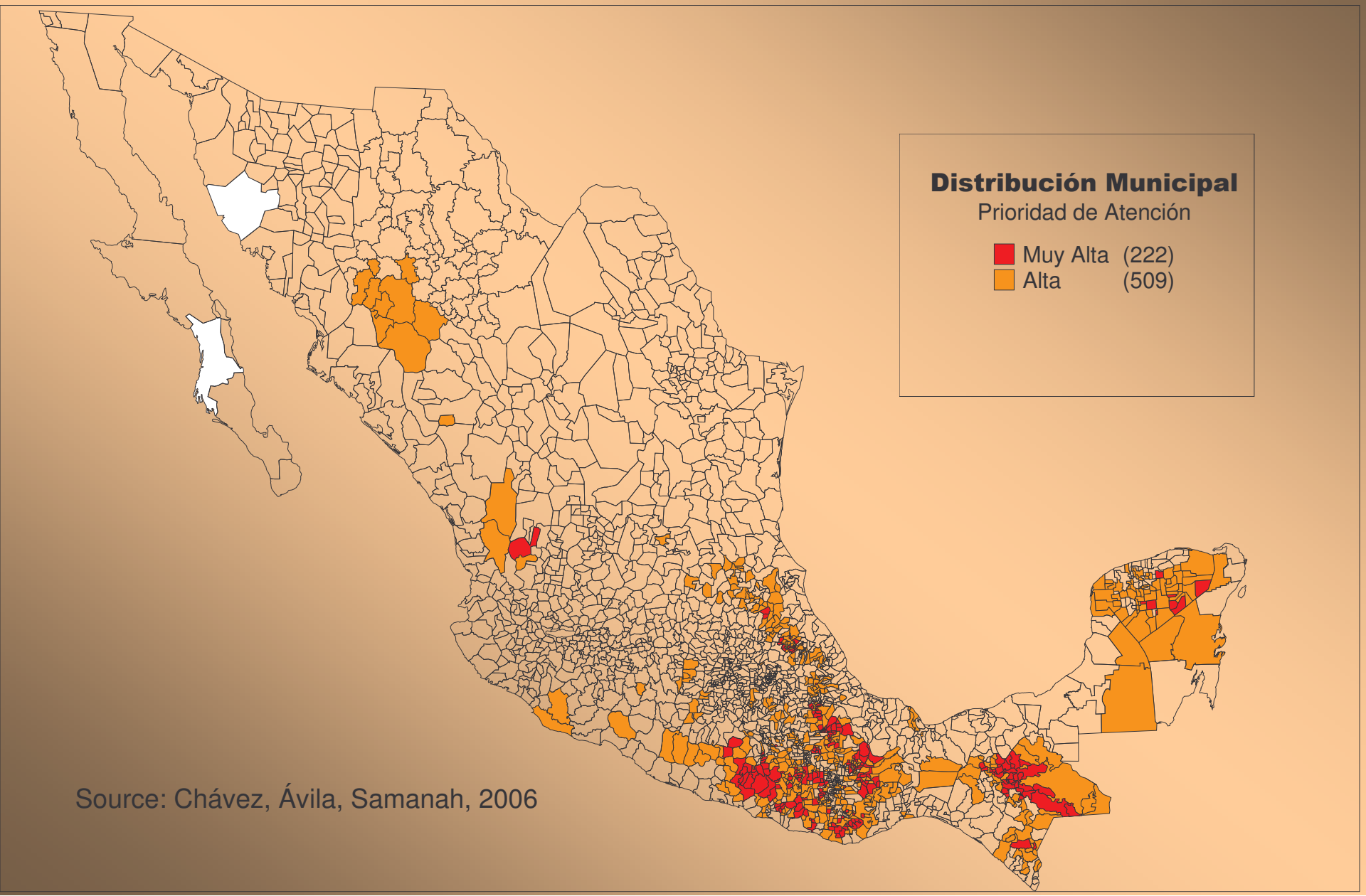
Loss of Population in Mexico



Source: INEGI 1990, 2000, 2005
Elaborated by Fernando Lozano

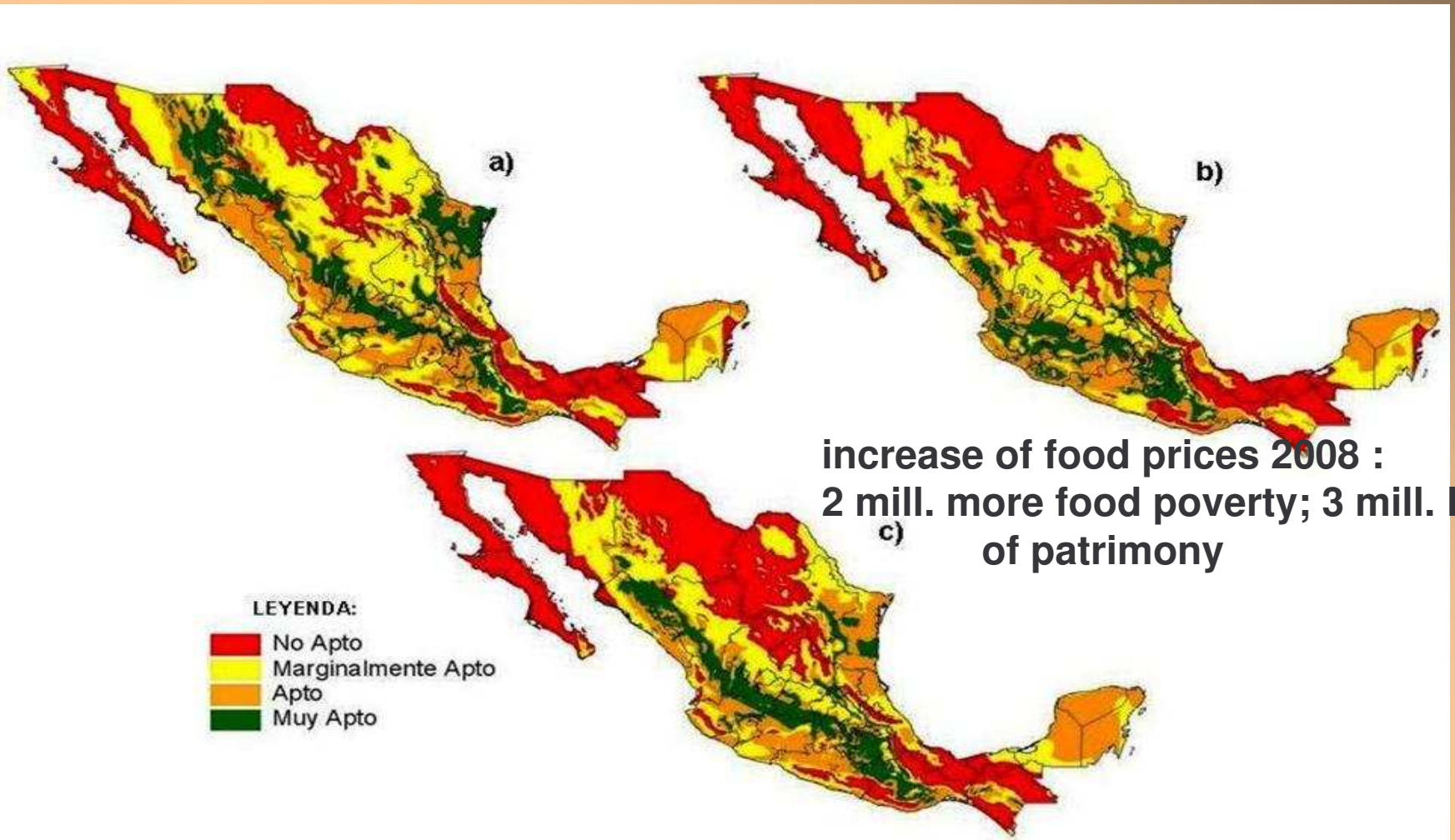
Municipalities loosing population
Municipalities with more population

Very High and High Marginalization: Mexico



Source: Chávez, Ávila, Samanah, 2006

Impact on Production of Corn



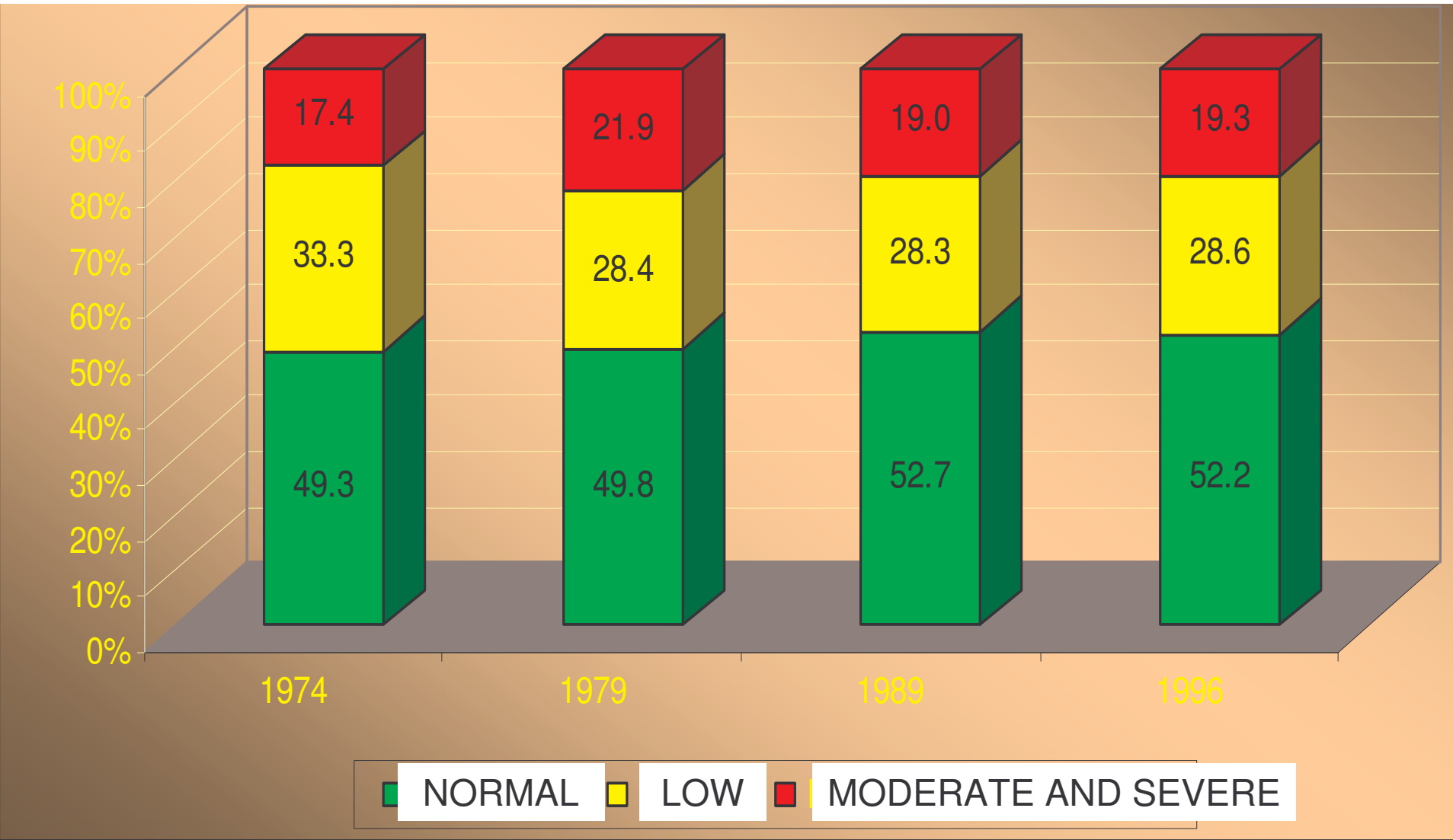
increase of food prices 2008 :
2 mill. more food poverty; 3 mill. Poverty of patrimony

Monterroso, A. G, Rosales, 2006.

Community food security exists when all citizens obtain a safe, personally acceptable, nutritious diet through a sustainable food system that maximizes healthy choices, community self-reliance and equal access for everyone.

Public Health Association of British Columbia (PHABC) (2004)

State of Nutrition of Children Under 5 Years: Weight/Age



7. Mitigation, Adaptation, Resilience and Social Vulnerability

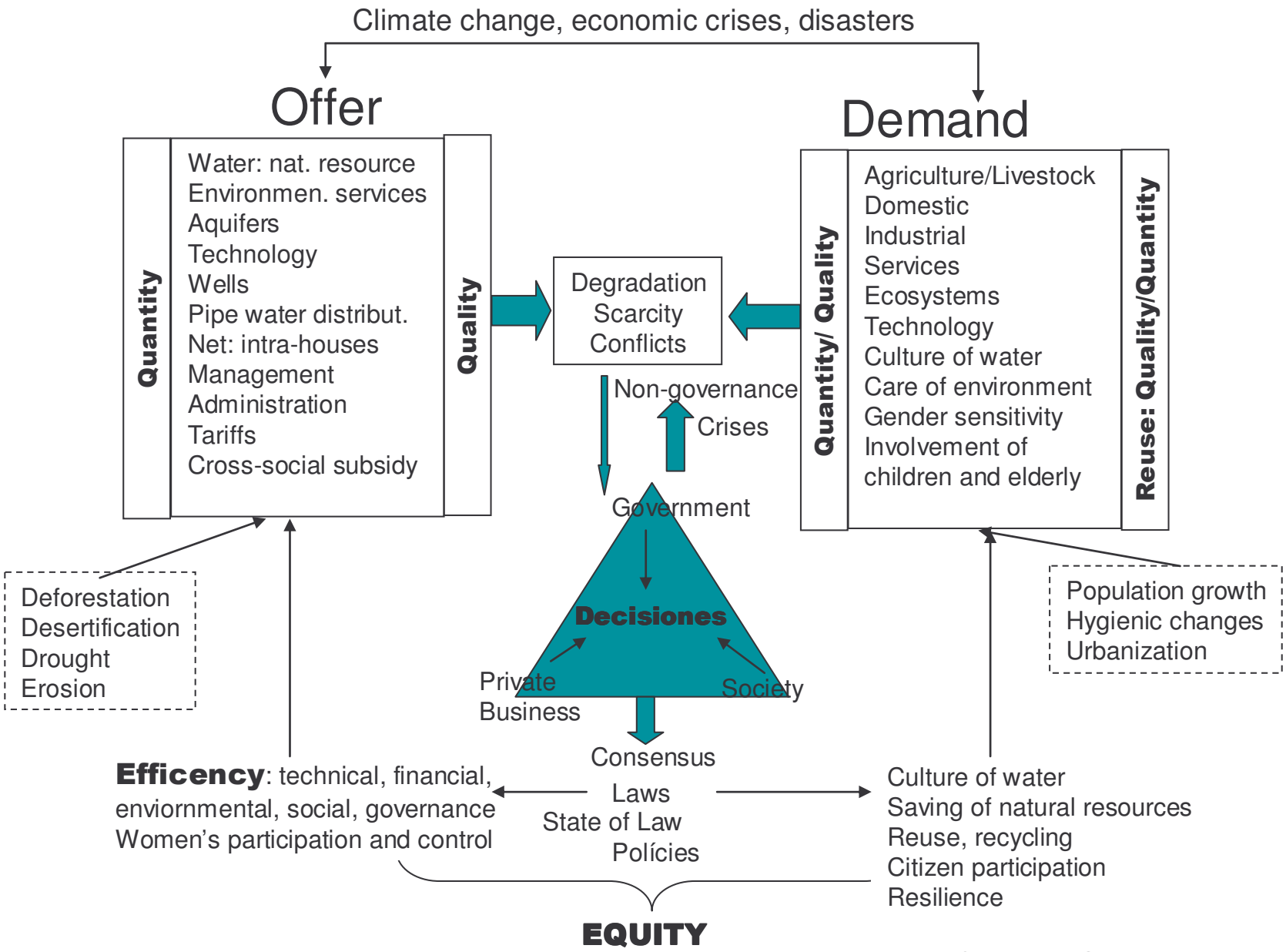
- **Social vulnerability is an historical and accumulative result** of poverty and unequal access to material and cultural consumption and power.
- Increase susceptibility of a community or person confronted with hazard impacts.
- Poor women, heads of single household are at greater risks: **poverty has a woman's face**.
- Hazard impacts **can increase poverty or empower** affected people and prepare them to cope with disasters and new risks.

Strategies of adaptation: top-down and bottom-up

Strategies of Adaptation

- Definition of resources:
  - **Economic**: financing, infrastructure, poverty alleviation, ethical business, international aid and compensation, participative budget, sustainable job creation, environmental services
  - **Social**: peasant organizations, research, science and technology, experts, NGO, Consultation Councils for Government, Public Private Partnership, sustainable livelihood, education and youth attention
  - **Environmental:** Strategy of holistic sustainable development, recuperation and protection of ecosystems, environmental protection, urban reorganization, combat to desertification, integral **water** management, waste recycling, alternative energy, prevention,
  - **Political:** Transparency, state of law, governance, democratic participation in planning, execution and evaluation, food and health security, early warning, sustainable reconstruction
- Integration of National Plan of Development with **Sectoral** Plans, **State** and **Municipal** Plans
- Prevention and permanent monitoring
- Rigorous evaluation and modification

Efficiency and Equity with Natural Resources



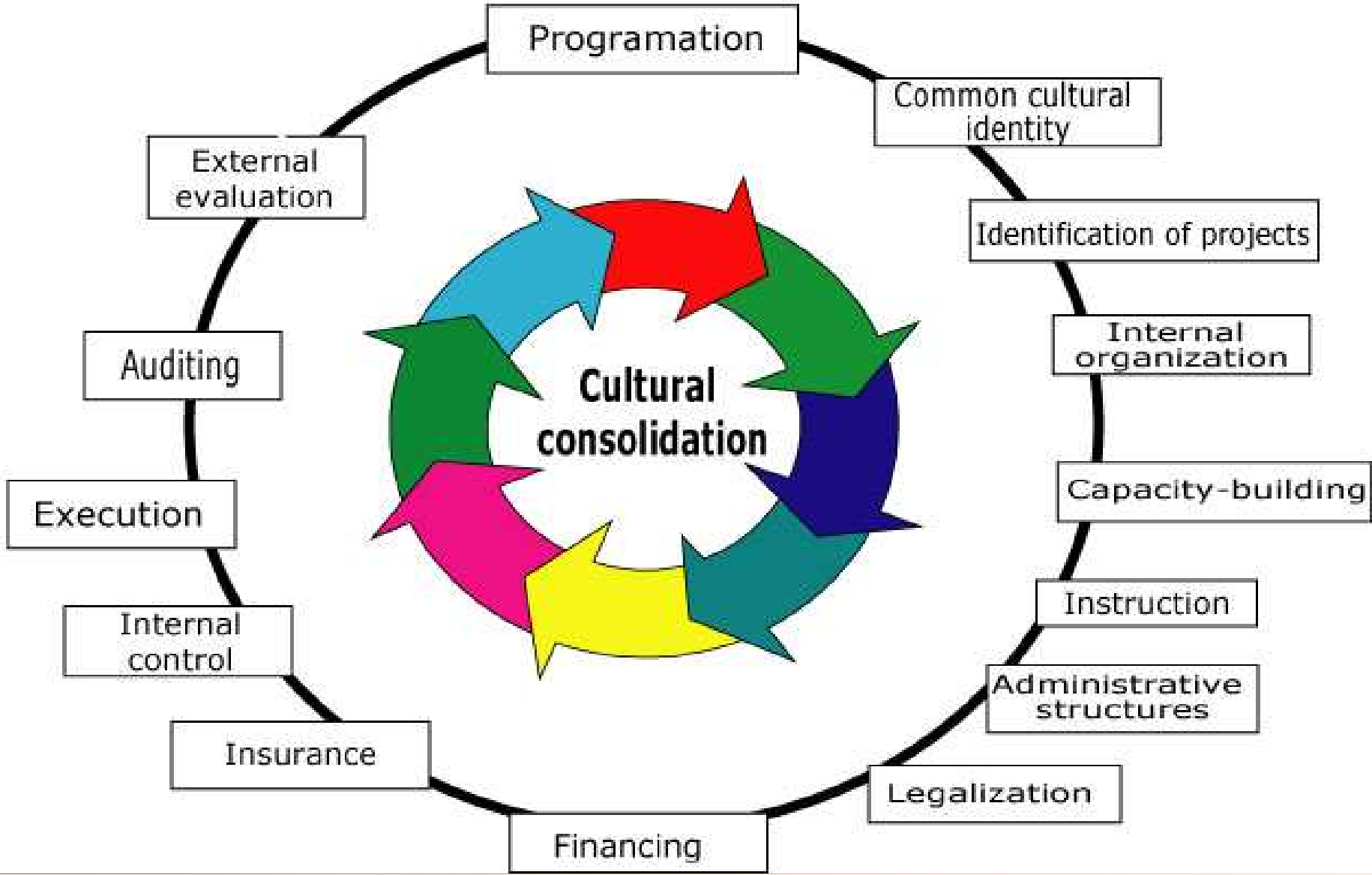
Fuente: Oswald y Sandoval, 2006

Survival Strategies

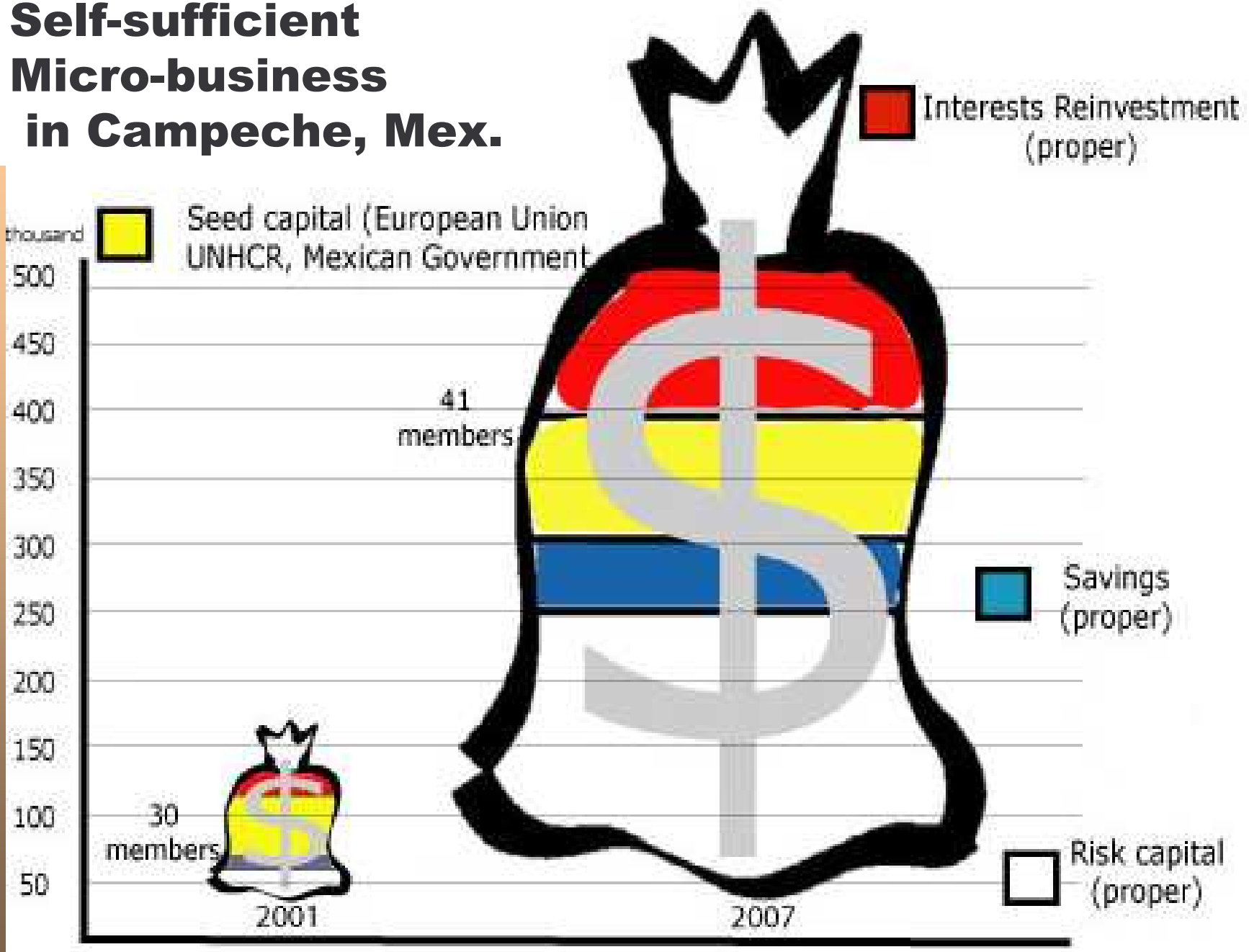
Survival Strategies (Oswald, 1991, 2007)

1. Massive rural migration to urban slums
2. Illegal occupation of marginal and risky land
3. Construction of shelter with precarious materials (waste)
4. Chronic unemployment of men and lack of cash
5. Selling unnecessary goods
6. Credits from family members and neighbors
7. Economic crises increases and lack of food
8. Recollection of perished fruits and vegetables
9. Collective popular kitchen
10. Rotation of women in collective community work (kitchen, child rearing)
11. Common struggle for basic services (electricity, water, access, community center)
12. Communal organization for regularization of land and services
13. Struggle for public subsidies and poverty alleviation programs
14. Temporary paid work
15. Multiple activities: services, handicraft, food, washing, ironing, paid jobs
16. Social organization against organized crime and gangs
17. Empowerment and fight against intra-family violence
18. Social and economic consolidation of colony and families

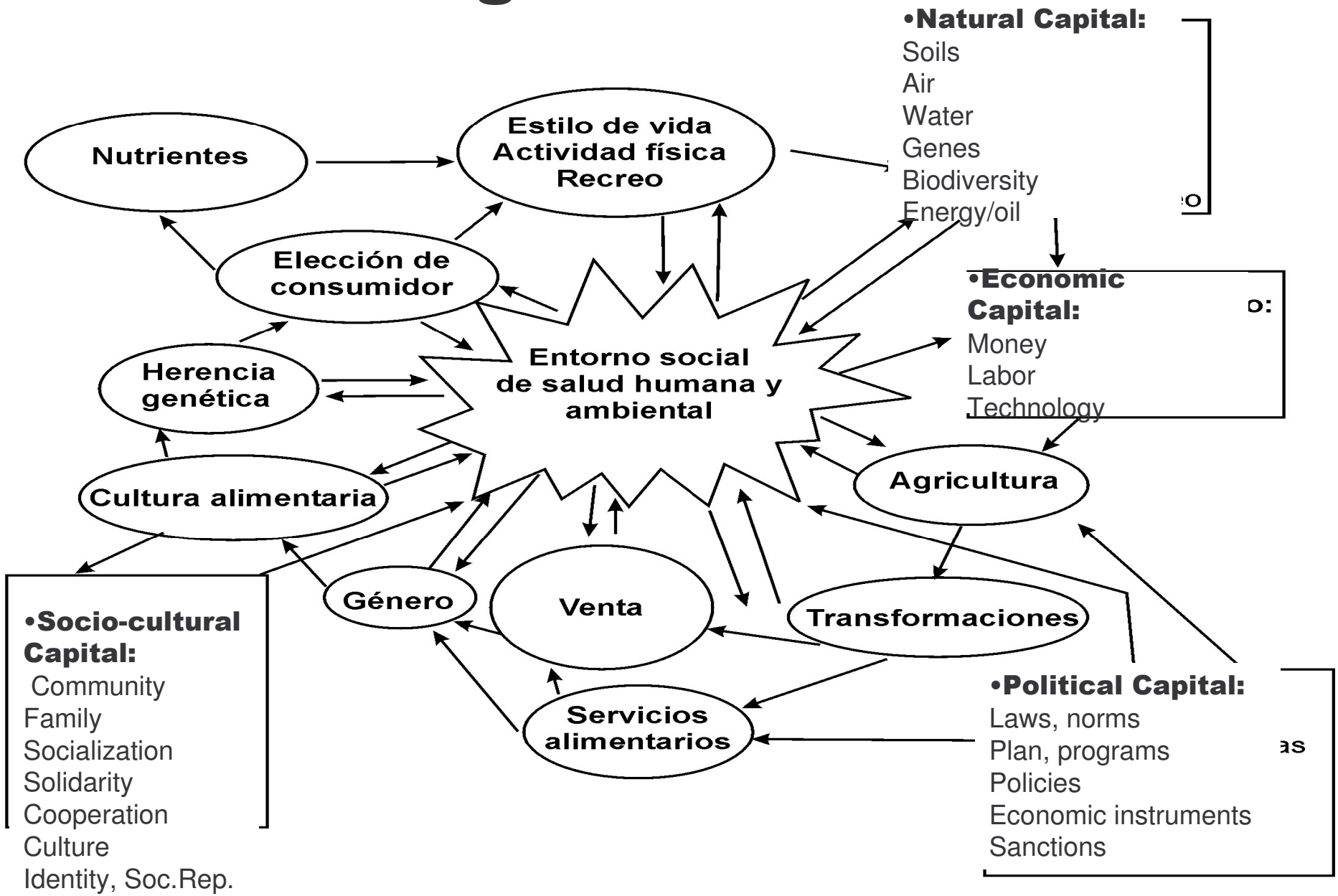
Fig 1. Model of self-reliant entrepreuneurship



Self-sufficient Micro-business in Campeche, Mex.

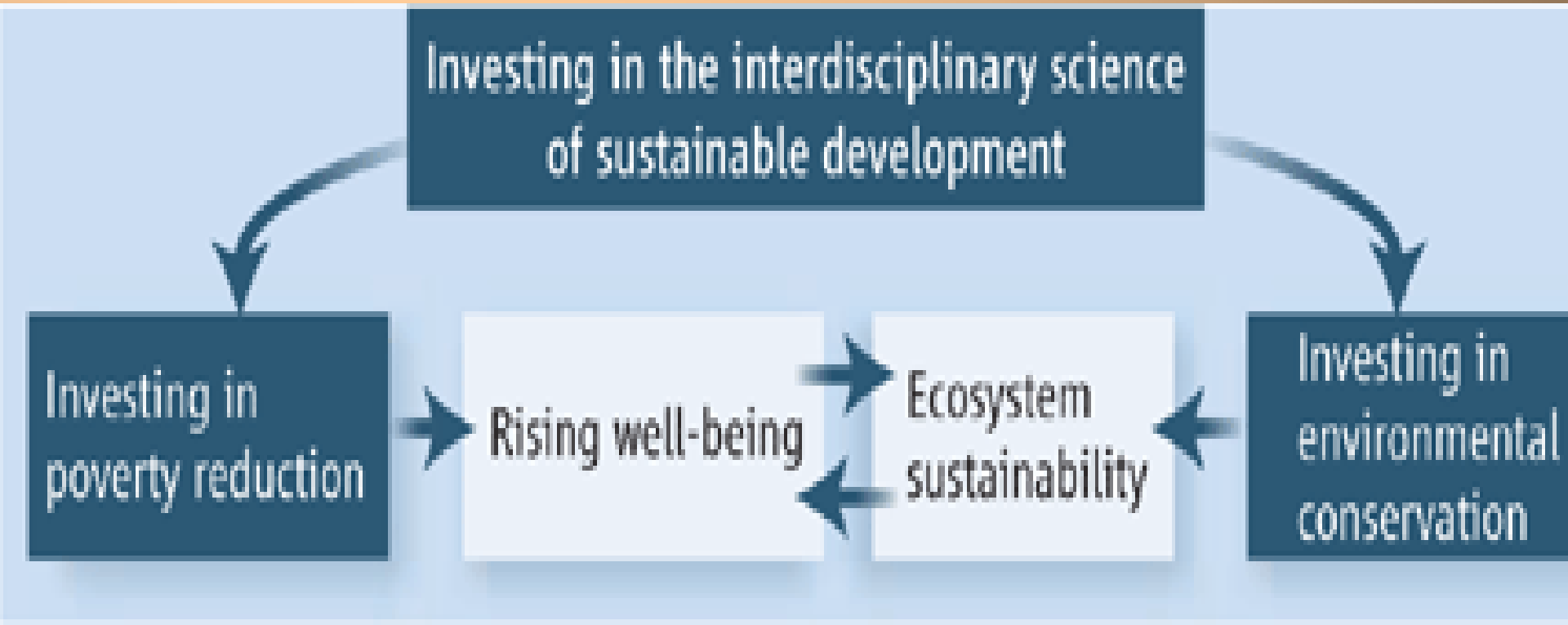


Health integrated in environment

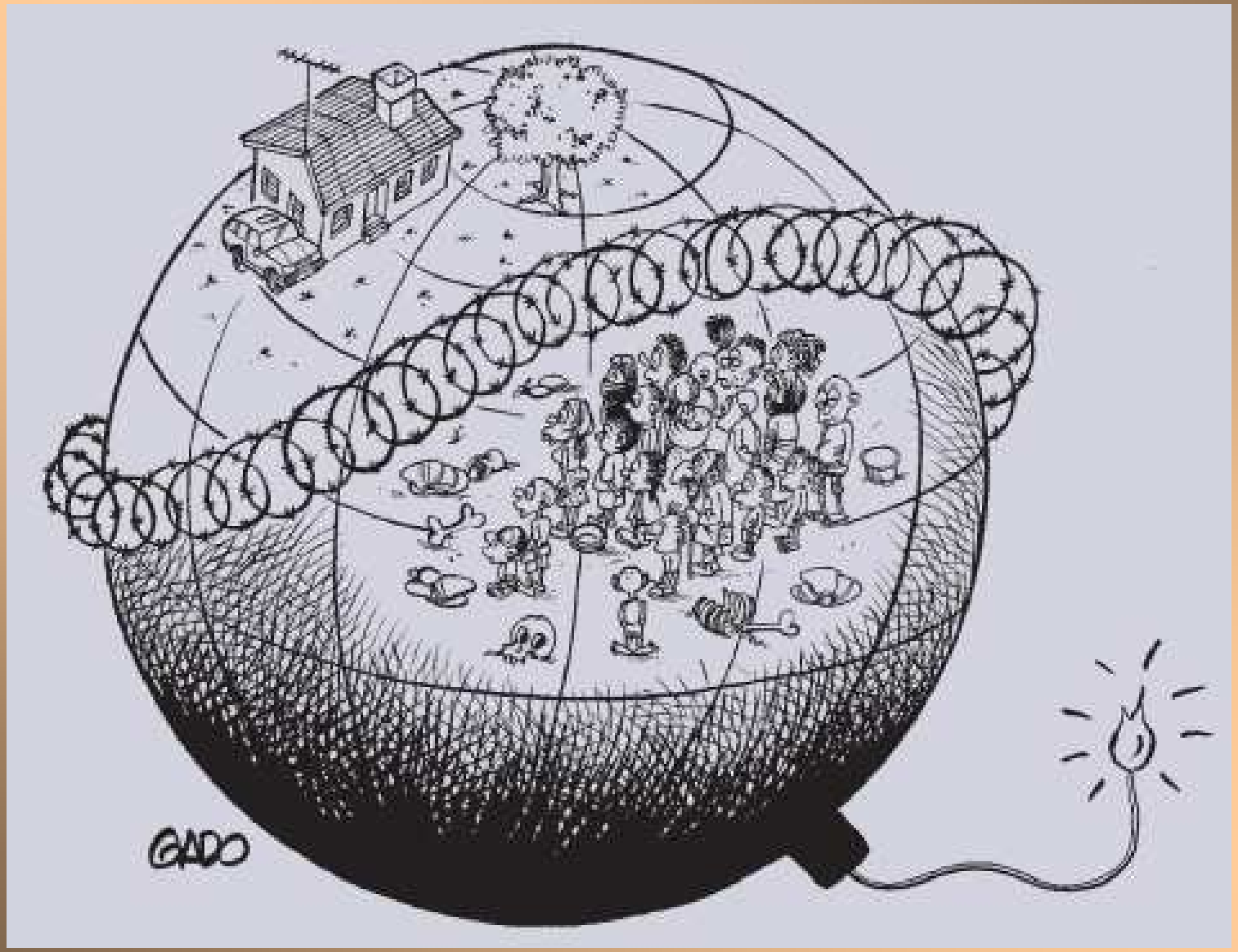


Fuente: Lang y Heasman, 2005: 39, modificado por Oswald, 2006

Integral proposal of poverty alleviation and environmental recovery to reduce migration

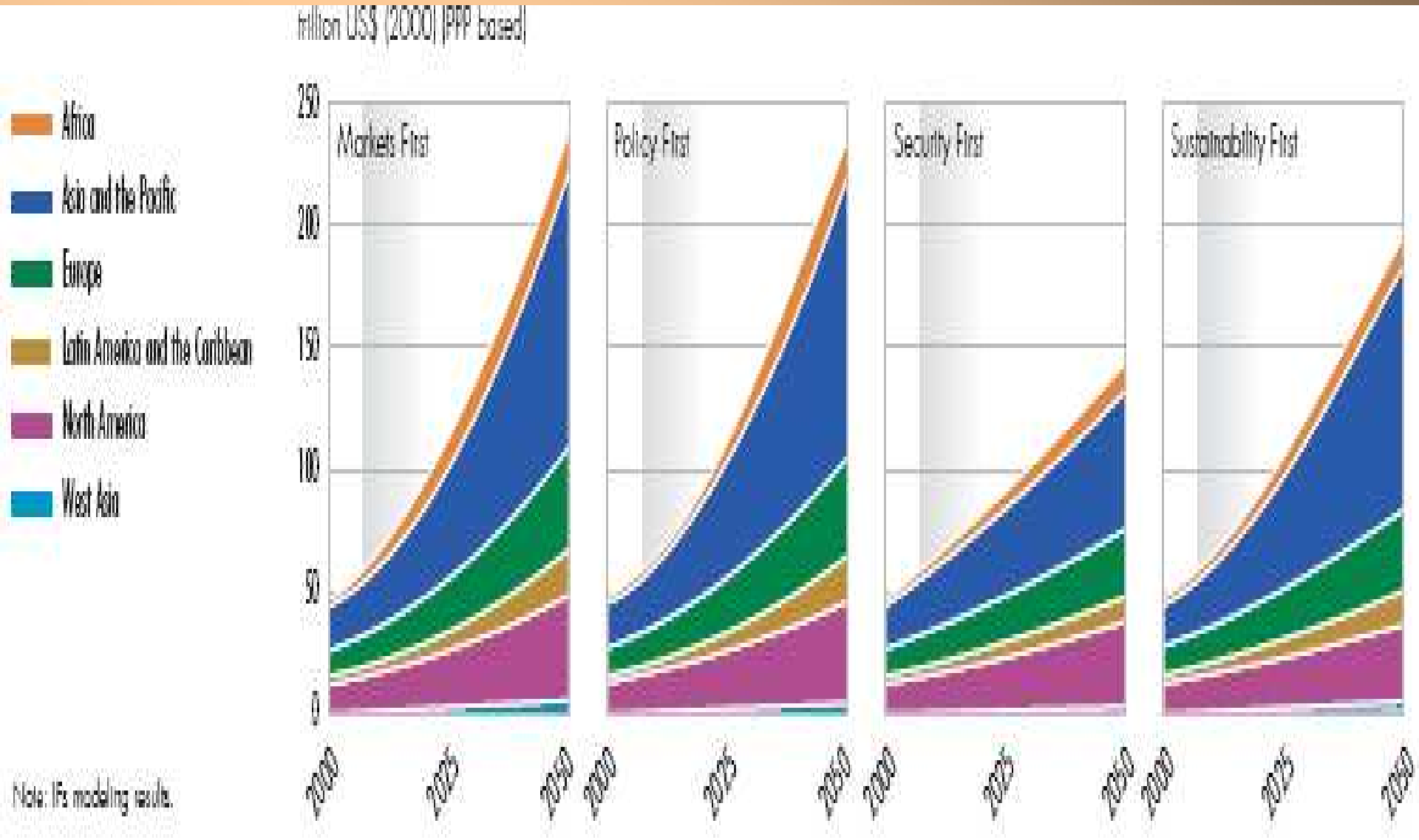


8. Future Scenarios & Policy

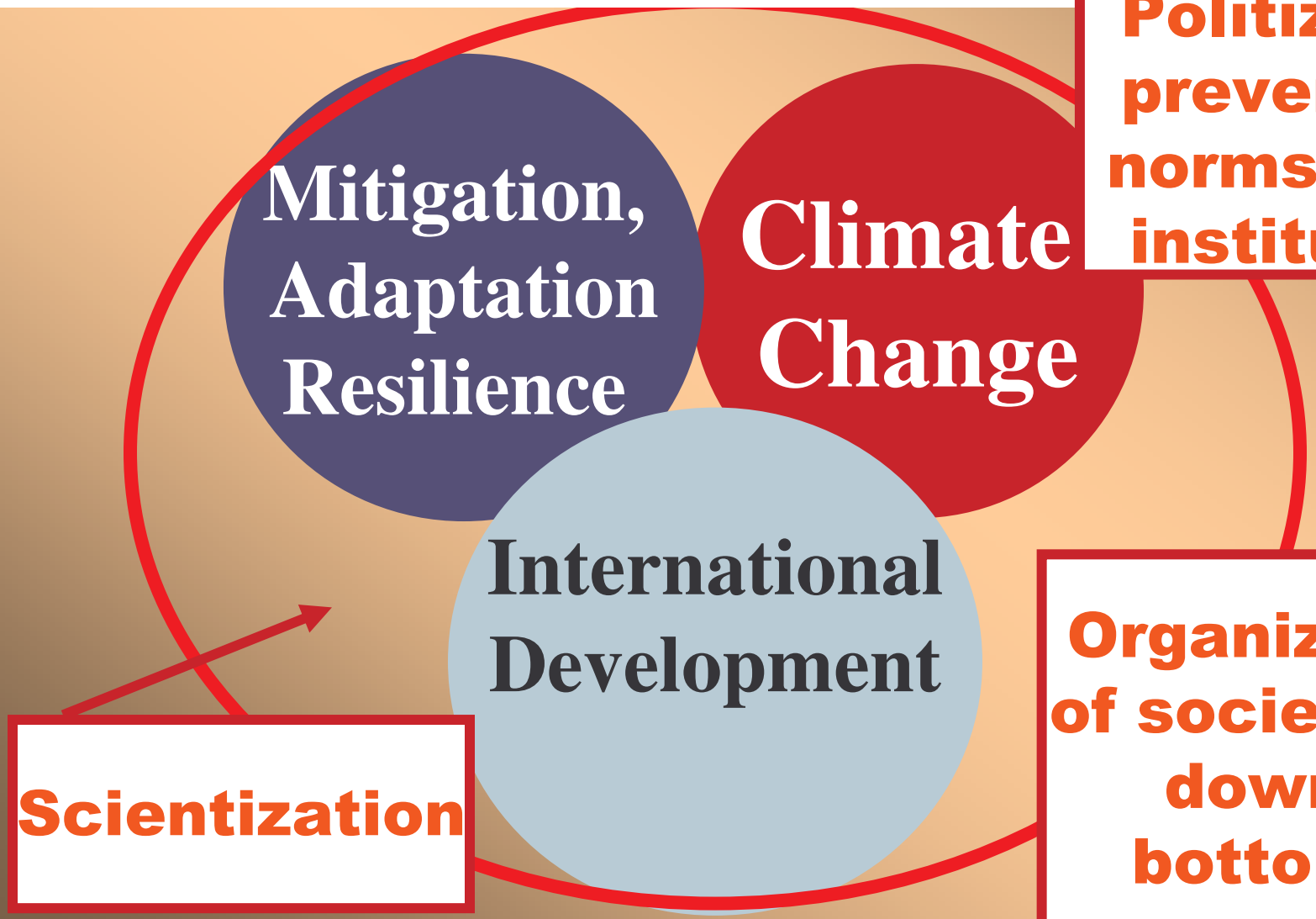


Four Models of Development

(Source: UNEP, GEO-4, 2007)



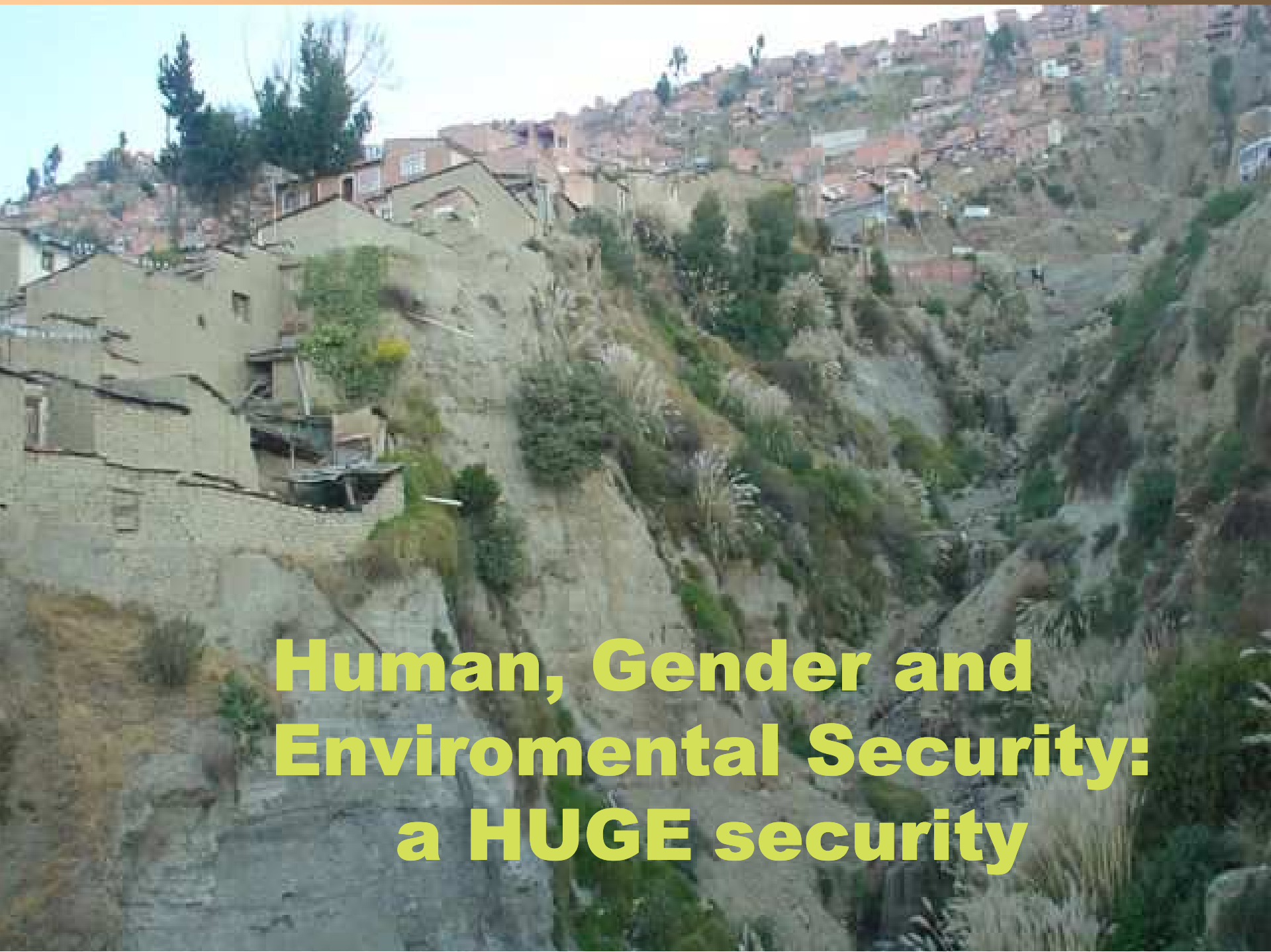
Securitization: Sustainable Development, Eradication of Poverty and HUGE Security



Politization: prevention: norms, laws, institutions

Scientization

Organization of society: top-down & bottom-up


Human, Gender and
Enviromental Security:
a HUGE security

Why a HUGE Security?

Confronted with global environmental change, globalization, urbanization and a homogenizing culture, the traditional narrow military security concepts is insufficient to deal with the new dangers. Poverty and marginalization is increasing, resources are getting scarce and polluted, and profit interests of small elites are creating a risk society. Further, gender violence is still the most common aggression worldwide.

To deal with these new challenges an integral concept of security is proposed: a **Human, Gender and Environmental Security: or a HUGE security.**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