Kasetsart University

Chulalongkorn University

CHULALONGKORN UNIVERSITY

Faculty of Architecture, Kasetsart University
and Koh Kret, Nonthaburi

International Workshop on

Urban Climate Change and Community Resilience

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Analysing Urban Climate Change and Community Resilience

PEISOR Model and Perspectives of Human Security & Peace Ecology

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Springer Briefs in Environment, Security, Development & Peace
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Contents

1. Research Question & Structure of the Presentation

1. Research Question & Structure of the Presentation

What can a political scientist specializing in international relations, environmental, security and peace studies contribute to the analysis of the linkage? between

–**"Politik":** Policy (field), politics (process), polity (legal framework)

–**Urban Climate Change**: impact of a global process on a local urban level as a "glocal" (S. Sassen) problem

–**Community Resilience**: policy response from bottom-up (society)

Structure of the presentation

–**Assessment of urbanization trends and climate change impacts**

–**PEISOR Model**: Stimulus & response model

–**Human Security Approach**: freedom from hazard impacts

–**Peace Ecology Perspective**: sustainable peace.

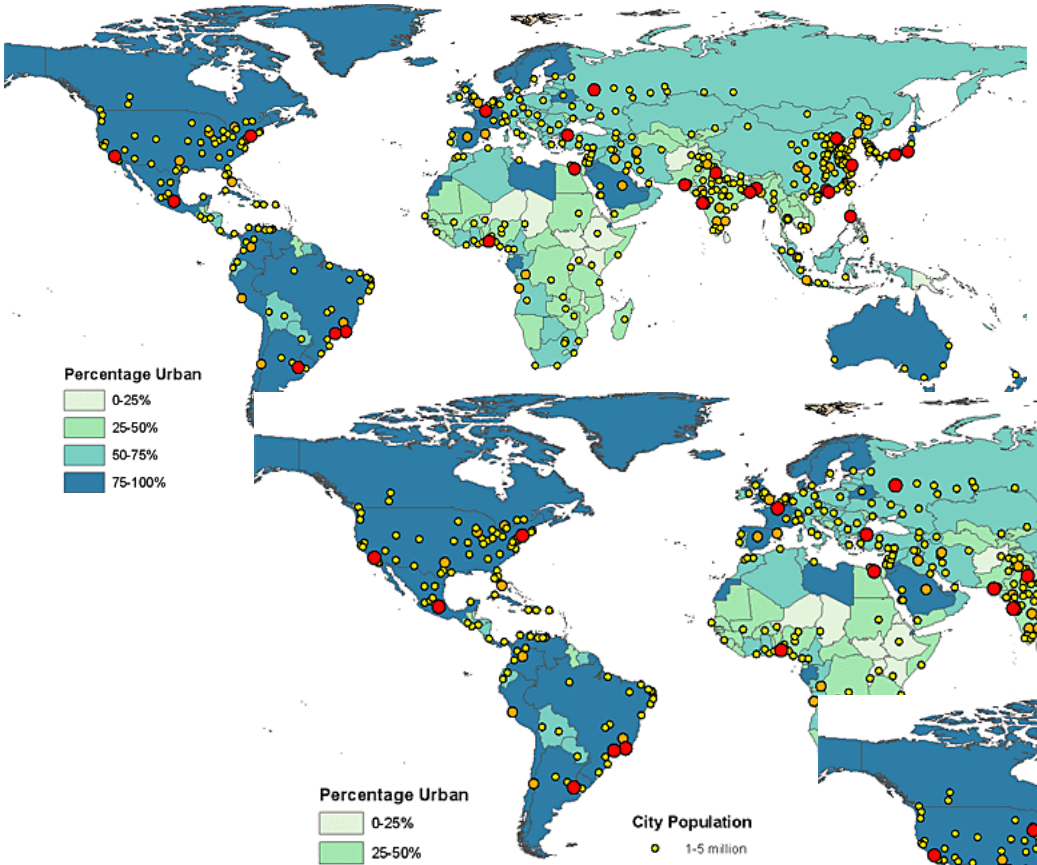
1.1. „Politik“: Politics, Policy, Polity,

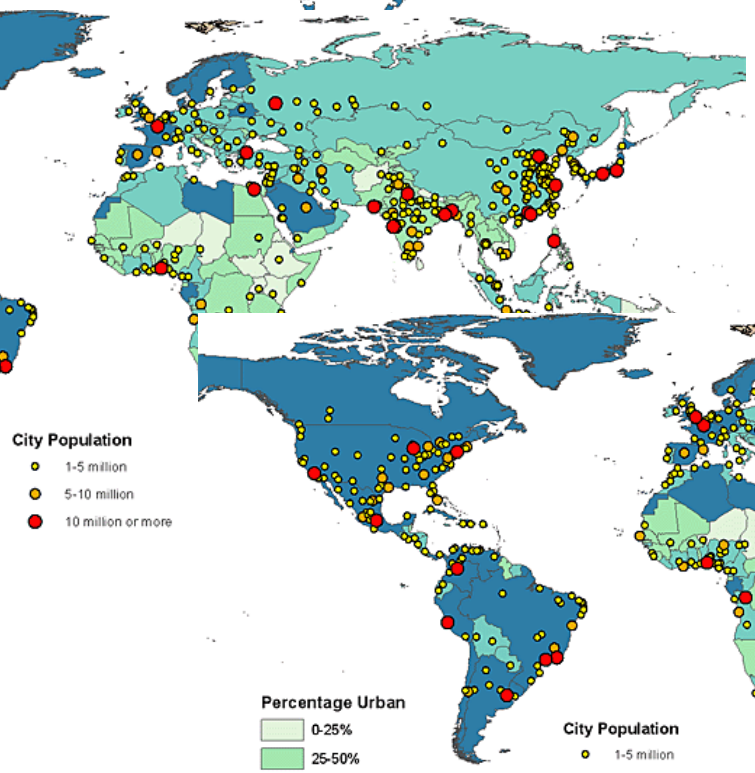
- **Politics: process of decision-making: TD, bottom-up**
  - **Actors**: state, society, economic sector, **knowledge**
  - **Interests**: special (lobbies), local, **community interests**
  - **Levels:** national, regional**, local (community)**
- **Policies: Horizontal coordination is suboptimal**
  - Urban policies (planning), transportation, housing
  - Environment policies
  - Disaster management: early warning, shelters, resilience
- **Polity: legal & institutional frameworks**
  - **National laws:**
  - **Implementing agencies:**
    - Financial resources,
    - human capacities: training, capacity building -> community resilience

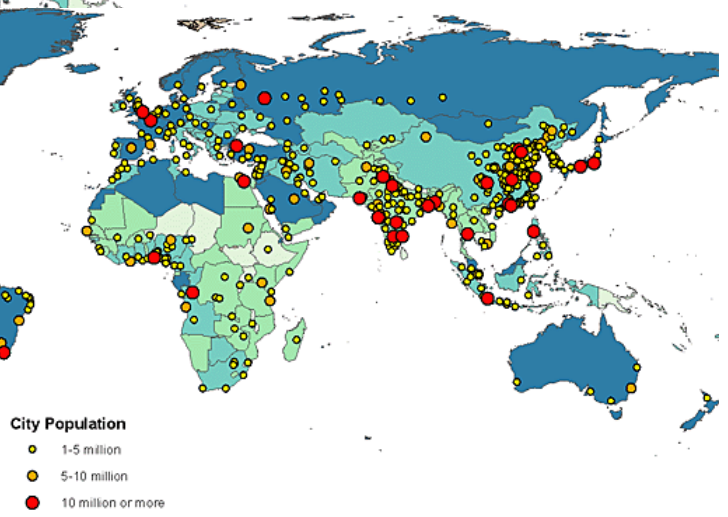
1.2 Urban Climate Change: Impact of a Global Process on Local Urban Level (glocal)

- **Climate Variability vs. Anthropogenic Climate Change**
  - **Climate variability: warm & cold periods in Holocene**
  - **Anthropogenic CC: burning of hydro carbons (since industrial revolution 1750), 2/3 since 1958: (280) 315 to 400 ppm (2013)**
  - **From Holocene to Anthropocene (Paul Crutzen)**
  - **National contributions: historical, present, future**
- **We (people) are the threat and we are the victims**
- **Urban centres responsible for high GHG contributions (threat)**
  Primarily energy and transportation sectors
  - **Industry and housing sectors**
- **Urban centres: high vulnerability to floods (victims)**
  - **Population density, high values (factories, government, hospitals)**

1.3. Global Urbanization: 1960, 2011, 2025







1.4 Urbanization in Thailand (1950-2050)

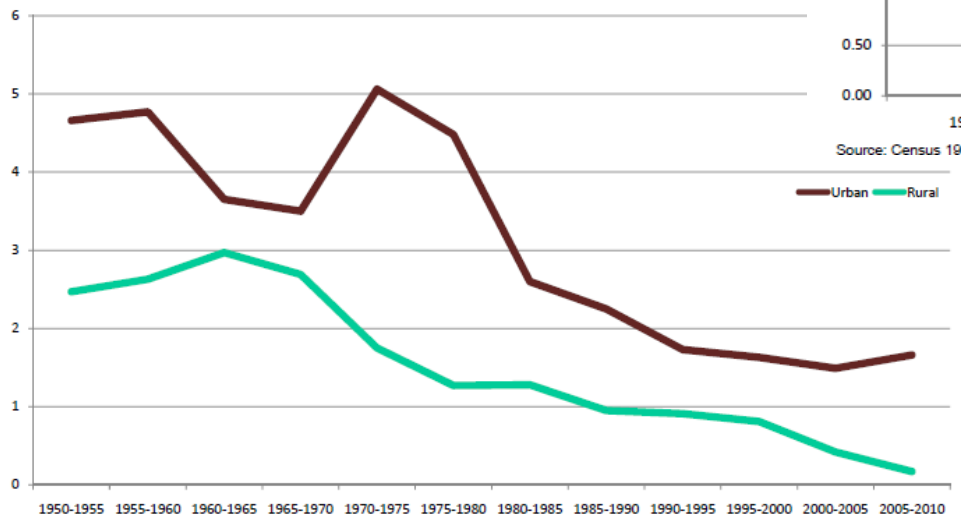
year	Population	Urban population	% Urban population		An. urban Growth %	An rate change % urban	
1950	**20 607**	**3 396**	**16.5**	**1950-1955**	**4.51**	**1.81**	
1960	27 312	5 373	19.7	1960-1965	3.59	0.55	
1970	36 915	7 711	20.9	1970-1975	5.34	2.57	
1980	47 483	12 721	26.8	1980-1985	2.89	0.95	
1990	57 072	16 793	29.4	1990-1995	1.46	0.57	
2000	63 155	19 669	31.1	2000-2005	1.78	0.69	
2010	**69 122**	**23 315**	**33.7**	**2010-2015**	**1.60**	**1.10**	
2015	70 876	25 255	35.6	2015-2020	1.61	1.27	
2020	72 091	27 375	38.0	2020-2025	1.63	1.41	
2025	**72 884**	**29 704**	**40.8**	**2025-2030**	**1.51**	**1.39**	
2030	73 321	32 039	43.7	2030-2035	1.34	1.32	
2040	72 994	36 274	49.7	2040-2045	0.95	1.18	
2050	**71 037**	**39 567**	**55.7**	**2050-2055**	**0.65**	**1.03**	

World Population Prospects: The 2010 Revision & *World Urbanization Prospects: The 2011 Revision*

1.5 Urbanization Trends in Thailand & Bangkok

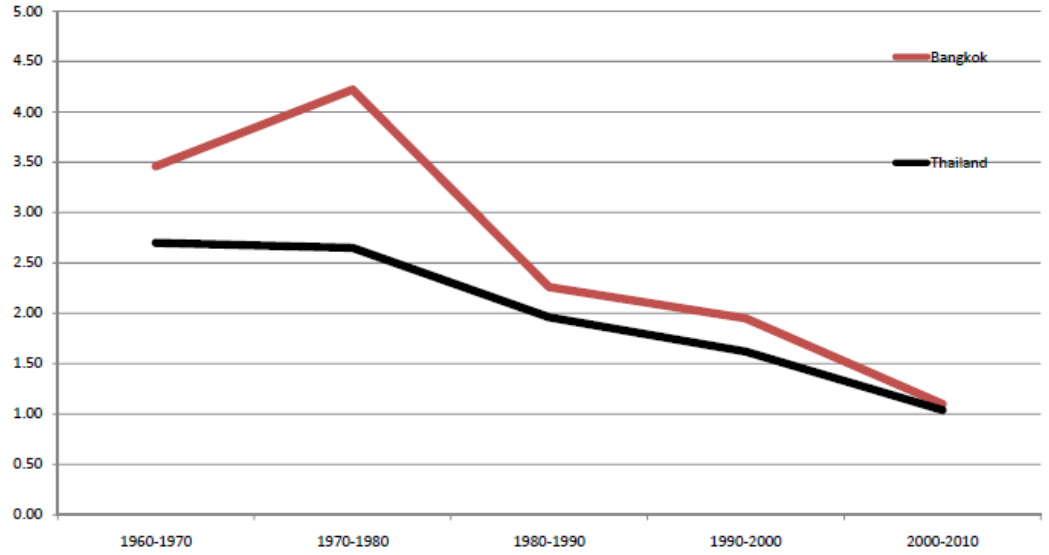
SUREEPORN PUNPUING AND KERRY RICHTER
INSTITUTE FOR POPULATION AND SOCIAL RESEARCH
MAHIDOL UNIVERSITY

Thailand: Annual growth, urban/ rural (1950-2010)



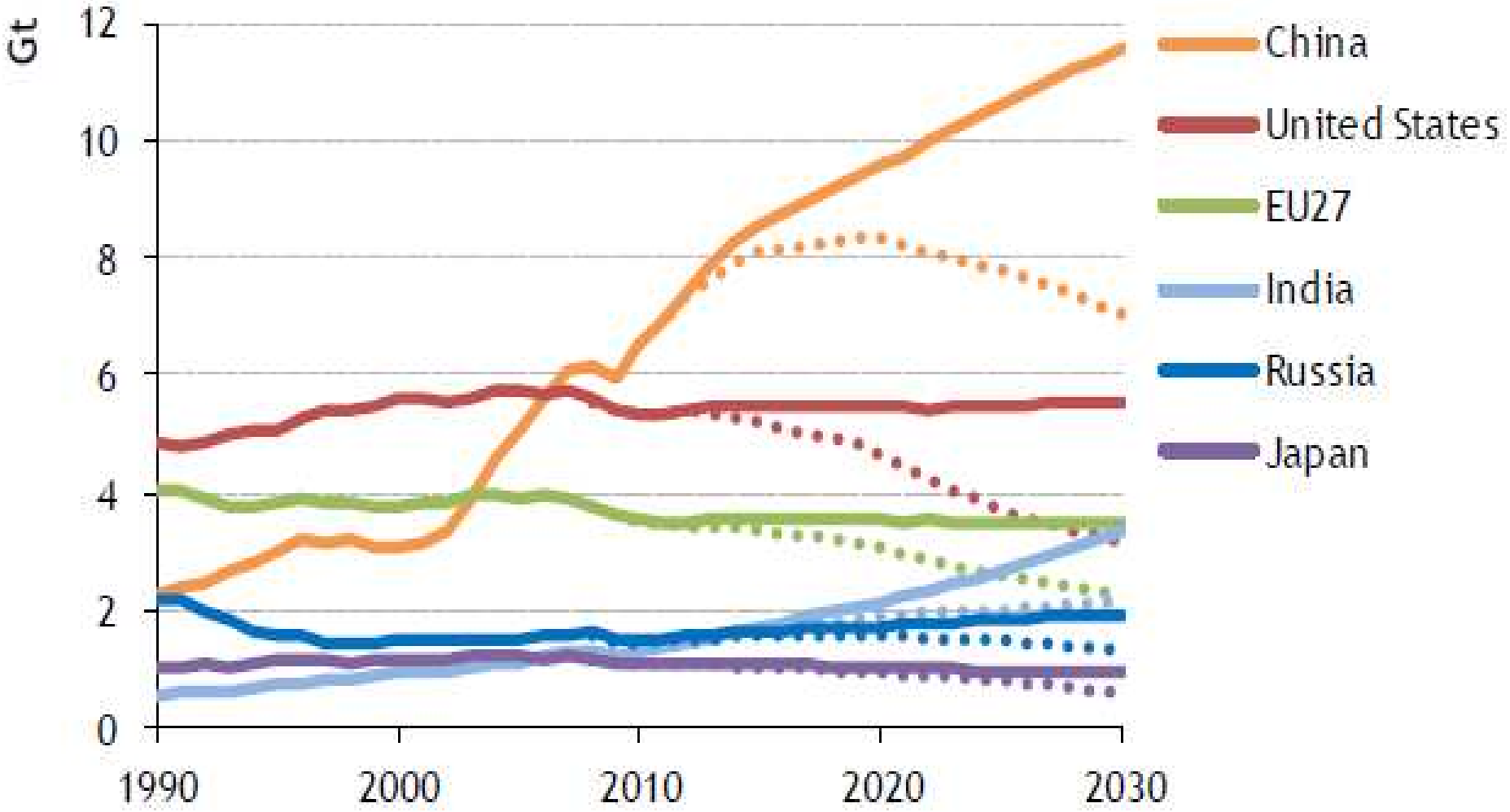
Source: United Nations, World Urbanization prospects database, 2010.

Average annual growth rate of Thailand, Bangkok and peripheral provinces, 1960-2010



Source: Census 1960-1990, NESDB 2000-2010 (projections)

1.6 Energy-related CO2 Emissions for EU27, US, Japan, Russia, China & India (1990-2030)



1.7. Internat. Energy Agency, 2011, Global GHG Emissions (1970-2050)

Figure 7.5. **Global GHG emission pathways: Baseline and mitigation cases to 2050 compared to 2100 stabilisation pathways**

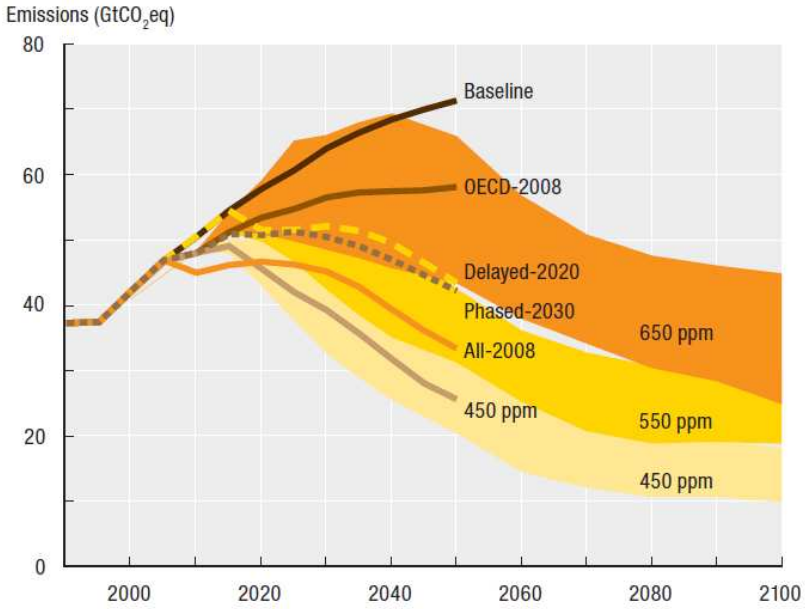
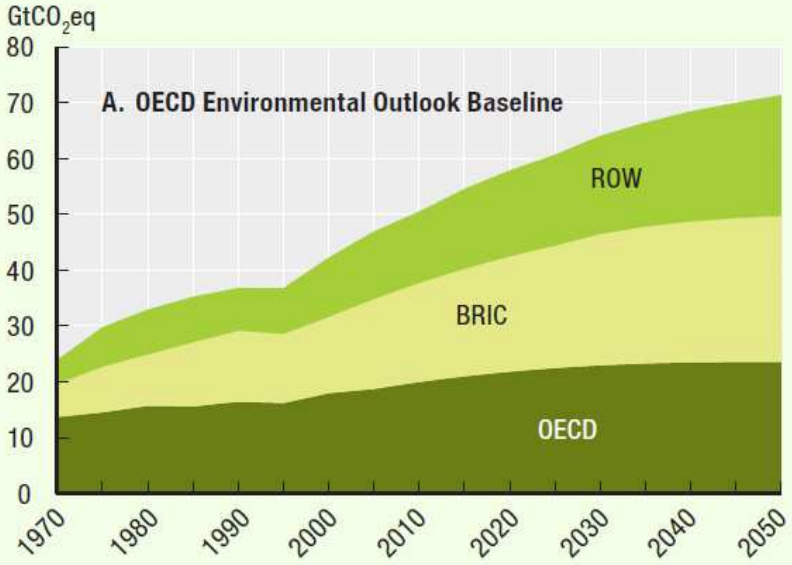
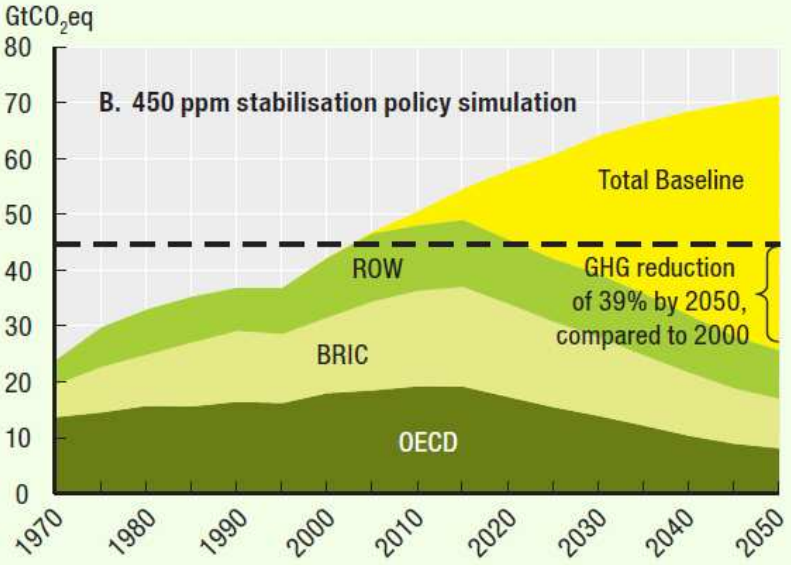


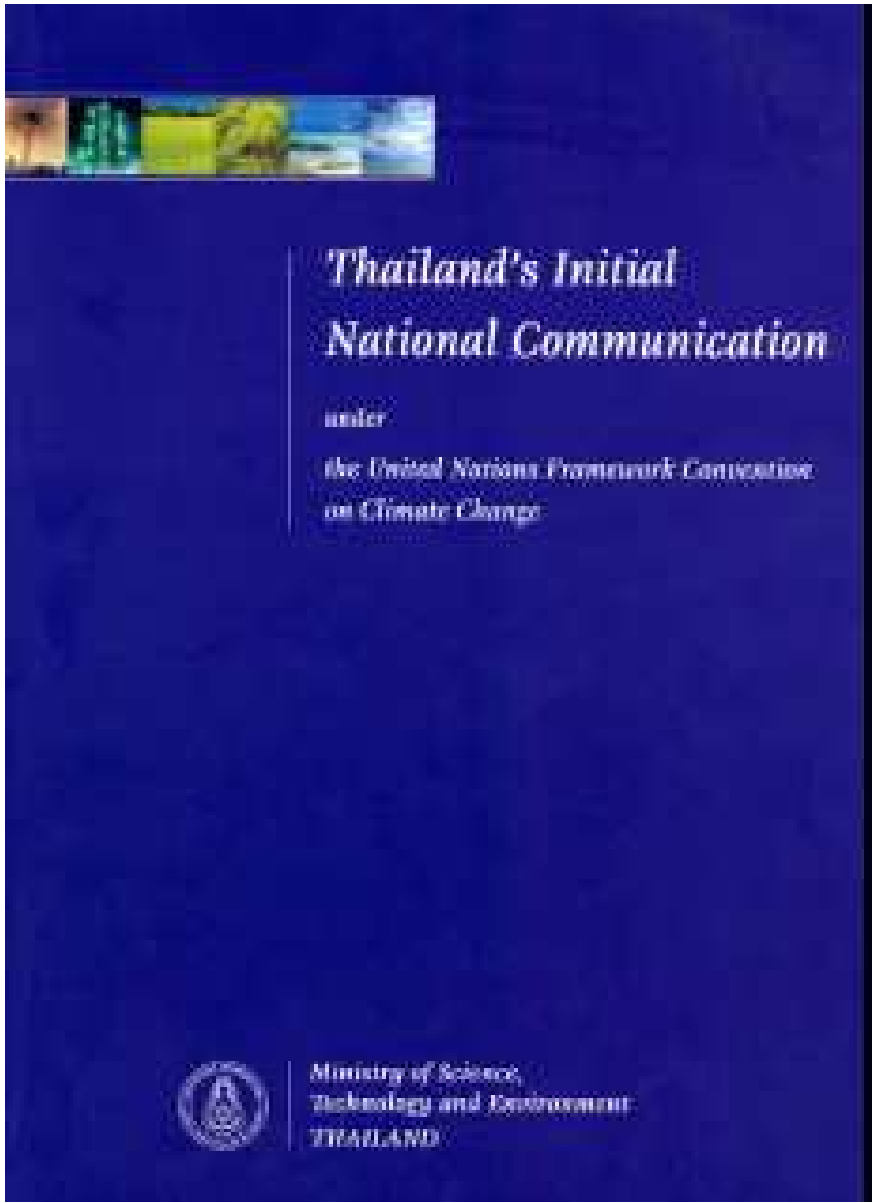
Figure 0.2. **Total greenhouse gas emissions (by region), 1970-2050**

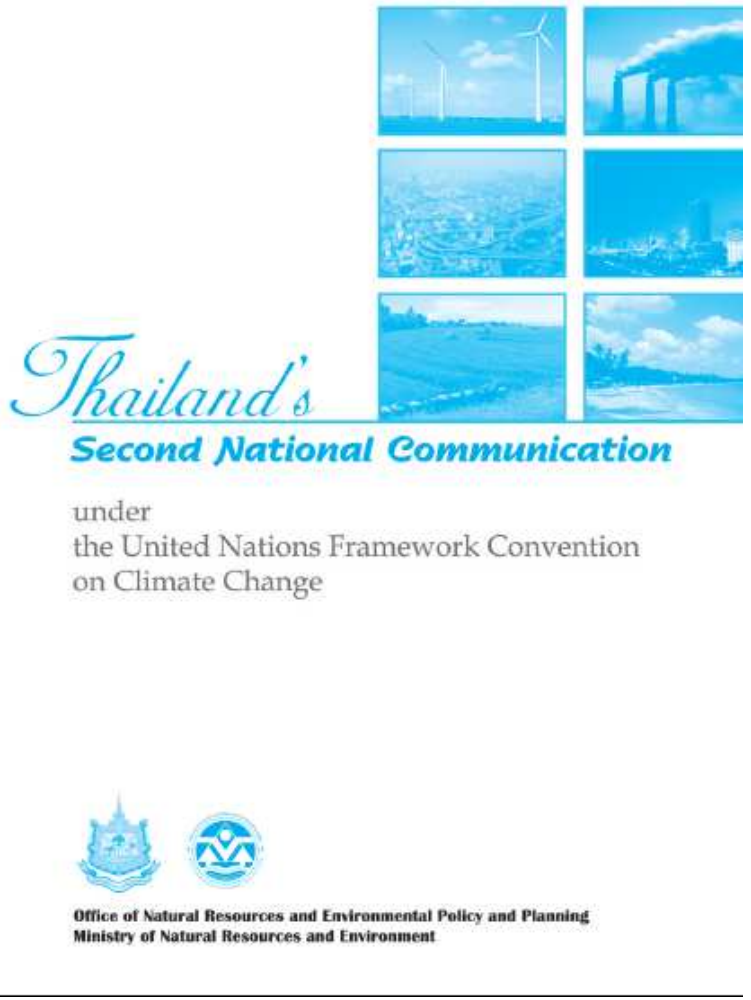




StatLink http://dx.doi.org/10.1787/258472880870

1.7. Thailand – UNFCCC National Communications (2000->1994, 2011->2000)





1.8 Thailand National Communications to UN Framework Conv. Climate Ch. (2000, 2011)

IEA (CO_2 Emissions from Fuel Combustion, 2012, 3/2013).

GHG emissions (sec. approach) 1990-2010: World: +44.4%

- Malaysia: +272%, Vietnam: +658%, China: +223.5%; **Thailand: +208.7%,** Singapore: 114.1% , **Asia: +160.4%**

•Thailand 1990: 80.5; 2000: 158.1; 2010: 248.5 mio. tons of CO2

In 2000, Thailand emitted 210.23 million tons of CO_2 and absorbed 52.37 million tons of CO_2. Thus, Thailand's net CO_2 emission in 2000 was 157.86 million tons. The amount was lower than in 1994, when 202 million tons net of CO_2 was emitted. Of the total CO_2 emission in 2000, power generation emitted 150 million tons or more than 90% of net CO_2 emission. The remaining amount was mainly emitted by industrial processes (16 million tons), while an insignificant amount was emitted by waste management (see table below).

•I

In the energy sector, power generation was the largest emitter of CO_2 (64.2 million tons), followed by transportation at 44.4 million tons, and industry at 30.3 million tons. As for industrial processes, almost all CO_2 emission from this sector was emitted by cement production.

1.9 Second National Communication to UNFCC (2011)

Main Greenhouse Gas	CO_2 emissions (Gg)	CO_2 removals (Gg)	CH_4 (Gg)	N_2O (Gg)
Total national emissions and removals	210,231.2	-52,374.0	2,801.5	40.0
1. Energy	149,914.6	0.0	413.9	2.5
2. Industrial processes	16,059.3	0.0	6.4	0.6
4. Agriculture			1,977.0	33.4
5. Land use change and forestry	44,234.1	-52,374.0	10.4	0.1
6. Waste	23.3		393.8	3.3

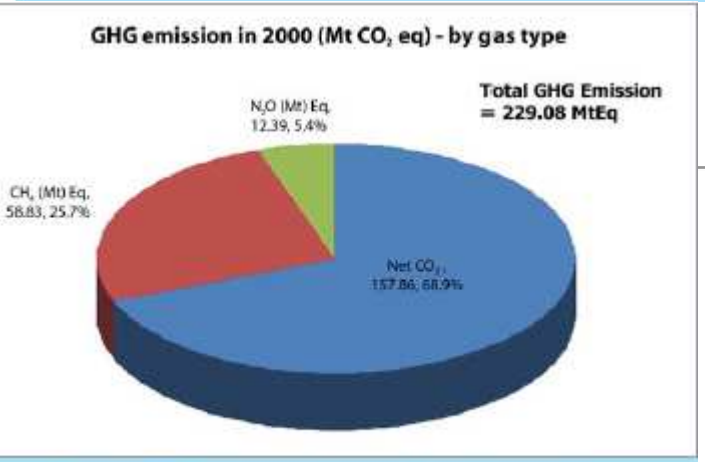
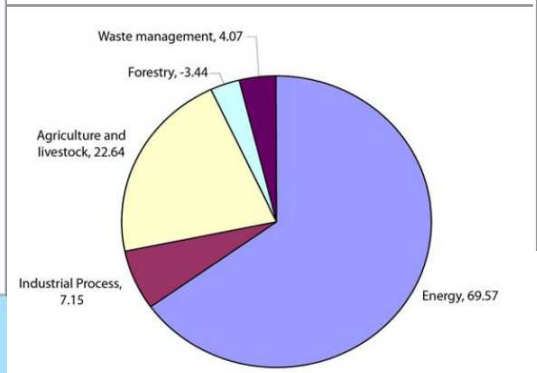


Figure 2-2 Emission by type of greenhouse gas in CO_2 equivalent, for 2000



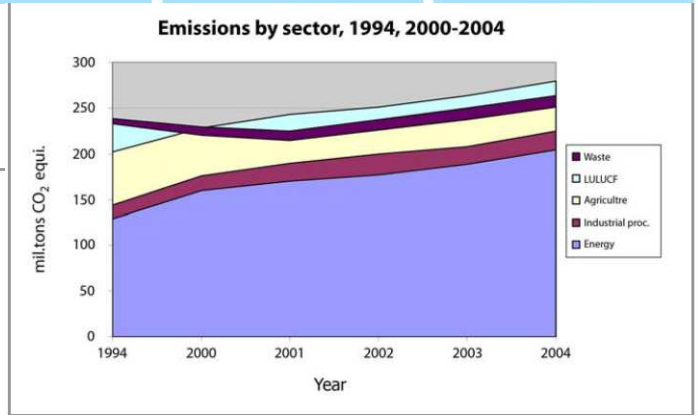


Figure A GHG emission by source in CO_2 equivalent, for 2000 (%)

1.10. CO2 Emissions in Energy Sector

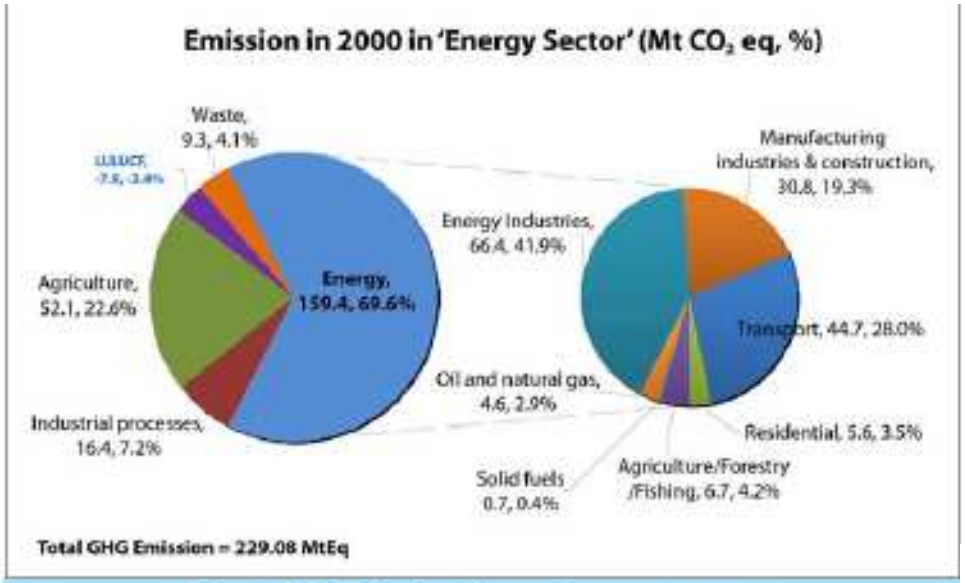


Figure 2-3 Emissions from the energy sector in CO_2 equivalent, for 2000

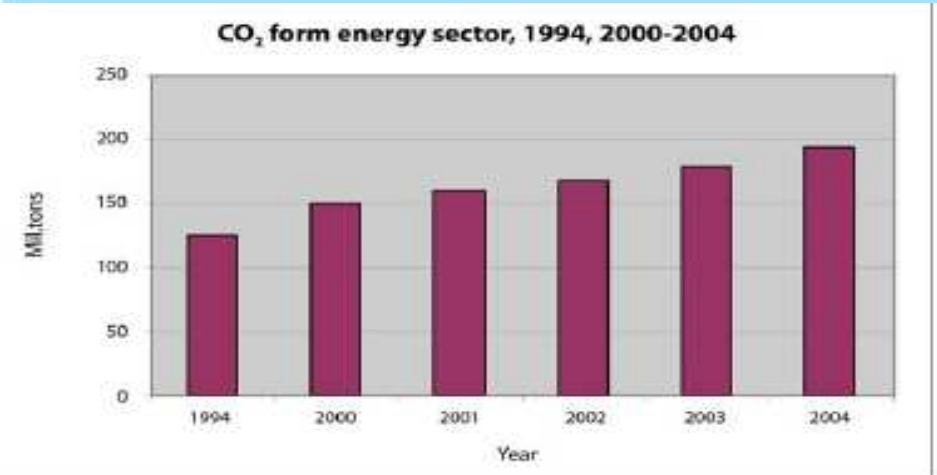


Figure 2-10 Thailand CO_2 emissions from the energy sector, 1994, 2000-2004 (million tons)

- **Source:** Second national communication of Thailand to UNFCC of 2011 (data of 2000). **From 2000-2012 CO2 emissions increased probably more than 50%)**

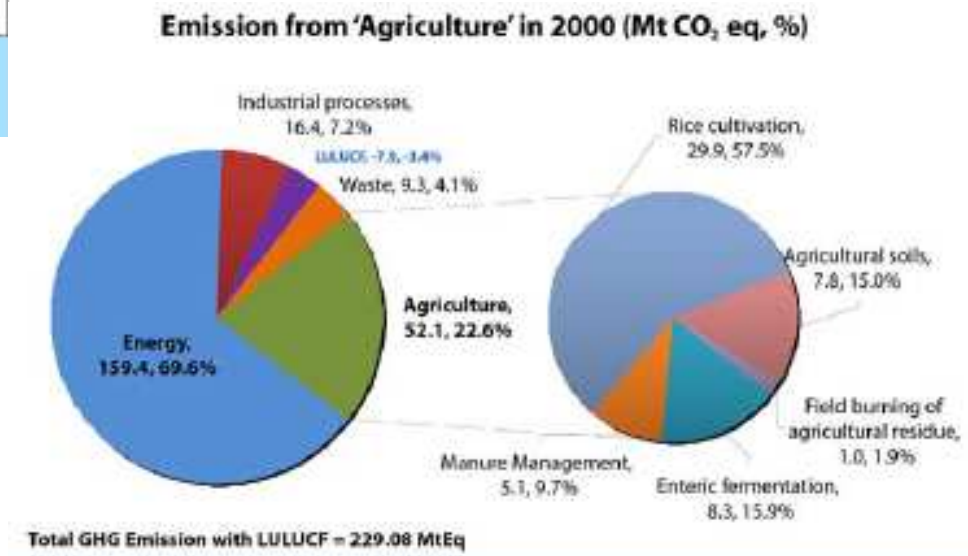


Figure 2-5 Greenhouse gas from all sectors and agriculture, by source in CO_2 equivalent, in 2000

1.11 Tropical Cyclones: Threat to Megacities

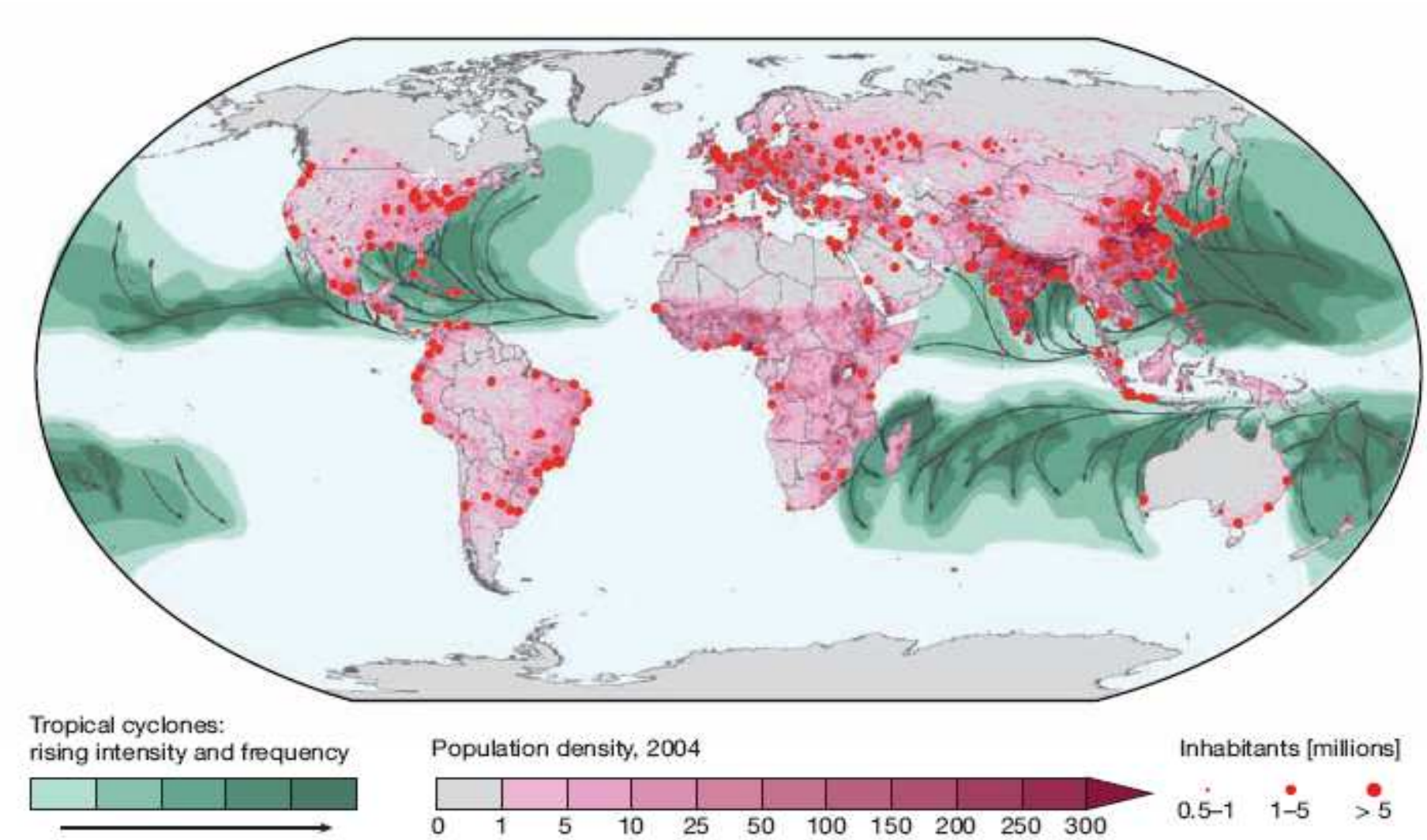


Figure 6.4-1
Tropical cyclone threat to urban agglomerations.
Cartography: Cassel-Gintz, 2006.
Source: WBGU

1.12. Disasters: Killed, Affected & Economic Damage

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

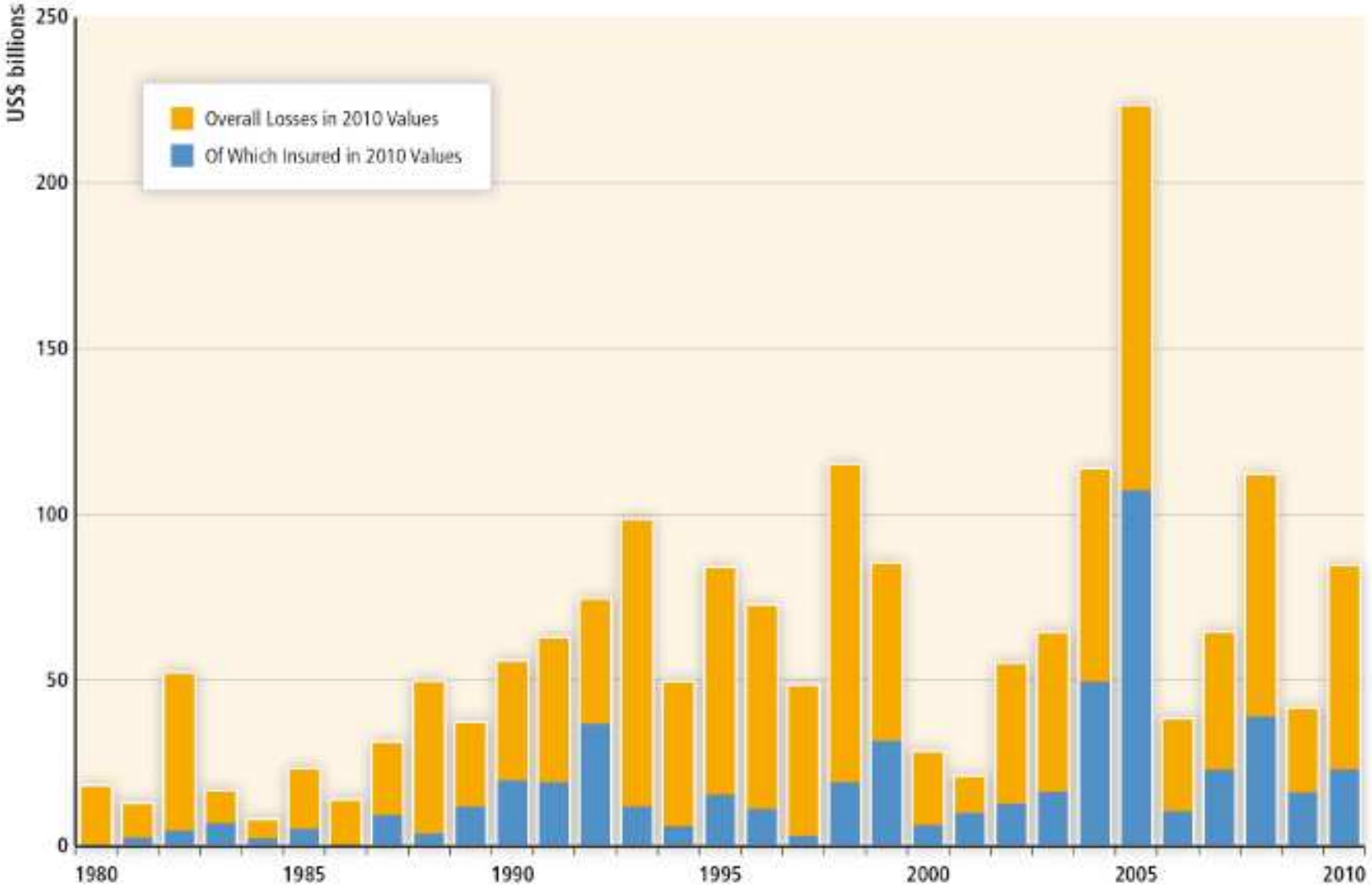
1.13 2nd National Communication (2011)

Table 3-2 Disaster and damages in Thailand, 2001-2006

Year		2001	2002	2003	2004	2005	2006
Storm	Frequency (times)	1,061	594	3,213	3,834	1,313	1,883
	Provinces (number)	70	67	76	76	57	65
	Household (number)	32,100	23,070	146,024	70,818	32,449	30,296
	Public utility loss (mil.baht)	501.0	213.3	457.4	398.4	148.9	92.4
Drought	Provinces (number)	51	68	63	64	71	61
	Household (number)	7,334,816	2,939,139	1,399,936	1,970,516	2,768,919	2,960,824
	Loss (mil. Baht)	72.0	508.8	174.3	190.7	7,565.9	495.3
Flood	Provinces (number)	60	72	66	59	63	58
	Household (number)	919,699	1,373,942	485,436	619,797	763,847	1,673,822
	Loss (mil.baht)	3,666.3	13,385.3	2,050.3	850.7	5,982.3	9,627.4

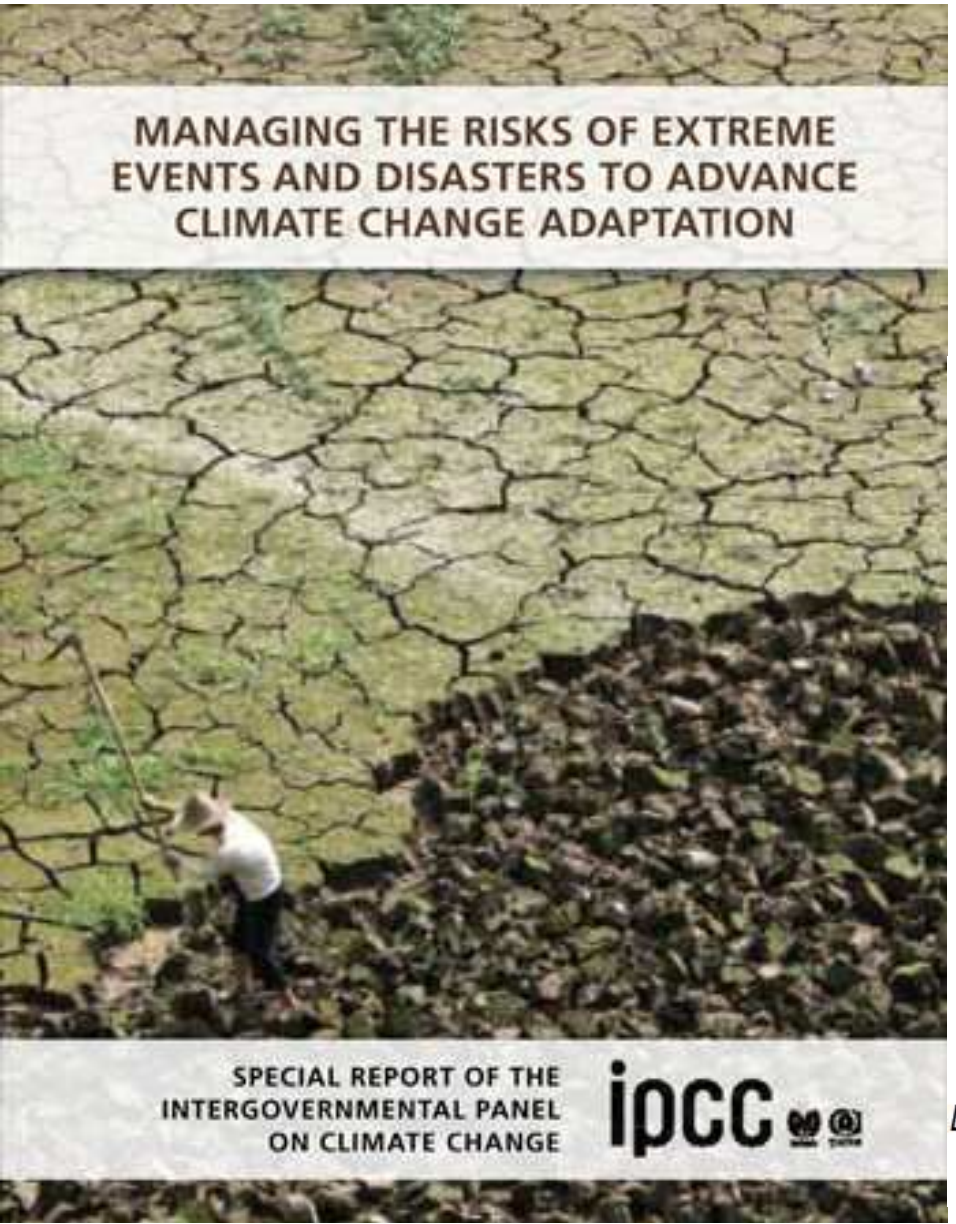
Source: Department of Disaster Prevention and Mitigation, Ministry of Interior

Economic losses from climate-related disasters have increased, with large spatial and interannual variations



Data from Munich Re, 2011

1.15 IPCC Special Report of 2012 (SREX)



Task of scientific community (**knowledge**) is to analyse, monitor, evaluate, learn, innovate & produce **social and technical knowledge**

Learning-by-doing and low-regrets actions can help reduce risks now and also promote future adaptation

1.16 Conclusions

- Population growth will decline after 2030
- **Urbanization will increase from 33,7% (2010) to 55,7 (2050)**
- Thailand is **highly vulnerable** to climate related natural hazards: **storms, floods, droughts**
- **Urban regions are very vulnerable** (high concentration of people, economic value)
- This **vulnerability is to grow** due to a) increase in urbanization and b) of hazards (typhoons, floods & sea-level rise), IPCC 5th Assessment Report
- **Cities are the major contributor**: energy, transportation, industry, domestic sectors
- Challenge for adaptation & mitigation: Need for a sustainability transition in urbanization, energy, transporation, industry sector

2. Analysing Urban Climate Change and Community Resilience from a Political Science Perspective: A Model and Two Perspectives

2. Analysing Urban Climate Change and Community Resilience from a Political Science Perspective: a Model and Two Perspectives

- **Urban Climate Change: IPCC AR5, WG II (2014) on impacts, chapters on urbanization**
  - Part A: Global & Sectoral Aspects:
    - **chap. 8: urban areas**,
    - **chap. 11 health,**
    - **chap. 12: human security,**
    - **chap. 13: livelihoods;**
    - **adaptation** (ch. 14-17); **mitigation** (ch. 18-20), sustainabl. developm.
  - Part B: Regional Impacts: **Chap. 24 (Asia)**
- Adaptation & Mitigation, **IPCC AR5,** WG III (2014)

Debate on community resilience: level of analysis/actors

- government (national, provincial, local) vs. civil society, economic sector, scientific and local community

2.1. Resilience Term and Concept

- According to *Oxford Dictionary and Thesaurus* (2001: 645) ‘resilient’ means: “resuming original form after compression etc., readily recovering from setback”.
- *Chambers Dictionary* (2001) ‘resilient’ as: “recoiling, re-bounding, able to recover form and position elastically, able to withstand shock, suffering, disappointment...”
- IPCC’s WG II of AR4 (2007a: 880) defined resilience:
  - “**The ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self-organization, and the capacity to adapt to stress and chan-ge.”**

- **Ecosystem resilience** is the capacity of an ecosystem to tolerate disturbance without collapsing into a qualitatively different state that is controlled by a different set of processes. A resilient ecosystem can withstand shocks and rebuild itself when necessary.
- **Resilience in social systems** has the added capacity of humans to anticipate and plan for the future. Humans are part of the natural world. We depend on ecological systems for our survival and we continuously impact the ecosystems in which we live from the local to global scale. Resilience is a property of these linked social-ecological systems (SES). "Resilience" as applied to ecosystems, or to integrated systems of people and the natural environment, has three defining characteristics:
- **The amount of change the system can undergo and still retain the same controls on function and structure depends on the**
  - **degree to which the system is capable of self-organization**
  - **ability to build and increase the capacity for learning & adaptation**

2.3. Urban Resilience

- **Urban Resilience** is defined as the "**capability to prepare for, respond to, and recover from significant multi-hazard threats with minimum damage to public safety and health, the economy, and security"** of an urban area.
- Contemporary academic discussion of urban resilience focuses on three distinct threats; **climate change**, **natural disasters** and terrorism.
- Challenges and disasters specific to climate change, other disasters (earthquakes, tsunamis, solar flares, etc.)
- Sustainable energy strategies are welcome and encouraged.
- The urban impacts of climate change vary widely across geographical and developmental scales. This article will define and discussing the challenges of heat waves, droughts and flooding. Resilience-boosting strategies will be introduced and outlined. Resilience is especially important in urban areas, because over the past century there has been a considerable increase in urbanization and urban sprawl.
- Half of the world's population now lives in cities, a figure that is set to rise to 80% by 2050. Mass density of people makes them especially vulnerable both to the impacts of acute disasters and the slow, creeping effects of the changing climate; all making resilience planning critically important.
- Source: <http://www.ask.com/wiki/Urban_resilience?o=2801&qsrc=999 >

2.4 World Economic Forum: Working Definition of Resilience (2013)

- In the wake of unprecedented disasters in recent years, “resilience” has become a popular buzzword across a wide range of disciplines, with each discipline attributing its own working definition to the term. A definition that has long been used in engineering is that resilience is the capacity for “bouncing back faster after stress, enduring greater stresses, and being disturbed less by a given amount of stress”.
- This definition is commonly applied to objects, such as bridges or skyscrapers. However, most global risks are systemic in nature,- and a system – unlike an object – may show resilience not by returning exactly to its previous state, but instead by finding different ways to carry out essential functions; that is, by adapting.- For a system, an additional definition of resilience is “maintaining system function in the event of disturbance”

2.5 WEF: Global Risk 2013:

Special Report: Building National Resilience to Global Risks

Figure 21: Resilience is Most Applicable to Unpredictable Risks with Little Knowledge About Effective Measures

Source: Adapted from Comfort, L. K., Boin, A., & Demchak, C. C. *The Rise of Resilience, in Designing Resilience: Preparing for extreme events*. Pittsburg: University of Pittsburgh Press, 2010.

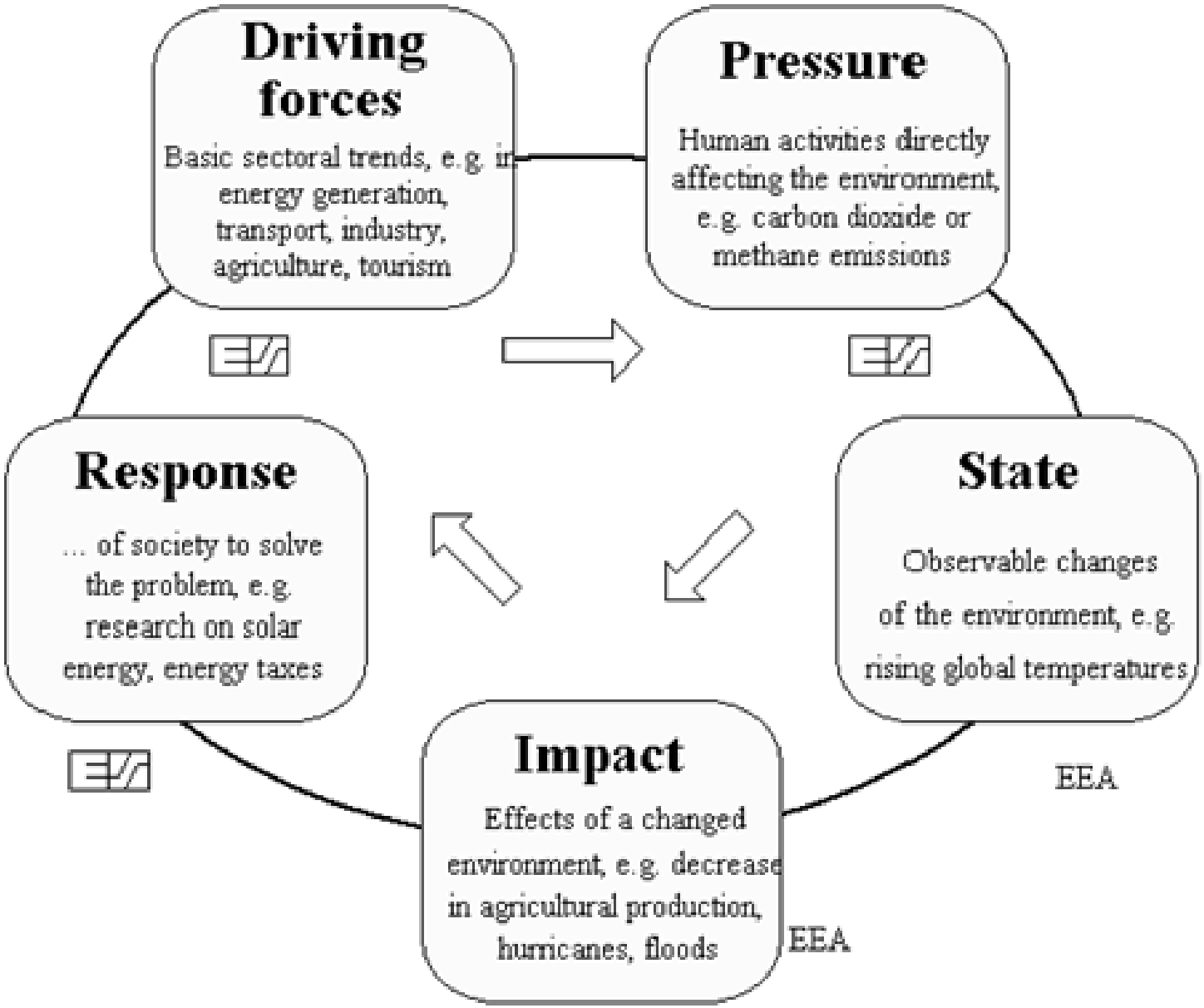
3. Early Pressure – Response Models

3. Early Pressure – Response Models

Early Stimulus Response Models: OECD, UNCSD, EEA

- **OECD: PSR-Model** distinguished ‘pressure’ (P), ‘state of environment’ (S), & ‘response’ (R) indicators.
  - ‘*pressure*’ key factors are listed (population growth, consumption, poverty),
  - ‘*state*’ refers to environmental conditions that emerge from this pressure (air pollution, deforestation, degradation) that influence human health, well-being
  - ‘*response*’ manifold activities of society to avoid, prevent, reduce negative impacts on environment, and to protect natural resources from these effects.
  - Between these three elements of the PSR model there are many complex interactions (resource transfers, information, decisions).
  - **UN-CSD** (Committee for Sustainable Development) used with its **DSR** (*Driving Force-State-Response*) model a slightly modified framework.

3.1 European Environment Agency: DPSIR Model



- EEA (1998) distinguishes **"*D*riving Force - *P*ressure - *S*tate – *I*mpact – *R*esponse (DPSIR)** that offers a mechanism for the analysis of envi-ronmental problems & for development of environmental indicators

3.2 PEISOR Model: Linking Global Environmental Change with Environmental Effects, Impacts, Societal Outcomes and Policy Responses

PEISOR: Result of pressure and response models and of debates on environmental security and on natural hazards.

The PEISOR model combines five stages:

- ***P* (*pressure*)** refers to 6-8 drivers of global environmental change
- ***E* to the *effects*** of the linear, non-linear or chaotic interactions within the 'hexagon' on environmental scarcity, degradation, and stress;
- ***I* to extreme or fatal *impacts*** of human-induced and climate-related natural hazards (storms, flash floods, flooding, landslides, drought);
- ***SO* to *societal outcomes***: internal displacement, migration, urbanization, crises, conflicts, state failure, and
- **R to *response* by society**, business community, state where both traditional & modern technological knowledge can make a difference.

Hazards cannot be prevented, their **impact** in terms of deaths, affected people, economic & insured damages can be reduced by policies & measures that link protection with empowerment of the people to become more resilient.

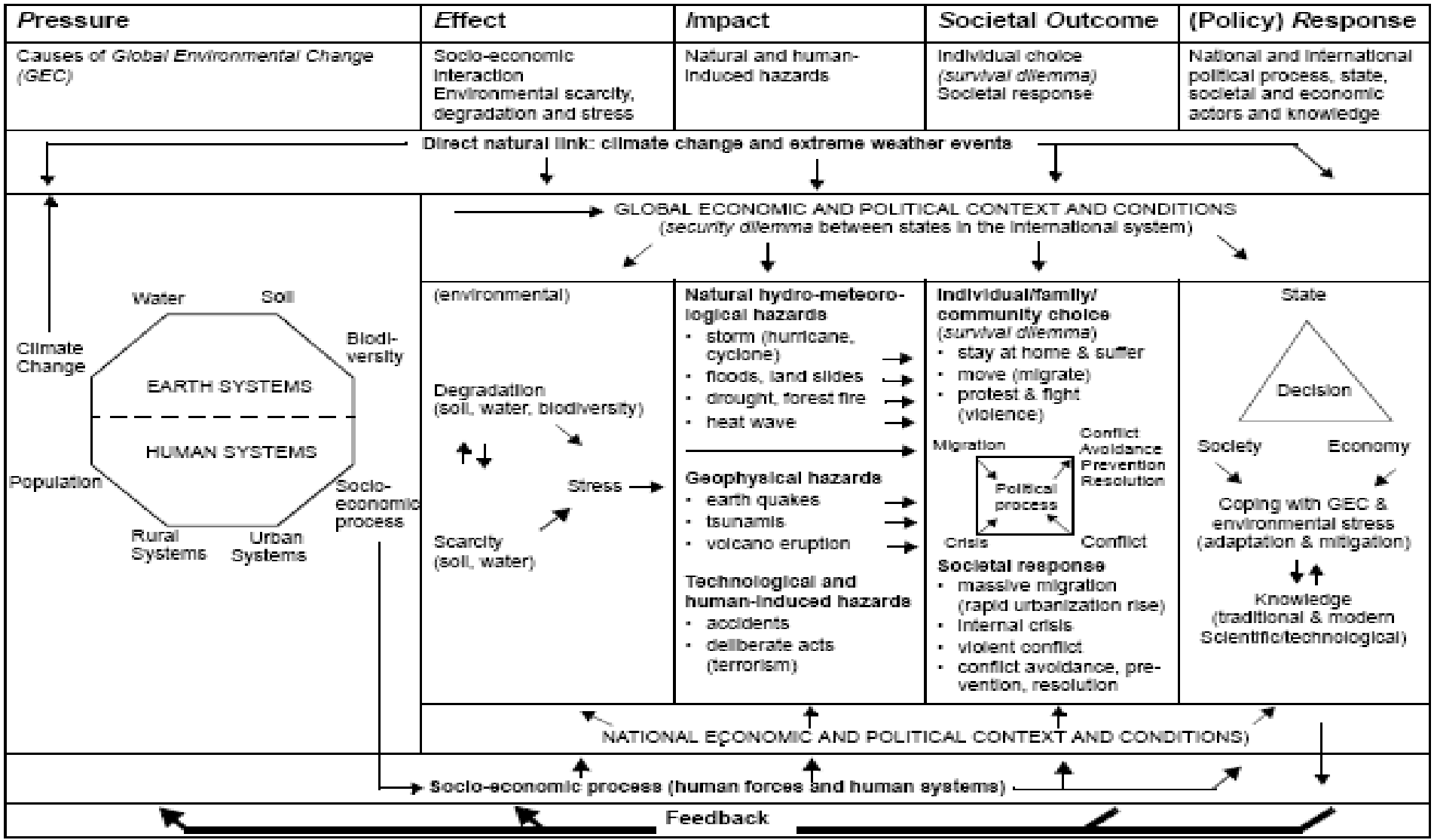
Workshop: P: Urban Climate Change; R: Community Resilience

3.3 PEISOR Model on Climate Change: Geophysical Effects & Societal Outcomes

- **4 geophysical effects will most likely increase**
  - Temperature change (2°C stabilization goal by 2100??)
  - Sea-level Rise much higher and longer lasting (threat)
  - Precipiation change (impact on drought, food security)
  - Increase in hydro-meteorological, climatological hazards

  Likelihood of crossing tipping points in climate system may rise
- **2°C world increasingly unlikely, 4°-6°C world more probable: dangerous,catastrophic Climate Change**
  - People‘s movement (displacement, distress migration)
  - Domestic, regional crisis & violent conflicts may increase
- **How to analyse these changes: models?**

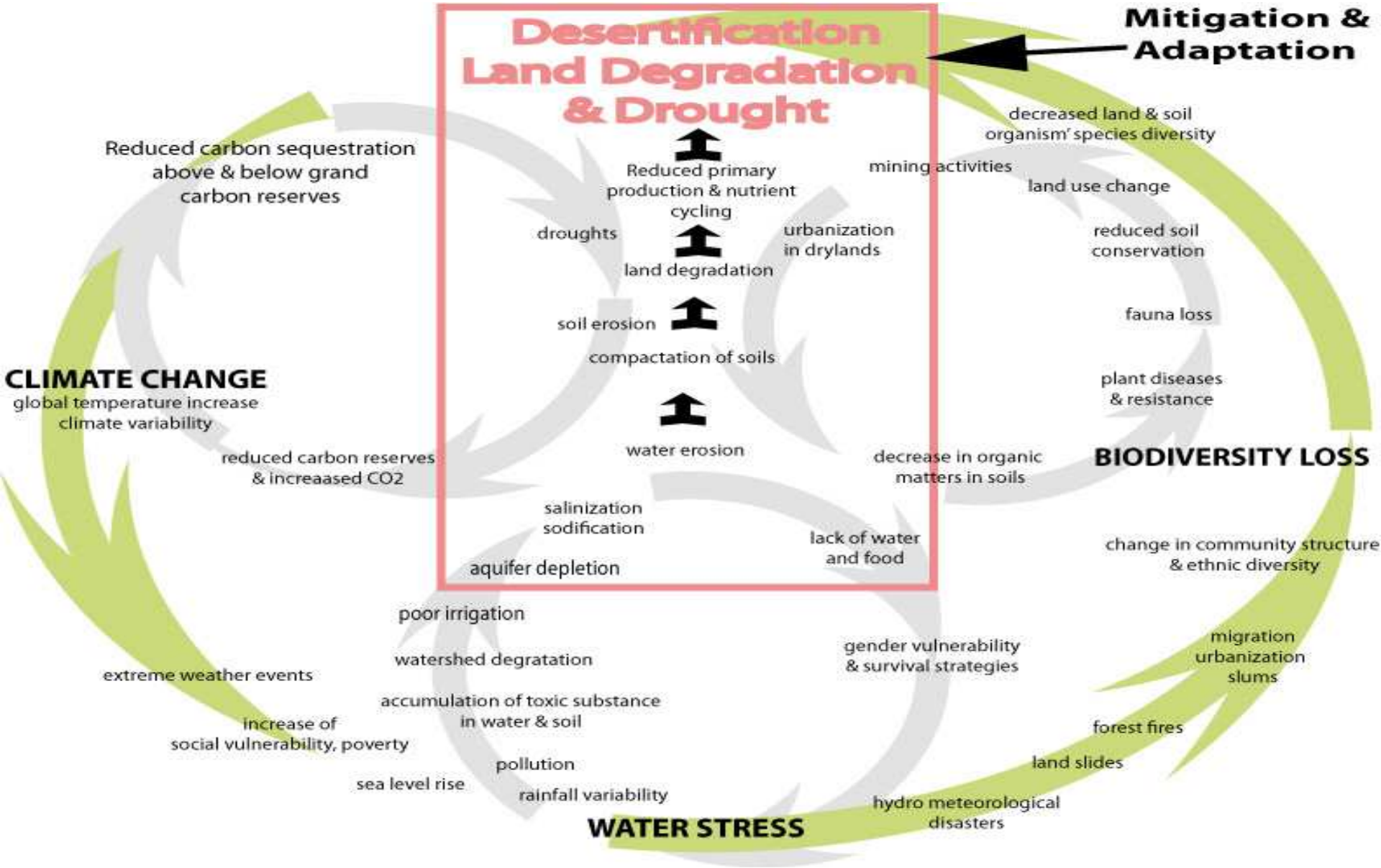
3.4 Global Environmental Change & Impacts: PEISOR Model

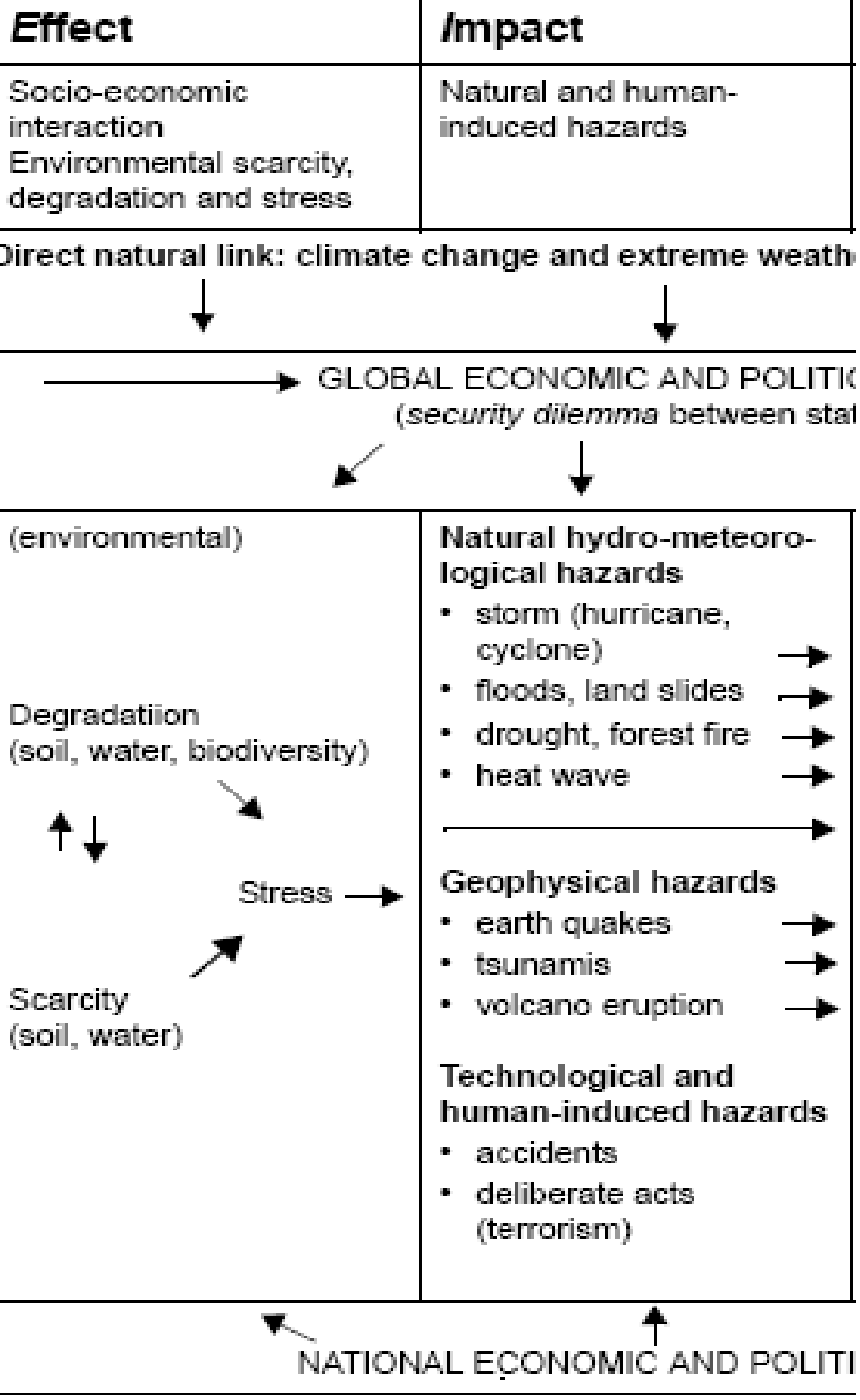


3.5 Applying the Model to:
Urban Climate Change & Community Resilience

- **Human pressure: population growth (demand side),**
  - **rural (agriculture, food) & urban systems (industry)**
  - **socio-economic processes (production & consumption)**
- **Environmental pressure:** Global Environmental and Climate Change: Soil, water, biodiversity & **climate change**
- **Effects:** env. scarcity, degradation & stress (water, soil)
- **Impacts: heat waves, storms, floods**
- **Societal Outcomes: death, affected, economic damage (e.g. big flood of August 2011)**
- **Policy Response: proactive vs. reactive**
  - **Infrastructure, early warning & societal community resilience**

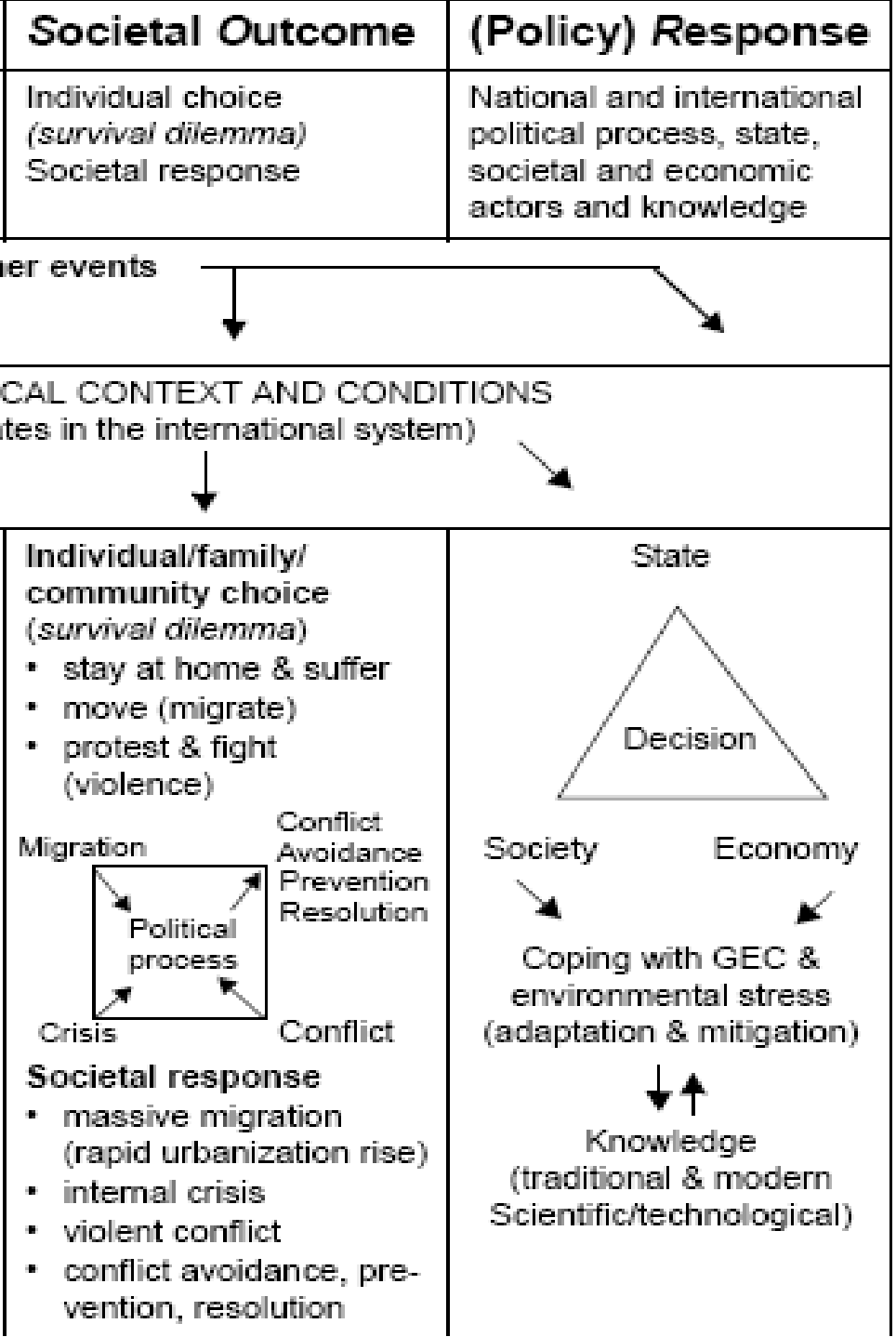
3.6 P: Pressure: Interactions of GEC: Four Environmental Factors (Quartet)





3.7 E: Effect & I: Impact

- **E: Environmental security debate of 1990s**
  - Toronto school (Homer-Dixon)
  - Swiss school (G. Bächler):
  - Soil scarcity > degradation > environmental stress
- **I: climate change -> extreme weather events**
  - Hydrometeorological hazards
    - **Drought (wind erosion)**
    - Heatwaves
    - Forest fires
    - Storms (hurricanes, typhoons
    - **Flash floods & landslights (wind & water erosion)**

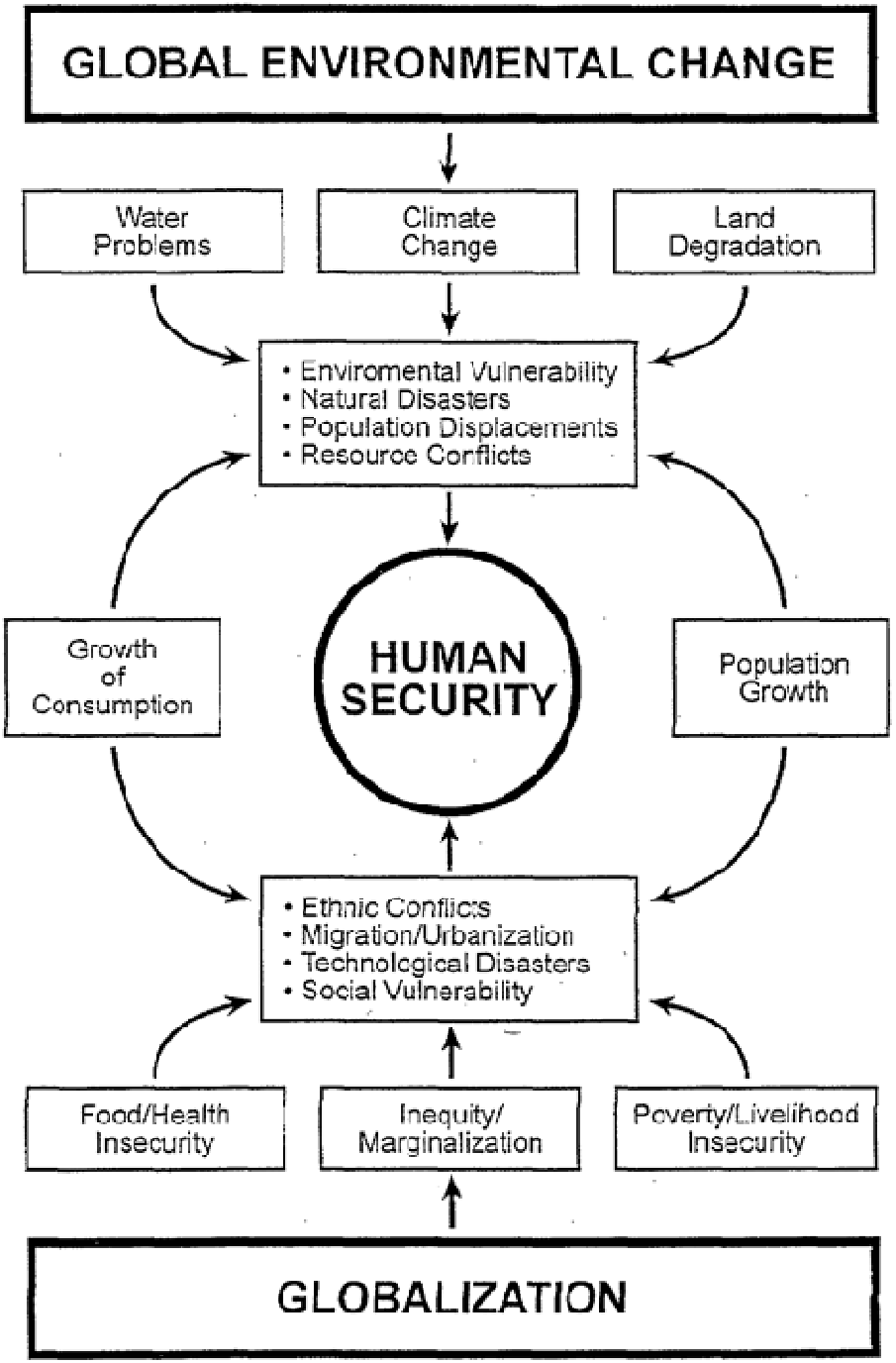


3.8 SO: Societal Outcomes

- **Individual level (choice)**
  - Human security perspective
  - Survival dilemma of humans
- **State/society level**
  - Rural-urban migration
  - Foreign immigration (Myanmar, Cambodia, Laos)
    - Seasonal (labour)
    - Permanent
  - Residence (flood prone areas)
  - Crises: domestic (related?)
  - Conflicts:
    - Peaceful protests
    - Violent clashes
  - Complex emergencies (2004: Sri Lanka, Indonesia: Aceh)

3.9 R: Policy Response to Security Dangers posed by Global Environmental Change: Object

- **How? Responsive vs. proactive action**
  - **Response:** cost of non-action (Stern Report)
  - **Proactive:** anticipatory knowledge, learning, action
- **What? Addressing Causes (Pressure)**
  - **Earth system:** environmental quartet
  - **Human:** productive & consumptive behaviour
- **Responding to Effects and Impacts**
  - **Environmental stress**
  - **Climate-related natural hazards**
- **Addressing Societal Outcomes:** Migration & Conflicts



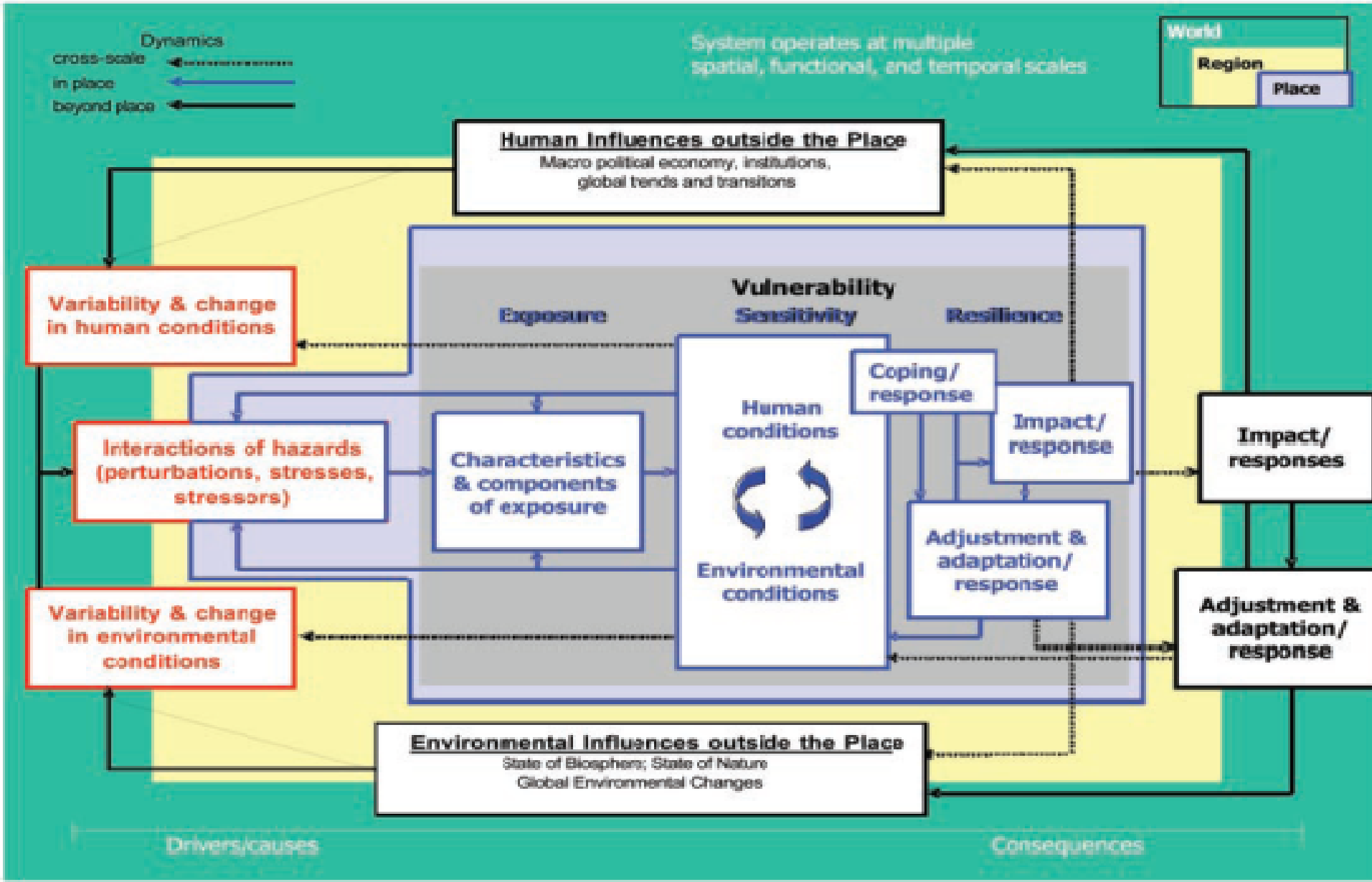
3.10 HG Bohle's Model of Dual Vulnerability

Bohle (2001) distinguished a dual structure of vul-nera--bility

- **'exter-nal' or 'environmental vulnerability' that points to expo-sure (**political economy approaches, human ecology per-spec-tives and theo-ries of entitlement),
- **'internal' or 'social vulnera-bility' -> coping (**crisis and conflict theory & influenced by ac-tion theory and models of access to assets).

Clark, Crutzen, Schelln-huber (2004) relied on a framework for vulnerability analysis in sustainability

3.11 Vulnerability framework. Components of vulnerability identified and linked to factors beyond the system of study and operating at various scales. Source: **Turner/ Kasper-son/Mat-son et al., PACS 2003:**



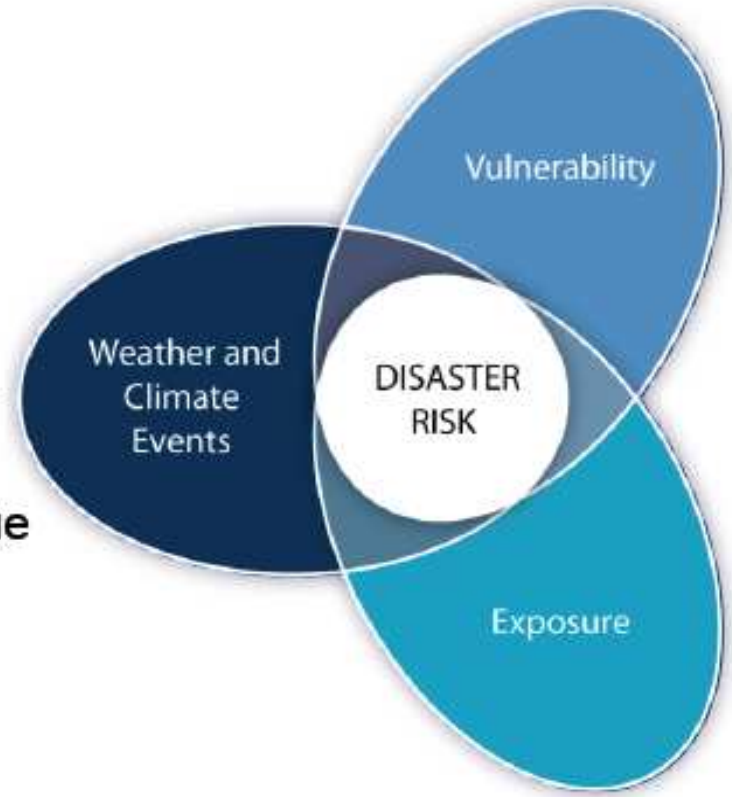
3.12. Elements of this Vulnerability Model

- (i) linkages to broader human and biophysical (environmental) conditions & processes opera-ting on the coupled system in question;
- (ii) perturbations and stressors/stress that emerge from these conditions and processes;
- (iii) the coupled human-environment system of concern in which vulnerability resides, including exposure and responses (i.e., coping, impacts, adjustments, & adaptation).
- These elements are interactive and scale dependent, its analysis is affected by the way in which the coupled system is conceptualized and bounded for study.

Socioeconomic development interacts with natural climate variations and human-caused climate change to influence disaster risk

Disaster Risk:

the likelihood of severe alterations in the normal functioning of a community or society due to weather or climate events interacting with vulnerable social conditions

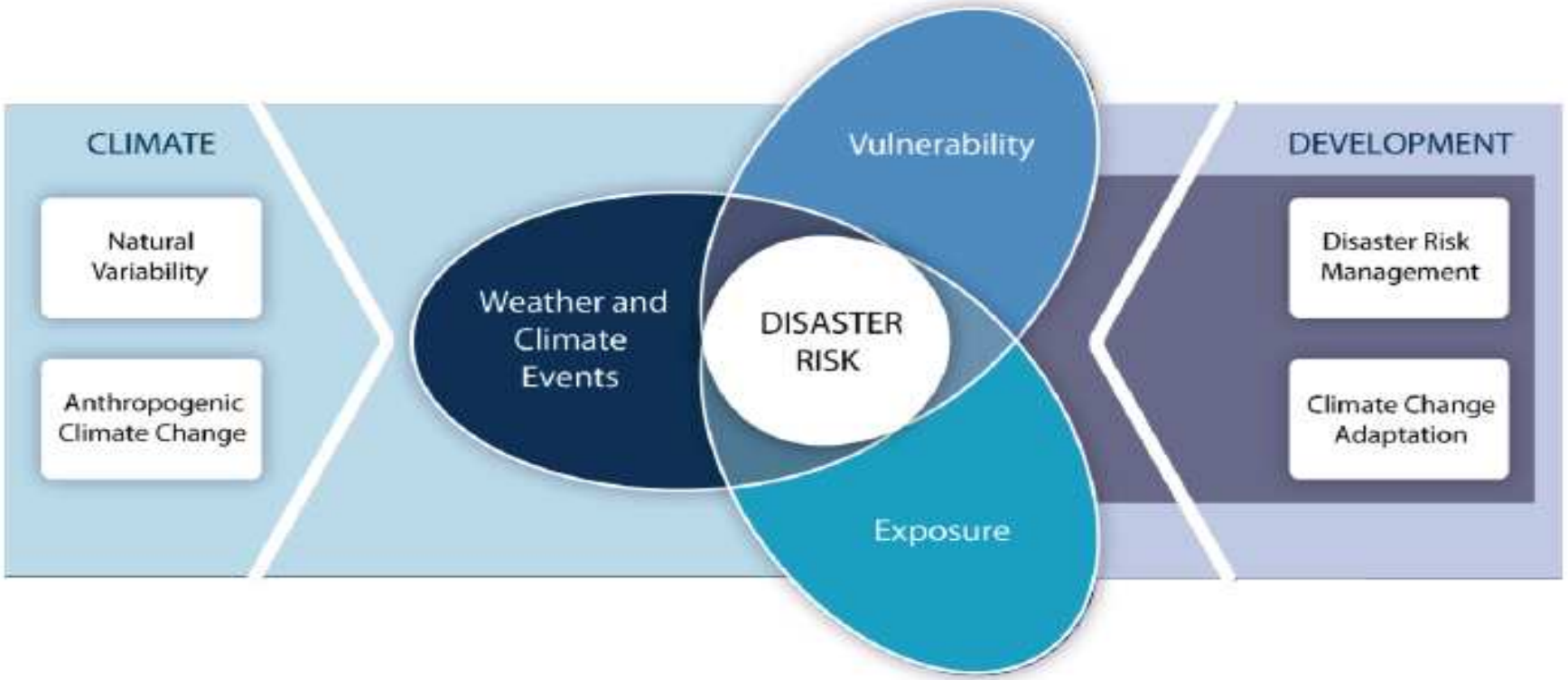


Vulnerability:

the predisposition of a person or group to be adversely affected

3.14 Linking Climate Change, Vulnerability & Exposure to Community Response

Increasing vulnerability, exposure, or severity and frequency of climate events increases disaster risk



3.15 Climate Change & Security: Challenges for New Peace & Security Policy in the Anthropocene

- **New security challenges require new security & peace policy for the Anthropocene**
- **We are the threat! Impossibile to fight against oneself !**
  - **threat:** our fossil energy consumption and way of life
  - **solution: GHG reduction by 2050: -50% (global), -80% ICs**
    - Electricity, heating, transportation, industry
    - Incrase in energy efficiency and renewable energy
  - **Global responsibility and global action**
  - **Proactive vs. reactive Policy and Crisis Management**
    - **Reactive: Welt financial crisis: no price is too high**
    - **Dominance of mindset and Worldview of business as usual (BAU) Short term horizon: Reactive political & economic action**
    - **International Climate Policy since 2009, failure of Rio+20**
    - **Proactive: climate change response: sustainability transition strategies**

4. A Human Security Approach to Urban Climate Change and Community Resilience

4. A Human Security Approach to Urban Climate Change and Community Resilience

Human Security: UNDP (1994), HSN (1999), CHS (2003)

- Dual goal:
  - Task of the government: protection: early warning & infrastructure (shelters, urban planning)
  - Empowerment; capacity-building and training

Four Pillars of human security

- Freedom from fear (Canadian, Norwegian approach)
- Freedom from want (Japanese, Thai approach)
- Freedom to live in dignity (Kofi Annan: In Larger Freedom, 2005)
- **Freedom from hazard impact** (UNU-EHS: Bogardi/Brauch (2005)

Dual vulnerability model (H.G. Bohle)

- Environmental
- Social

Dual task of resilience

- **Government:** top-down,. Infrastructure, shelters
- **Community based**: self-organization

4.1. Deepening: State- vs. People Centred Human Security

- **UNDP Human Security Report (1994: 3) by Mabhuq ul Haq, Pakistan: *New Dimensions of Human Security***
  - **Security … means safety from the constant threat of hunger, disease, crime and repression. It also means protection from sudden and hurtful disruption in the pattern of our daily lives – whether in our homes, in our jobs, in our communities or in our environ-ment.**
- **Human Security Commission: Human Security Now, 2003 (Ogata/Sen)**
  - **Human security complements state security, enhances human rights and strengthens human development. It seeks to *protect* people against a broad range of threats to individuals and communities and, further, to *empower* them to act on their own behalf. And it seeks to forge a global alliance to strengthen the institutional policies that link individuals and the state – and the state with a global world. Human security thus brings together the human elements of security, of rights, of development.**
  - **The Commission on Human Security's definition of human security: to *protect* the vital core of all human lives in ways that enhance human freedoms and human fulfilment. Human security means protecting fundamental freedoms – freedoms that are the essence of life. It means *protecting* people from critical (severe) and pervasive (widespread) threats and situations. It means using processes that build on people's strengths and aspirations. It means creating political, social, environmental, economic, military and cultural systems that together give people the building blocks of survival, livelihood and dignity.**

4.2.Human Security Network (1999)

- In 1999,a group of like-minded States from different regions of the world, including Austria, Canada (left), Chile, Costa Rica, Greece, Ireland, Jordan, netherlands (left), Mali, Norway, Panama, Slovenia, Switzerland**, Thailand** & South Africa (observer): **Human Security Network (HSN)**.
- The Network defined human security as
  - "A humane world … where every individual would be guaranteed freedom from fear and freedom from want, with an equal opportunity to fully develop their human potential ... In essence, human security means freedom from pervasive threats to people's rights, their safety or even their lives ... Human security and human development are thus two sides of the same coin, mutually reinforcing and leading to a conducive environment for each other".
  - **Thai presidency (2006): Freedom from hazard impact**

4.3 Human Security Commission Report: Sadago Ogata & Nobel Laureate Amartya Sen: Human Security Now (2003)

- ***Commission on Human Security*** **(CHS)** established in January 2001 at initiative of Japan. The Commission consisted of twelve persons, chaired by Sadako Ogata (former UNHCR) Amartya Sen (1998 Nobel Economics).
- **CHS goals:** a) promote public understanding, engagement and support of human security; b) develop the concept of human security as an operational tool for policy formulation and implementation; c) propose a concrete program of action to address critical and pervasive threats to HS.
- ***Human Security Now*** (2003) proposes a **people-centered** security fra-mework that focuses "**on shielding people** from critical and pervasive threats and **empowering them to take charge of their lives**. It demands creating genuine opportunities for **people to live in safety and dignity and earn their livelihood**. Its final report highlighted that:
- More than **800,000 people a year lose their lives to violence**. Ca. **2.8 billion suffer from poverty, ill health, illiteracy &** other maladies

4.4 Human Security Commission: Human Security Now (2003)

Independent Commission on Human Security (CHS), led by Sadako Ogata and Amartya Sen, in 2001 reached a new consensus on security threats facing contemporary societies in 21stcentury. CHS in its 2003 report Human Security Now: Protecting and Empowering People, defined HS as

- to ***protect*** **the vital core of all human lives in ways that enhance human freedoms and human fulfilment**. Human security means protecting fundamental freedoms – freedoms that are the essence of life. It means ***protecting*** **people from critical (severe) and pervasive (widespread) threats and situations**. It means using processes that build on people's strengths and aspirations. **It means creating political, social, environmental, economic, military and cultural systems** that together give people the building blocks of survival, livelihood and dignity.
- ***Urban Climate Change*** **requires protection and** ***Community Resilience*** **relies on process of empowerment of the people!**

4.5 Fourth Pillar of Human Security: Freedom From Hazard Impacts

- **UNU-EHS**: Bogardi/Brauch (2005), Brauch (2005)
- **Goal:** reduce dual vulnerabilities & enhance capacity building & coping capabilities of societies faced with natural & hum. hazards
- **Threats/Hazards:**
  - Environmental: floods, droughts, other natural disasters, environmental degradation, lack of water, human-induced climate change
  - Societal: poverty, improper housing, insufficient food and water, malfunctioning of technical systems, traffic accidents, population explosions, terrorism and organized crime
- **Develop vulnerability indicators & vulnerability mapping** to apply to operational realm: working on solutions
  - improved early warning systems capacity-building for early warning
  - disaster preparedness (education and training, infrastructure)
  - coordinated rapid disaster response by local, regional and national level
  - developing clear guidelines for post hazard reconstruction
  - long term strategies: e.g. Kyoto, Montreal Protocol
  - adaptation measures: e.g. dams, switching to renewable energy
  - mitigation measures: restrict housing in hazard areas (coastal areas-flooding, mud slides), charging more for garbage disposal and energy usage, birth control measures
- **Support community resilience, sustainable development & sustainability transition (e.g. urban energy, transport)**

4.6 Climate Change as a Human Security Challenge

- From a human security perspective, climate change was addressed by the ***Global Environmental Change and Human Security*** **(GECHS)** programme of IHDP in June 2005.
- Focus of the **Greek Presidency of the Human Security Network (2007-2008)** "to raise the international community's awareness of the impact of climate change and global warming on hu-man security, with regard to vulnerable groups, particularly women, children and persons fleeing their homes due to climate change".
- **Barnett and Adger (2005)** discussed how climate change may under-mine human se-curity, and how human insecurity may increase the risk of violent conflict; as well as the role of states in human security and peace- building.
- **Scheffran, Brzoska, Brauch et a. (2012): Climate Change, Human Security and Violent Conflict**
- **The linkage between climate change and human security is addressed by *Working Group* (WG) II of the IPCC, that will be released in its fifth assessment report will be released in 2014.**

4.7 Human Security Network: 10th Ministerial Conference Athens (2008)

Climate Change and Developing Countries

- Developing and Least Developed Countries will pay heaviest toll due to dependence on agriculture & limited capacity to deal with natural disasters, Most vulnerable to climate change impacts.

Climate Change and Women

- Climate change will disproportionally affect lives of poor women in developing world who suffer from limited access to basic goods and rights.
- Women are more exposed to dangers when fleeing their homes, due to natural disasters or conflicts, during their resettlement to camps and recipient countries.
- Girls are most vulnerable to exploitation, human trafficking and other forms of gender-based violence.

Climate Change and Children

- Children are physically more vulnerable to malnutrition, disease and hardships.
- The lives of up to tens of millions of children will be endangered by floods, drought and climate change related diseases over the next decades (malaria, dengue fever).
- They will also be affected by disasters with long-term impact, such as desertification.

Climate Change and People on the Move

- The severe HS effects of climate change will be more acute for the population with high resource-dependency in environmentally & socially marginalized regions.

5 Reflections from an Emerging Peace Ecology

5 Reflections from an Emerging Peace Ecology

- **Conceptualising Peace**
  - **European concept**: Greek & Roman origins: **Eirene & pax**
  - **Asian**: Hindu concept of **Ahimsa**: peace with nature
  - Is there a similar concept in **Teravati Buddhism**?
- **Conceptualizing Ecology: The many ecologies**
  - 'deep ecology' (Leopold 1949; Naess 1973, 1989),
  - 'human ecology' (Marsh 1864; Young 1974),
  - 'social ecology' (Bookchin 1988, 2005),
  - 'political geoecology' (Brauch/Dalby/Oswald Spring 2011).
  - '**peace ecology**' (Kyrou 2007, Oswald Spring/Brauch/Tidball)
- **Peace Ecology: A new approach**
  - Environmental peacemaking
  - **5 pillars of peace ecology:**
    - negative peace
    - positive peace
    - cultural peace
    - **sustainable peace**
    - engendered peace

5.1. Ecology: Term & Concept

- Ecology is based on Greek terms ‘oikos’ (οἶκος) household, house or family and ‘logos’ (λόγος) speech, philosophy or science.
- The *ecology* concept was coined by Ernst Haeckel (1834-1919) for the study of living species and their physical and biotic surroundings.
- In late 19th century it was used for animals, plants, in hydrobiology, while a modern definition includes a) the interactions between organisms (individuals, populations), b) in their abiotic and biotic environment and c) links in energy, material and information flow.
- Ecology concept “has been centrally concerned with the concept of adaptation and with all properties having a direct and measurable effect on demography, development, behaviour and spatio-temporal position of an organism.” (Ellen 1996)
- *Human ecology* is used in human geography, urban sociology and anthropology. Ellen (1996) argued that “the other major impact of ecological concepts in the social sciences has been in the relation of political environmentalism, and to environment and development…”.

5.2 Manifold Ecological Approaches

- The ecology concept has been conceptualized by many social scientists as
  - ‘deep ecology’ (Leopold 1949; Naess 1973, 1989),
  - ‘human ecology’ (Marsh 1864; Young 1974),
  - ‘social ecology’ (Bookchin 1988, 2005),
  - ‘ecofeminism’ (d’Eaubonne 1974; Shiva/Mies 1997),
  - ‘political ecology’ (Thone 1935)
  - urban ecology
  - ‘political geoecology’ (Brauch/Dalby/Oswald Spring).
  - Peace ecology (Kyrou 2007, Oswald Spring/Brauch/ Tidball 2014)

5.3 Urban Ecology (Wikipedia)

- **Urban ecology** is scientific study of the relation of living organisms with each other & their surroundings in the context of the urban environment. Urban environment refers to environments dominated by high-density residential & commercial buil-dings, paved surfaces, & other intense human influences, which create a unique landscape dissimilar to many previously studied environments in ecology
- **Urban ecology is a recent field of study** compared to ecology as a whole. It carries increasing importance because, as by 2050, two-thirds of the world's population will be living in expanding urban centers. The ecological processes in the urban environment are comparable to those outside the urban context. … Often, explanations for phenomena examined in the urban setting as well as predicting changes because of urbanization are the center for scientific research.
- Ecology has historically focused on 'pristine' natural environments, however by the 1970s many ecologists began to turn their interest towards ecological interactions taking place in, and caused by urban environments. Jean-Marie Pelt's 1977 book *The Re-Naturalized Human*, Brian Davis' 1978 publication, *Urbanization and the diversity of insects*, as well as, Sukopp et al.'s 1979 article, *The soil, flora and vegetation of Berlin's wastelands* are some of the first publications to recognize the importance of urban ecology as a separate and distinct form of ecology (different from landscape ecology and population ecology).
- The **European concept of urban ecology examines** the biota of urban areas while to the North **American concept** which has traditionally examined the **social sciences of the urban landscape, as well as the ecosystem fluxes and processes.**

5.4 Environmental Peacemaking

- While both scientific peace and ecology concepts have significantly changed since 1989, the scientific exchange between peace research and ecological approaches has been limited.
- Conca (1994) suggested an “environmental agenda for peace studies” and a discussion on whether “ecologically desirable futures include concerns for peace and justice” arguing that it is not enough “to place ‘sustainable development’ and ‘ecological security’ alongside peace or social justice as ‘world-order values’”.
- Conca, Carius, Dabelko (2005: 150) argued that environmental peacemaking may help “forestall environmentally induced conflict,… soften group grievances that … are worsened by ecological injustices”, which is also identified as ‘negative peace’, while a second approach “moves beyond conflicts with a specifically environmental component, seeking to build peace through cooperative responses to shared environmental challenges”, thus partly aiming at ‘positive peace’.

5.5 Towards Peace Ecology

- Kyrou (2007) introduced ‘peace ecology’ as an “integrative, multi-contextual, and case sensitive approach in identifying resources for conflict and violence transformation” with the goal “to include issues of conflict analysis and peacebuilding” into environmental studies”. ‘A shortcoming of environmental peacemaking is “the lack of a common worldview and of a shared philosophical space in relating ecology with peace”.
- Kyrou argues that “peace ecology values the preservation and harmonious interaction of societies with the nature of peace; at the same time, it values a society striving to maintain positive peace as an ecological asset”. Peace ecology links the value of biodiversity with that of cultural diversity and aims to protect the environment and to maintain the peace far into the future. Other elements of his peace ecology approach are bioregionalism, the ‘do-no-harm’ principle that aims at the “preservation of positive peace in society while maintaining ecological integrity”. “Peace ecology places environmental peacemaking activities within the context of bio-regions and examines their impact on various forms of violence”.

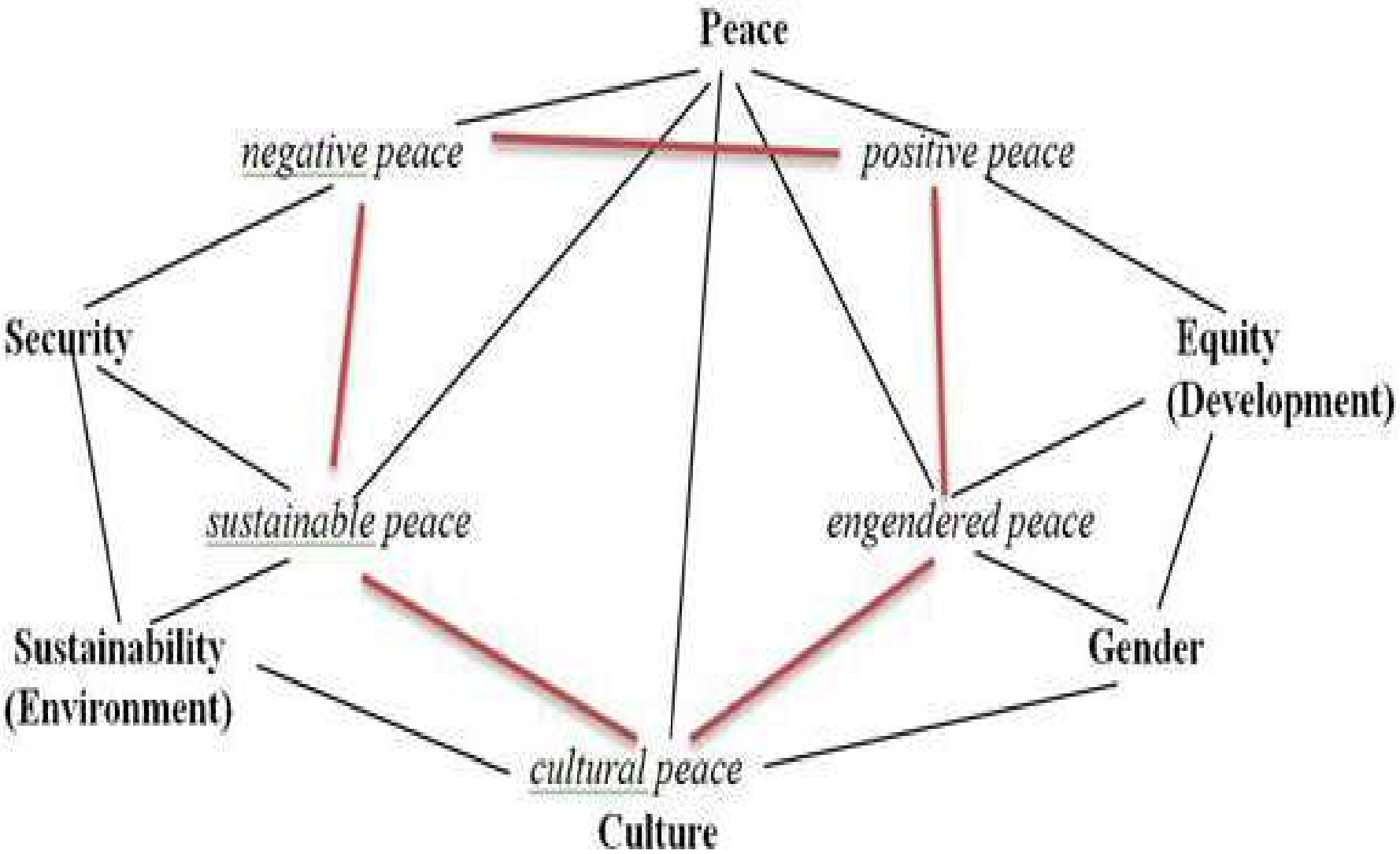
5.6 Expanding Peace Ecology

- Brauch, Dalby and Oswald Spring (2011) proposed to reconceptualize peace ecology by linking it to the political geoeology approach.
- Peace ecology calls for “peace with nature” that is increasingly being challenged by the manifold anthropogenic interventions into the earth system during the Anthropocene (Crutzen 2000): To achieve ‘peace with nature’ is a domestic and international task where human behaviour has to be brought in line with the holeness of nature.
- How human beings respond to these new dangers to the survival of the species but also of plants and animals through a declining biodiversity depends but on the worldview of the scientists but also on the mindset of the elites and on whether the carbon lobbies succeed.
- Business-as-usual prevails when the political, economic and military elites are unwilling or unable to act to address the root causes of global environ-mental and climate change. Many religious leaders, scientists, policymakers have called for an alternative vision aiming for a new scientific revolution, for a fundamentally different worldview shifting to an alternative paradigm of sustainable development and sustainable peace (Scheffran 2011; OECD 2011), where the ethical goal of ‘peace with nature’ can be achieved.

5.7 Conceptual Pillars of Peace Ecology

- Peace ecology in the Anthropocene may be conceptuallized with 5 concep-tual pillars consisting of peace, security, equity, sustainability & gender.
- To conceptualize the linkages between peace and security we refer to '**negative peace**' and for the relationship between peace and equity to '**positive peace**' concept, for interactions between peace, gender and environment '**cultural peace**' and for the relations between peace, equity and gender we propose the concept of an '**engendered peace**'.
- ***Sustainable peace*** refers to links among peace, security & environ-ment, where humankind and the environment as 2 key parts of global Earth face the consequences of destruction, extraction and pollution.
- **Sustainable peace** includes also processes of recovering from environmental destruction, reducing the human footprint in nature through a less carbon-intensive - and in the long-term possibly carbon-free and increasingly dematerialized production processes that future generations may still be able to decide on their own resources and development strategies.

5.8 Five Pillars of Peace Ecology



6 Relevance for Urban Climate Change and Community Resilience?

6 Relevance for Urban Climate Change and Community Resilience?

- Urban Climate Change & Communtiy Resilience refers to politics, policy and polity.
- GHG emissions in the energy sector increased by 160% (1990-2009). Urbanization is projected to rise from 33 to 55% between 2010 and 2050. Thus urban GHG and CO2 emissions will prevail in Thailand.
- Urban CO2 emissions are projected to rise significantly in the energy, transport, industry and housing sectors if strategies of BAU dominate.
- **Thus, in Thialand the urban centres are both a threat to and a victim of global environmental change.**
- This poses potential human security consequences due to the dual environmental & social vulnerabiltiy.
- **The knowledge sector can rise awareness on these linkages, develop the infrastructure and enhance community resilience by capapacity building and training activities. Architecture matters!**

6.1 **Relevance for Urban Climate Change and Community Resilience? (2)**

- Stimulus-response and the PEISOR model offer a tool for a systematic analysis of climate change impacts for urban centres and for bottom-up policy responses through community resilience.
- With a human security approach the linkages between urban climate change and community resilience may be upgraded as issues of „utmost importance“ that need „extraordinary measures“.
- The urban and peace ecology approaches may offer different tools for an empirical and normative analysis of these complex linkages.

Background Information
Intellectual Food for Thought

Background Information

- Brauch, Hans Günter, 2009: “Securitzing Global Environmental Change”, in: Brauch, Hans Günter; Oswald Spring, Úrsula; Grin, John; Mesjasz, Czeslaw; Kameri-Mbote, Patricia; Behera, Navnita Chadha; Chourou, Béchir; Krumme-nacher, Heinz (Eds.), 2009: *Facing Global Environ-mental Change: Environmental, Human, Energy, Food, Health and Water Security Con-cepts* (Berlin – Heidel-berg – New York: Sprin-ger-Verlag): 65-102.
- Brauch, Hans Günter, 2011: Informal Thematic Debate of the 65 th Session of the United Nations General Assembly on Human Security , 14 April 2011, 3.00-5.45 pm., Interactive Debate 2: Human Security – Its Application and Added Value - Background paper prepared by Hans Günter Brauch: The Environmental Dimension of Human Security: Freedom from Hazard Impacts, at: <http://afes-press-books.de/html/PDFs/Brauch_UN-GA_Paper_12%204%202011_final%20%282%29. pdf and talking notes at: <http://afes-press-books.de/html/PDFs/Brauch_UN-GA_Talking%20Points_11%204%202011_final %20%282%29.pdf>.
- Oswald Spring, Ursula; Brauch, Hans Günter; Keith G. Tidball, 2014: “Expanding Peace Ecology – Peace, Security, Sustainability, Equity, and Gender”, in: Ursula Oswald Spring; Hans Günter Brauch; Keith G. Tidball (Eds.): *Expanding Peace Ecology: Security, Sustainability, Equity and Peace: Perspectives of IPRA’s Ecology and Peace Commission 1* (Cham – Heidelberg – New York – Dordrecht – London: Springer-Verlag, 2014, i.p.).

Thank you for your attention and patience

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