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वर्धमान महावीर खुला विश्वविद्यालय, कोटा
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Reconceptualising Security in the 21st Century:
The South Asian Context

Securitizing Global Environmental Change
The Environmental Dimension of Human Security

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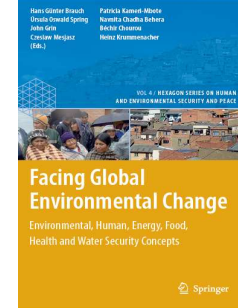
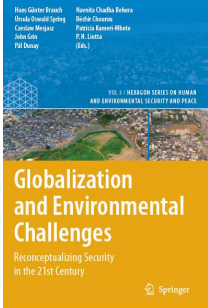
1. Reconceptualization of Security: Widening, Deepening, Sectorialization

Security is a Basic Goal & Value of Human Life that has different meanings: in cultural, philosophical and religious traditions: e.g. in Hinduism & Buddhism

Security may be defined in:

- **an objective sense:** absence of threats to basic values,
 - **a subjective sense:** absence of fears that these values will be attacked and
 - **an intersubjective sense:** what actors make of it or **how they securitize existential threats that require extraordinary policy responses.**
- **Reconceptualization of Security since 1989: Response to contextual change: policy response & conceptual innovation**
 - **Copenhagen School: Buzan/Waever/de Wilde (1998, 2009):**
 - **Securitization theory** of Ole Waever (1995)
 - **Widening:** five dimensions or sectors: military, political, economic, societal and environmental (Krell 1979, Buzan 1983)
 - **Deepening:** from state- to people-centred perspectives
 - **Hexagon Book Series: *Security Handbook for the Anthropocene*: ca. 270 chapters by 250 authors, 80+ countries (III,IV, V)**
 - **Global review** of scientific and political reconceptualization debate
 - **Sectorialization** of soft security issues: water, food and health
 - Environmental dimension of human security
 - **Focus:** *Facing and coping* with security impacts of GEC issues

1.1. Widening, Deepening and Sectorialization of Security Threats, Challenges, Vulnerabilities & Risks



Security dimension ⇒ ↓ Level of interaction	Military	Political	Economic	Environmental ↓	Societal
Human individual Human security ⇒			Food security Health security	Cause & Victim	Food & Health security
Societal, community security				↓↑	
National security	During Cold War Shrinking (in USA since 2001)		Energy security	↓↑	Energy Food & health security
International and Regional security			Water security	↓↑	Water security
Global and planetary security ⇒				GEC	

2. Environmental Dimension of Security: Environment: Object or Cause of Conflict?

war > environment

environment > crises/conflicts

Vietnam: Impact of Agent Orange



Climate Change Impacts: Hazards



Burning oil fields in Kuwait (1991)



Drought and Forest Fires



Oil spills at Lebanon Coast (2006)



-Flash Floods in India (2008)



2.1. Environment: Cause of Conflict?

Brundtland Report (1987), Gorbachev (1987/1988)

Old Focus of Policy Debate & Scientific Discourse:

Environmental scarcity of water and food creates multiple socio-economic & political impacts that may lead to internal crises & even violent conflicts:

malnutrition: health security challenges & risks

- **Environmental degradation and pollution: of water and air: health security challenges & risks**

New Focus: Global Environmental & Climate Change: new era of earth history (Anthropocene): since 2000

- **Securitizing of water (water security)**
- **Securitizing of soil, desertification & migration**
- **Securitizing of climate change**
- **PEISOR Model for the analysis: of environmental impacts on society and manifold security linkages**

2.2. Three Phases of Debate since 1989

- **First Phase: Policy agenda setting for US National Security (1989-1993)**
 - ❖ Impacts of wars on environment (**Westing**), since 2001: **UNEP-PCAU**
 - ❖ debate on environmental security as a national security issue (Ullman, 1983; Mathews, 1989, N. Myers, 1989)
- **Second Phase: Empirical case studies: Toronto and Swiss case study projects (1994-2000)**
 - Canadian (**Homer-Dixon**) & Swiss (**ENCOP, Bächler**):
 - case studies on env. scarcity, degradation as causes of environmental stress & conflicts and env. cooperation
- **Third Phase: Theoretical & empirical diversity without integration (2000-):**
 - ❖ methodological diversity (e.g. GECHS, state failure project, Swiss NSCCR: mitigating syndroms of global change, PRIO: civil war research; World Bank: Collier: greed vs. scarcity)
 - ❖ Many directions but hardly any synthesis of research
- **Oswald Spring – Brauch – Dalby: 4th phase**

2.3. Emerging Debate since 2000: Securitization of Global Environmental Change and Climate Change

Securitization of water

- Ministerial Declaration of WWF in The Hague (2000)

Securitization of desertification & migration

- NATO science conference in Valencia (2003)

Securitization of climate change: turning point (2007): Publication of the Fourth IPCC Assessment Report

- a challenge for **international security**:
 - 17 April: UK put climate change on the agenda of the UNSC
 - June: WBGU Report: Climate Change as a Security Risk
 - March 2008: EU Report on Climate Change and Security
- an issue of **US national security**: US Debate
- an issue for **human security**: Human Security Network during Greek presidency (2007-2008)

2.4. Policy Response: Progressive Decarbonization of the Economy

Enemy is us: our past, present, future burning of hydrocarbons since 1750, especially since 1950

- **Climate change causes & impacts: shifts focus to a proactive security policy on long-term political impacts of:**
 - temperature increase, sea-level rise and increase in number and intensity of hydro-meteorological hazards
 - forced migration and possible conflicts of migrants with resident population, humanitarian tragedies
- **Counter strategies require:**
 - No military response to this challenge of survival!
 - Reducing GHG emissions by energy efficiency and shifting the sources of energy from hydrocarbon to renewables
 - Adaptation measures for affected regions, people, sectors
 - Security policy for the Anthropocene must be based on sustainable development and aim at a sustainable peace

3. Human Security Conceptualizations: South Asian Initiatives

South Asian Origins of the Concept:

- **UNDP Report of 1994: human security: Mahbub ul Haq**
 - 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 environment.
- **CHS: Human Security Now: S. Ogata/Armatya 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.
- **UNGA Outcome Document:**
 - 143. We stress the right of people to live in freedom and dignity, free from poverty and despair.

3.1. Four Pillars of Human Security

- **“Freedom from fear”** by reducing the probability that hazards may pose a survival dilemma for most affected people of extreme weather events (UNESCO, HSN), **Canadian approach: Humanitarian agenda**
- **“Freedom from want”** by reducing societal vulnerability through poverty eradication programmes (UNDP 1994; CHS 2003: Ogata/Sen: Human Security Now), **Japanese approach; Development agenda**
- **“Freedom to live in dignity”** (Kofi Annan in report: *In Larger Freedom* (March 2005) **Human rights agenda**
- **“Freedom from hazard impact”** by reducing vulnerability & enhancing coping capabilities of societies confronted with natural & human-induced hazards (Bogardi/Brauch 2005). **Hazard/disaster agenda**

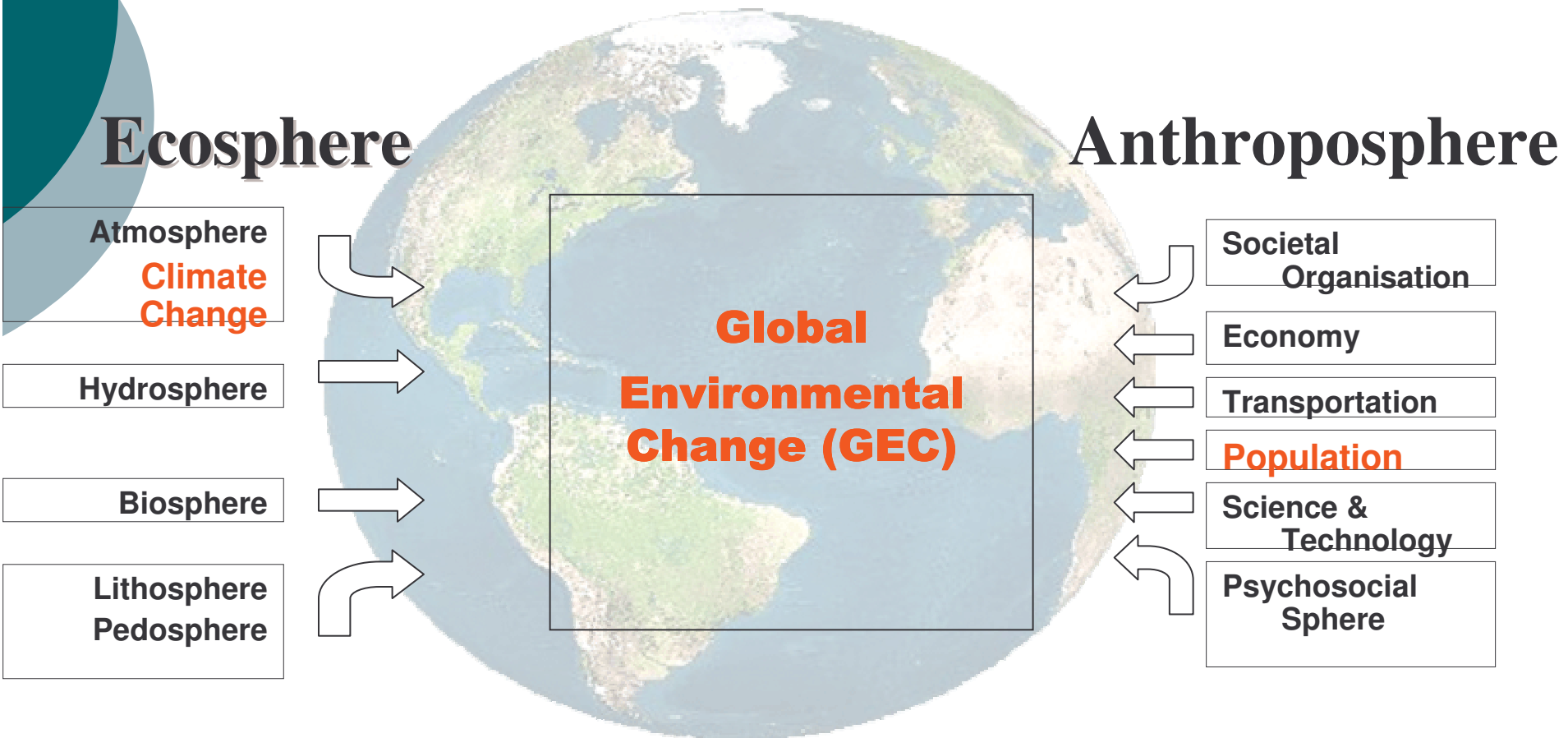
4. Towards the Environmental Dimension of Human Security

- **A Human security approachy focuses on five dimensions of a widened security concept**
- **UN context: Environmental Security: issue of**
 - UNEP Post Conflict and Disaster Management Branch
 - UNDP, UNESCO
 - ENVSEC: OSCE, UNDP, UNEP, UNECE, NATO, REC
- **UN context: Human Security an issue of:**
 - UNDP, UNESCO, UNU-EHS (see Ramesh Thakur)
 - Human Security Network, Friends of Human Security
- **UNESCO article: in Intern. Soc. Science J. 2008**
 - Climate change, water, desertification and natural hazards as challenges for human security
 - From short-term reactive to long-term proactive initiatives.

5. PEISOR Model for Analysing Environmental Security Challenges

- **Other Models: Environment – Response**
 - **OECD: Pressure – State of Environment – Response - Model**
 - **UN-CSD** (Committee for Sustainable Development)
- **PEISOR model distinguishes 5 stages:**
 - **P: Pressure: Causes of GEC: Survival hexagon**
 - **E: Effect: environmental scarcity, degradation & stress**
 - **I: Impact: Extreme or fatal outcome: hazards**
 - **SO: Societal Outcomes: disaster, migration, crisis, conflict**
 - **R: Response by state, society, the economic sector and by using *traditional* and *modern scientific* knowledge to enhance coping capacity and resilience**

6. Securitized Global Environmental and Climate Change in the 21st Century



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

6.1. Climate Change

Temperature Increases & Sea Level Rise (IPCC, III: 2001, IV: 2007)

Climate Change Impacts: Temperature & Sea level Rise

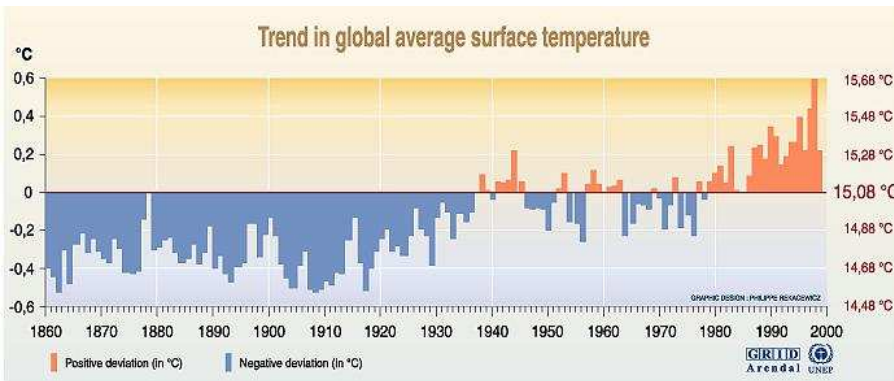
- ❖ Global average temperature rise in 20th century: **+ 0.6°C**

Projected temperature rise:

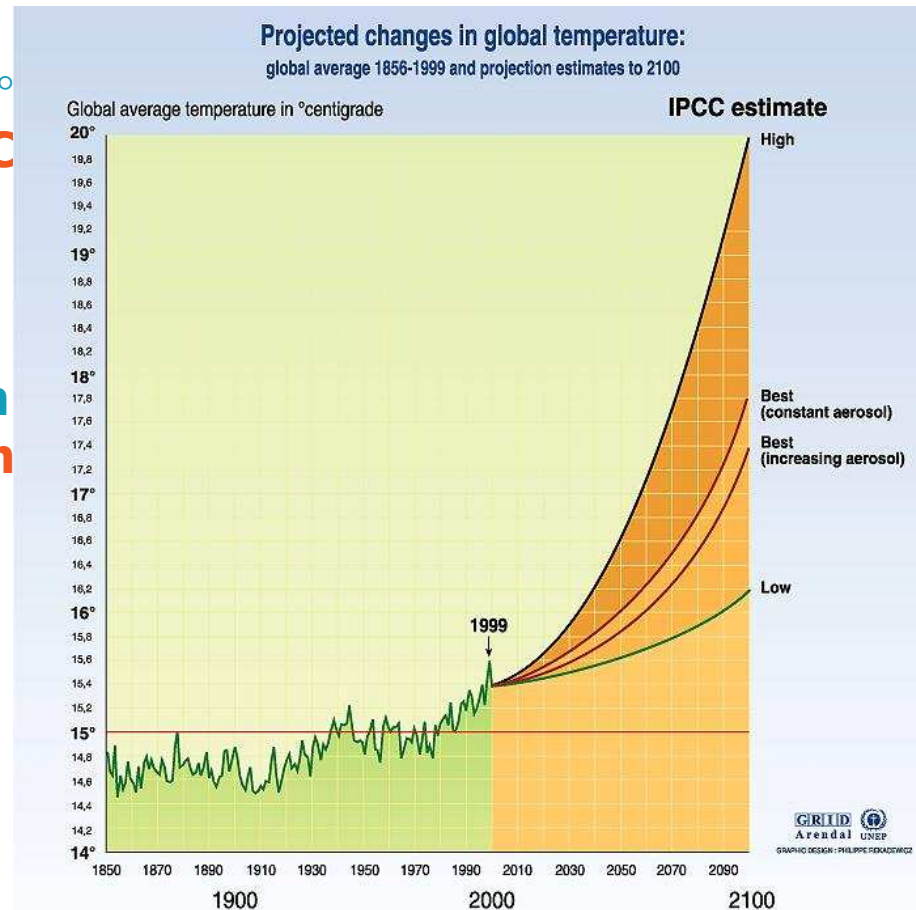
- ❖ TAR (1990-2100): **+1.4-5.8°C**
 - ❖ AR4 (07): **+1.1-6.4 (1.8-4)°C**
- IPCC 1990, '95, 2001, 2007

Sea level Rise:

- ❖ 20th cent.: **+0,1-0,2 metres**
- ❖ TAR: 21st century: **9-88 cm**
- ❖ AR4 (2000-2100): **18-59 cm**



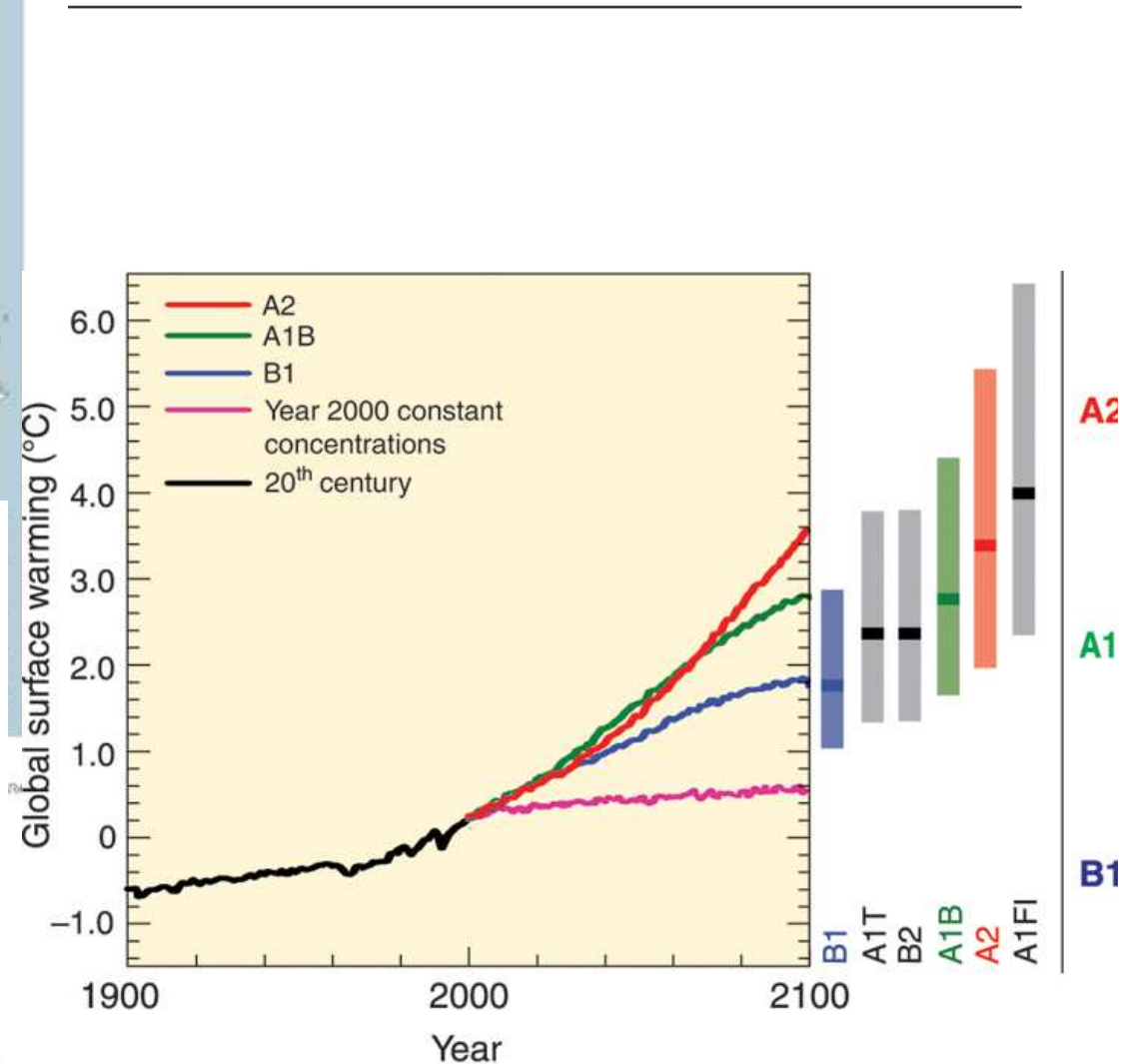
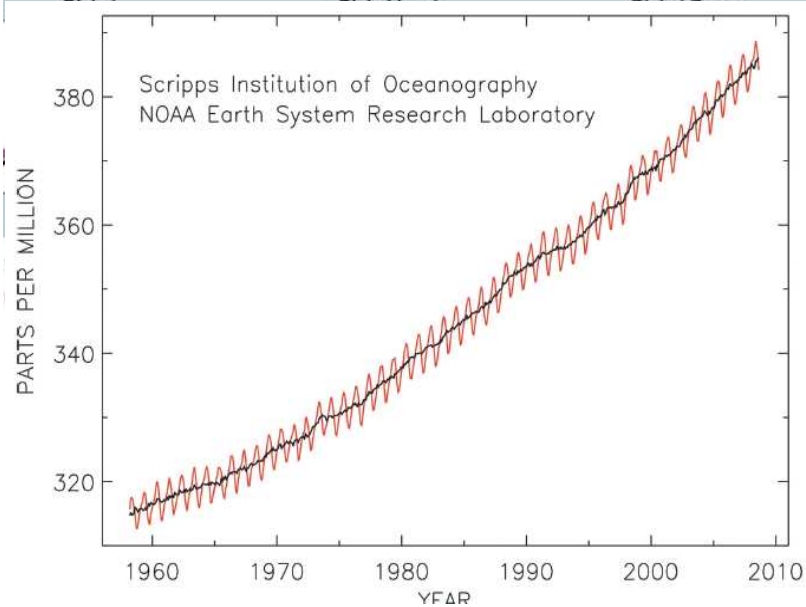
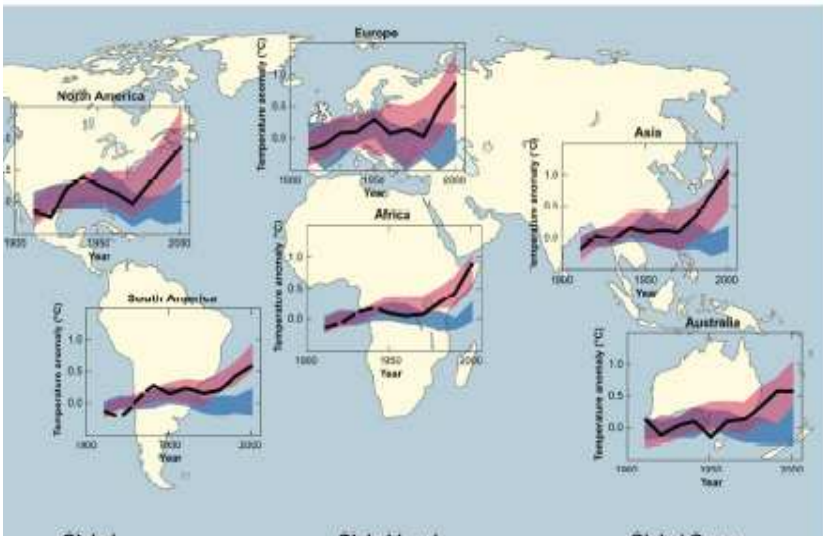
Source: School of environmental sciences, climatic research unit, university of East Anglia, Norwich, United Kingdom, 1999.



Source: Temperatures 1856 - 1999. Climatic Research Unit, University of East Anglia, Norwich UK. Projections: IPCC report 95.

6.2. Observed Temperature Increases and Projected Trends up to 2100

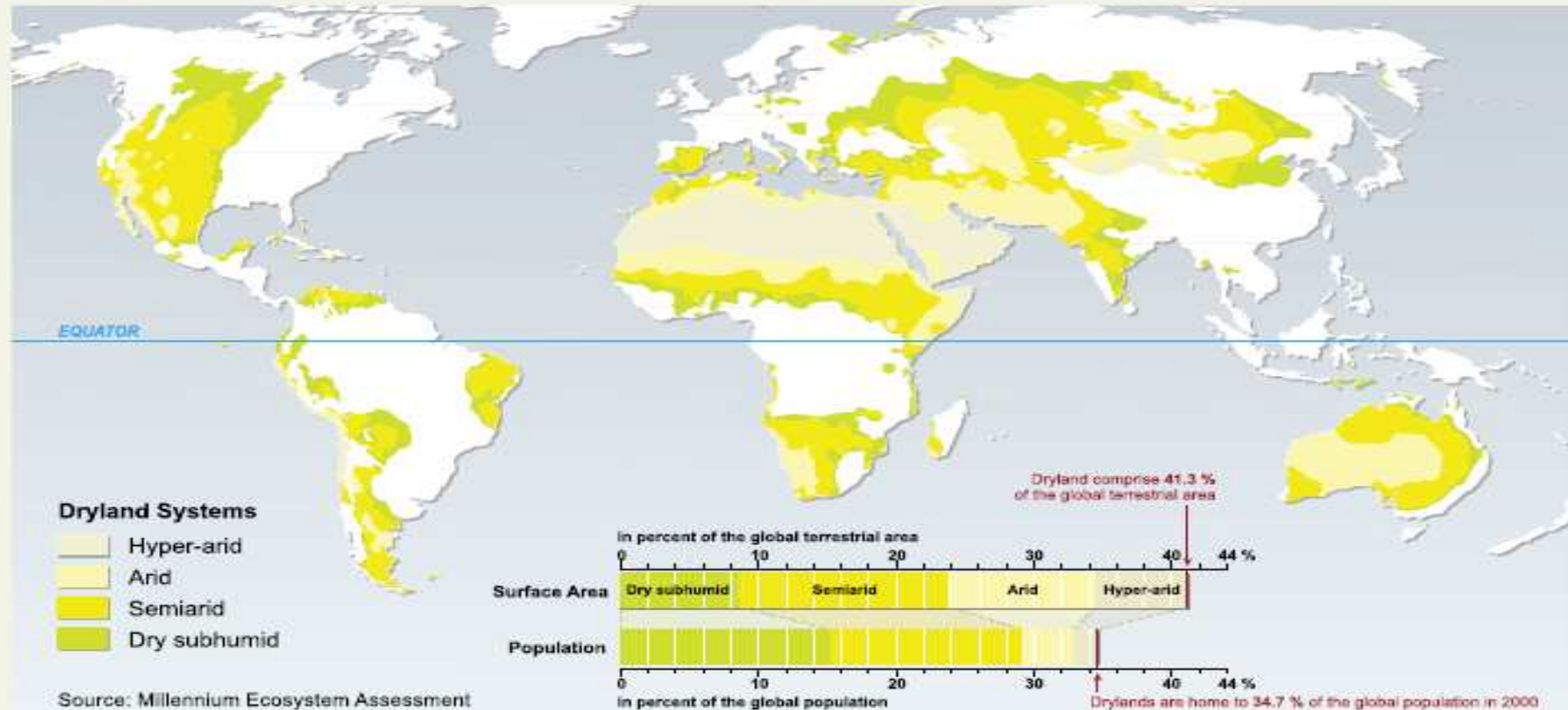
increase in the average global temperature (1900-2000). Source: IPCC (2007: 11); at: <<http://www.ipcc.ch/graphics/graphics/ar4-wg1/ppt/spm.ppt#262,5>>. Reprinted with permission.



6.3. GEC: Desertification and Drought

Drylands and their Categories

Drylands include all terrestrial regions where the production of crops, forage, wood and other ecosystem services are limited by water. Formally, the definition encompasses all lands where the climate is classified as dry subhumid, semiarid, arid or hyper-arid. This classification is based on Aridity Index values[†].

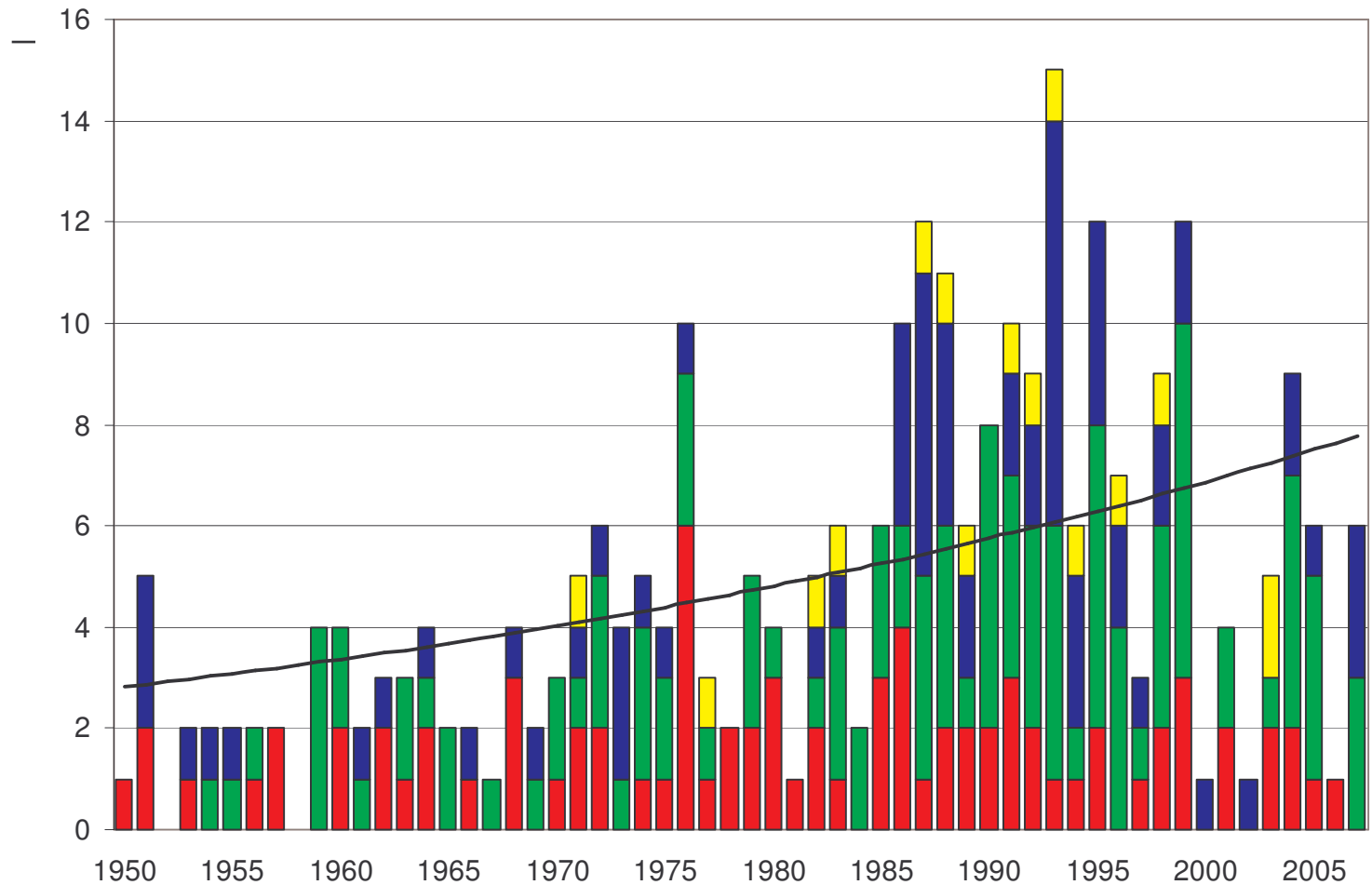


[†] The long-term mean of the ratio of an area's mean annual precipitation to its mean annual potential evapotranspiration is the Aridity Index (AI).

Notes: The map is based on data from UNEP Geo Data Portal (<http://geodata.grid.unep.ch/>). Global area based on Digital Chart of the World data (147,573,196.6 square km); Data presented in the graph are from the MA core database for the year 2000.

6.4. Global Great Natural Disasters 1950 – 2007 (Number of events)

Number



Earthquake, tsunami, volcanic eruption

Flood

Storm

Temperature extremes (e.g. heat wave, wildfire)

6.5. People Killed in ten Major Natural Hazards in India, Pakistan & Bangladesh

Pakistan			India			Bangladesh		
Hazard	Date	Killed	Hazard	Date	Killed	Hazard	Date	Killed
Earthq.	2005	73,338	Epidem.	1920	2,000,000	Drought	1943	1,900,000
Earthq.	1935	60,000	Drought	1965	1,500,000	Epidem.	1918	393,000
Storm	1965	10,000	Drought	1942	1,500,000	Storm	1970	300,000
Earthq.	1974	4,700	Epidem.	1907	1,300,000	Storm	1991	138,866
Earthq.	1945	4,000	Drought	1900	1,250,000	Storm	1942	61,000
Flood	1950	2,900	Epidem.	1920	500,000	Storm	1965	36,000
Flood	1982	1.334	Epidem.	1926	423,000	Flood	1974	28,700
Flood	1998	1,000	Epidem.	1924	300,000	Storm	1985	15,000
Flood	1977	848	Storm	1935	60,000	Storm	1965	12.047
Storm	1993	609	Storm	1940	40,000	Storm	1963	11,500

6.6. People Affected in Hydro-Meteorological Hazards in India, Pakistan & Bangladesh

Pakistan			India			Bangladesh		
Hazard	Date	Affected	Hazard	Date	Affected	Hazard	Date	Affected
Flood	2005	7,000,450	Drought	1987	300,000,000	Flood	1988	45,000,000
Flood	1992	6,665,450	Drought	2002	300,000,000	Flood	1974	38,000,000
Flood	1992	6,184,418	Drought	1972	200,000,000	Flood	2004	36,000,000
Flood	1976	5,566,000	Flood	1993	128,000,000	Flood	1984	30,000,000
Earthq.	2005	5,128,000	Drought	1965	100,000,000	Flood	1987	29,700,000
Flood	1973	4,800,000	Drought	1982	100,000,000	Drought	1983	20,000,000
Flood	1978	2,246,000	Drought	2000	50,000,000	Flood	1968	15,889,616
Drought	1999	2,200,000	Flood	2002	42,000,000	Storm	1965	15,600,000
Storm	2007	1,650,000	Flood	1975	34,000,000	Storm	1991	15,438,849
Flood	1996	1,300,000	Flood	1982	33,500,000	Flood	1998	15,000,050

6.7. Economic Damages (1,000 \$) in Hydrometeor. Hazards in India, Pakistan & Bangladesh

Pakistan			India			Bangladesh		
Hazard	Date	Damage	Hazard	Date	Damage	Hazard	Date	Damage
Earthq	2005	5,200,000	Flood	1993	7,000,000	Flood	1998	4,300,000
Storm	2007	1,620,000	Flood	2006	3.390,000	Storm	2007	2,300,000
Flood	1992	1,000,000	Flood	2005	3.330,000	Flood	2004	2,200,000
Flood	1973	661,500	Earthq.	2001	2,623,000	Flood	1988	2,127,000
Flood	1976	505,000	Storm	1999	2,500,000	Storm	1991	1,780,000
Flood	2007	327,118	Flood	2004	2,500,000	Storm	1995	800,000
Drought	1999	247,000	Flood	2005	2,300,000	Flood	1987	727,500
Flood	2001	246,000	Storm	1990	2,200,000	Flood	1974	579,200
Flood	1994	92,000	Storm	1996	1,500,300	Flood	2000	500,000
Flood	2005	30,000	Earthq.	2004	1,022,800	Earthq.	2004	500,000

7. Projected Impacts of Climate Change for South Asia and India (AR4 2007)

- **Temperature increase**
 - Increasing number, intensity and victims from heatwaves
 - Food yield declines, rising food prices, social unrest
- **Sealevel rise**
 - **Very high:** Ganges, Bramaputra (Bangladesh)
 - **High:** Gadavari (India)
- **Hydrometeorological hazards: drought, floods**
 - Have increased significantly (number of affected people and of the reported economic damages)
- **Tipping Points: Changes in Indian Monsoon**
 - Schellnhuber et al.: long-term fundamental changes, e.g. diversion of Gulf Stream in North Atlantic, Indian monsoon.

7.1. Observed Climate Change in South Asia and Projected Trends up to 2100

India (IPCC, 4th Assessm. Report, WG II (2007: 475):

- 0.68 °C per century, higher warming in post monsoon and in winter
- Increase in extreme rains in NW during summer monsoon
- Lower number of rainy days in East coast

Pakistan (IPCC, 4th Assessm. Report, WG II (2007: 475):

- 0.6-1 °C increase in coastal areas since 1990s
- 10-20% decline in precipitation in coastal belt & hyper arid plains
- Increase in summer & winter precipitation in N. Pakistan (40 yrs).

Bangladesh (IPCC, 4. Assessm. Report, WG II (2007: 475):

- 1 °C increase in May, 0.5 °C in November (1985-1999)
- Decadal rain anomalies after long term averages since 1960s.

Droughts: (IPCC, 4. Assessm. Report, WG II (2007: 476):

- 50% associated with El Nino. Droughts in Pakistan and NW India (1999, 2002, 2006): crop failure and mass starvation

7.2. Human & Security Implications of Climate Change Projections for South Asia

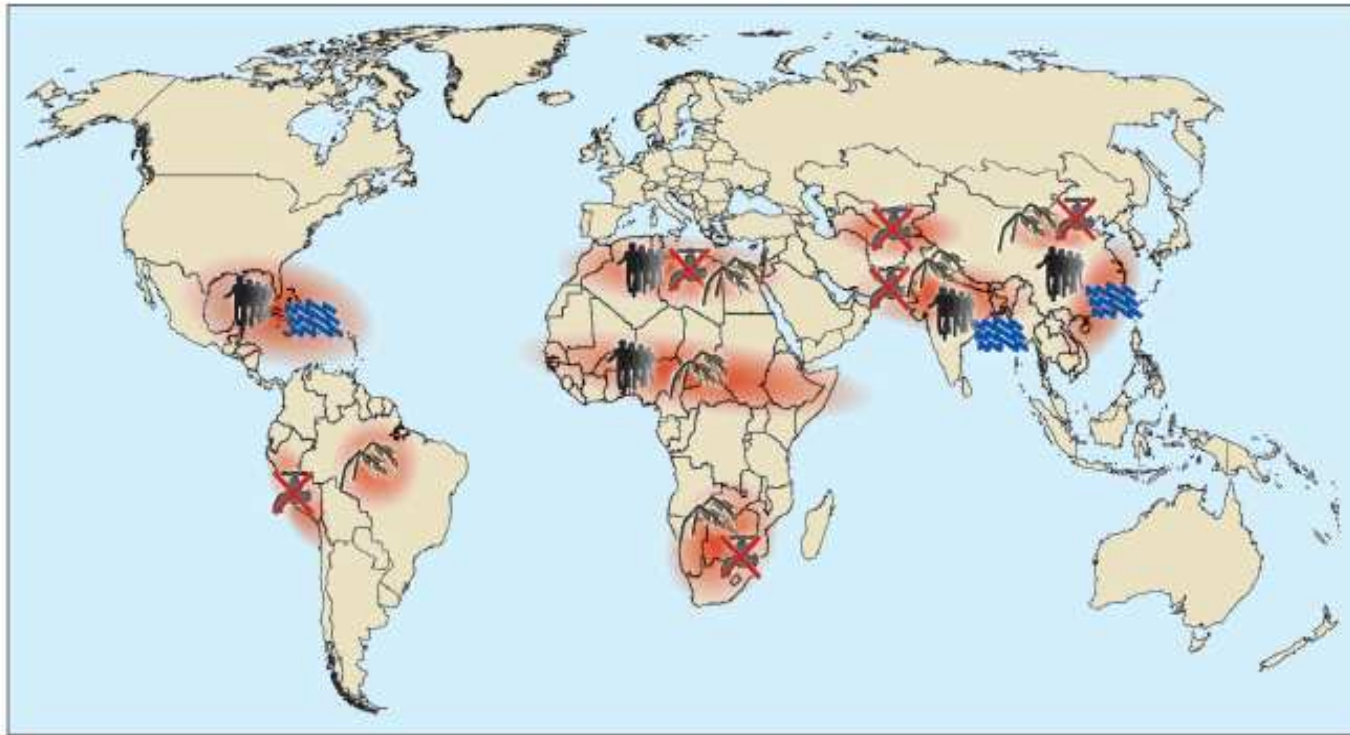
- Rise in **climate-related migration** to be expected over coming decades. This can lead to instability and conflict.
- Drought periods, **crop yield declines**, food price increases to increase of rural-urban migration (China, India)
- **Production losses due to climate change** may prevent land and water resources to be used for agricultural purposes
- **High social vulnerability** of rural and urban poor to climate change impacts
- Very high **vulnerability of delta regions** in India and Bangladesh due to sea-level rise.
- **Retreat of Himalyan galciars**: neative impact on water supply of major cities in North India (e.g. New Delhi)

Open questions:

- Impact of extreme weather events (storm, flood, drought)
- Social vulnerability to multiple stressors
- Identification of critical climate thresholds for various regions and sectors.

7.3. Regional Security Challenges & Risks due to Global Climate Change

Figure 4.7: Regional hotspots and security risks associated with climate change. Source: WBGU (2008: 4). Reprinted with permission.



Conflict constellations in selected hotspots



Climate-induced degradation of freshwater resources



Climate-induced decline in food production



Hotspot



Climate-induced increase in storm and flood disasters



Environmentally-induced migration

Security-related challenges in South Asia region:

- Water scarcity to rise due to demand increase and supply decline
- Rising food deficits
- **Rising environmentally induced migration**

7.4. EU-Study on Projected Security Impacts of Climate Change for South Asia

- **Sea-level rise** may threaten the habitat of millions of people as 40% of Asia's population (almost 2 billion) lives within 60km from the coastline.
- **Water stress and loss of agricultural productivity** will make it difficult for Asia to feed its growing population who will additionally be exposed to an increase of infectious diseases.
- **Changes in the monsoon rains** and decrease of melt water from the Himalayas will affect more than 1 billion people.
- **Conflicts over remaining resources and unmanaged migration** will lead to instability in a region that is an important economic partner of Europe with factors of production and distribution concentrated along vulnerable coastlines.

8. A Human Security Approach: Protection & Empowerment

- **Human Security: Freedom from Hazard Impacts**
 - **Reducing Social Vulnerability:** Poverty alleviation
 - Dealing with internal displacements and forced migration
 - Education & training of affected people as tasks of society and the state (reduce number of deaths)
- **Protection by Disaster Response & Preparedness**
 - Early warning systems and protection shelters to be built.
 - against impacts of storms, floods, drought
 - against sea-level rise (dams, infrastructure)
- **Empowerment of the People**
 - **Enhance Resilience of local people** to adapt and to mitigate

9. Facing the Challenges posed by GEC for South Asia. **Knowledge is vital!**

- Respond to the impacts of GEC with Adaptation
- Vital role of knowledge creation & dissemination
 - **Task of Universities: diagnoses and responses**
 - Training of the next generation of leaders in society, the state and the economic sector
 - Agenda-setting, awareness raising for society & state
 - Important role of the economic sector
 - **Role of Society**
 - Create a societal awareness, responsibility on urgency
 - **Role of the Economic Sector**
 - Develop the technical and administrative tools for self-interest (profit) and due to government requirements
 - **Role of the State**
 - Set the policy and budgetary priorities

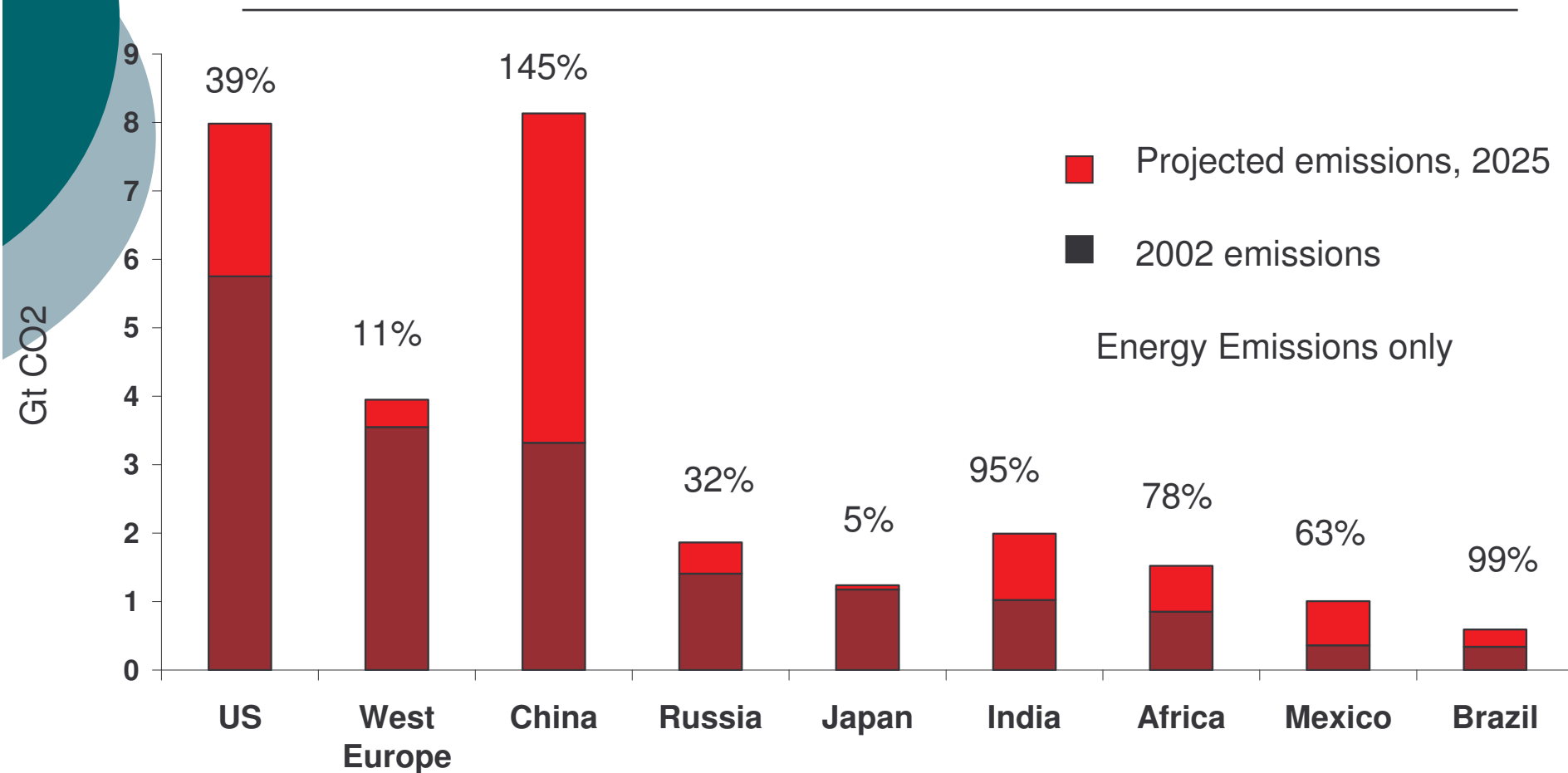
10. Coping with Challenges posed by GEC for South Asia

- **Develop national mitigation strategies**
- **Avoid the consequences by a proactive human and environmental security policy:**
 - **Major actors: engineers not the military**
 - Enhance energy efficiency (reduce costs: goods/services)
 - Diversify energy sources: gradual decarbonisation
- **Role of the Universities: Avant-garde of change**
 - **Observe, study, research and train people**
 - Send students to leading research & development institutions overseas of emerging energy revolution
 - In Germany, e.g. GTZ, INWENT& Renewable institutes
 - Potential for Rajasthan: Renewable energy
 - Wind power
 - Solar thermal electricity
 - Concentrated large-scale photovoltaic

10.1. Coping with the Causes and Impacts: Potential of Renewables

- **IEA, WEO 2007: Reference Scenario** – world's energy demand will grow over 50% in 2030 (2007). **China & India account for 45% of increase in global primary energy demand.** Their energy use will double from 2005 to 2030.
- Oil, gas, coal will dominate; coal will grow most rapidly due to demand in China & India. Global energy-related CO2 emissions will rise by 57%.
- **China will overtake the US as biggest emitter in 2007**, India becomes 3rd emitter by 2015. **China's per-capita emissions = OECD Europe by 2030.**
- **Net oil imports in China & India** jump from 5.4 mb/d in 2006 to 19.1 mb/d in 2030 – (more than combined imports of **USA & Japan today**).
- **A supply-side crunch up to 2015, abrupt escalation in oil prices!**
- **Alternative Policy Scenario**, global energy-related CO2 emissions would level off in the 2020s & reach 34 Gt in 2030 - almost a fifth less than in Reference Scenario. Global oil demand would be 14 mb/d lower – a saving equal to current output of NAFTA
- **Global (fossil) energy demand will grow and prices will rise: this will create a positive investment climate.**

10.2. Larger developing countries account for much of the forecast rise in emissions



Source: World Resources Institute, CAIT Energy Information Administration Reference Scenario, Energy emissions only

10.3. Coping with Causes and exploiting opportunities

- **Coping with causes and impacts**

- a) reduce emissions,
- b) energy sufficiency, c) shift from fossil to renewable energy

Adaptation: for coastal cities, health, agriculture, tourism

Mitigation: unique opportunity for regional cooperation:

- Declining Fossil Reserves:

- Climate Change mitigation strategy offers unique opportunity for a long-term climate & renewable energy partnership with India

- **Disaster preparedness & response:** A new task for international cooperation

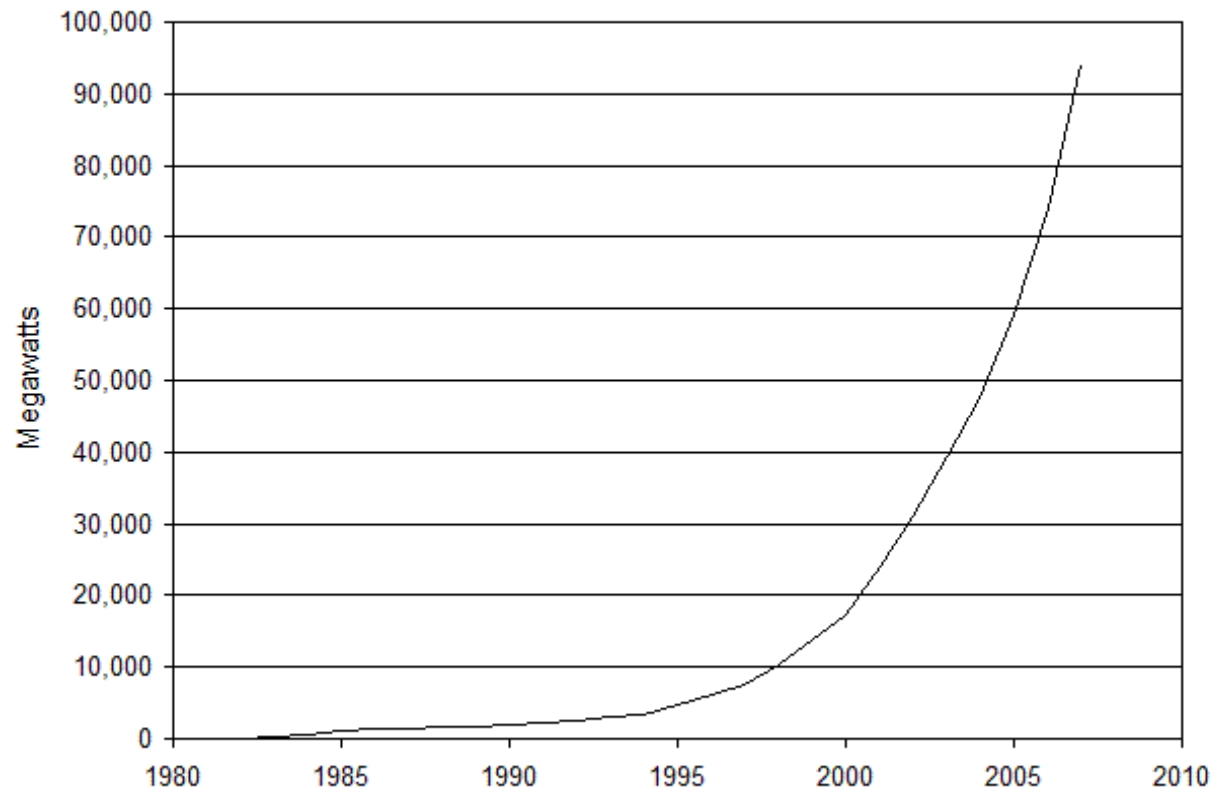
- **With growing energy demand & price rise renewables will become competitive: wind, biomass, solar thermal and photovoltaic**

- **Huge Renewable Energy Potential of Deserts** for electricity, water desalination, hydrogen for transportation

10.4. Growth of Wind power (1980-2007)

Source: http://www.earth-policy.org/Indicators/Wind/2008_data.htm#fig1

World Cumulative Installed Wind Power Capacity,
1980-2007



Source: GWEC; Worldwatch

Cumulative installed windpower capacity (1980-2007): 1-5 (MW)

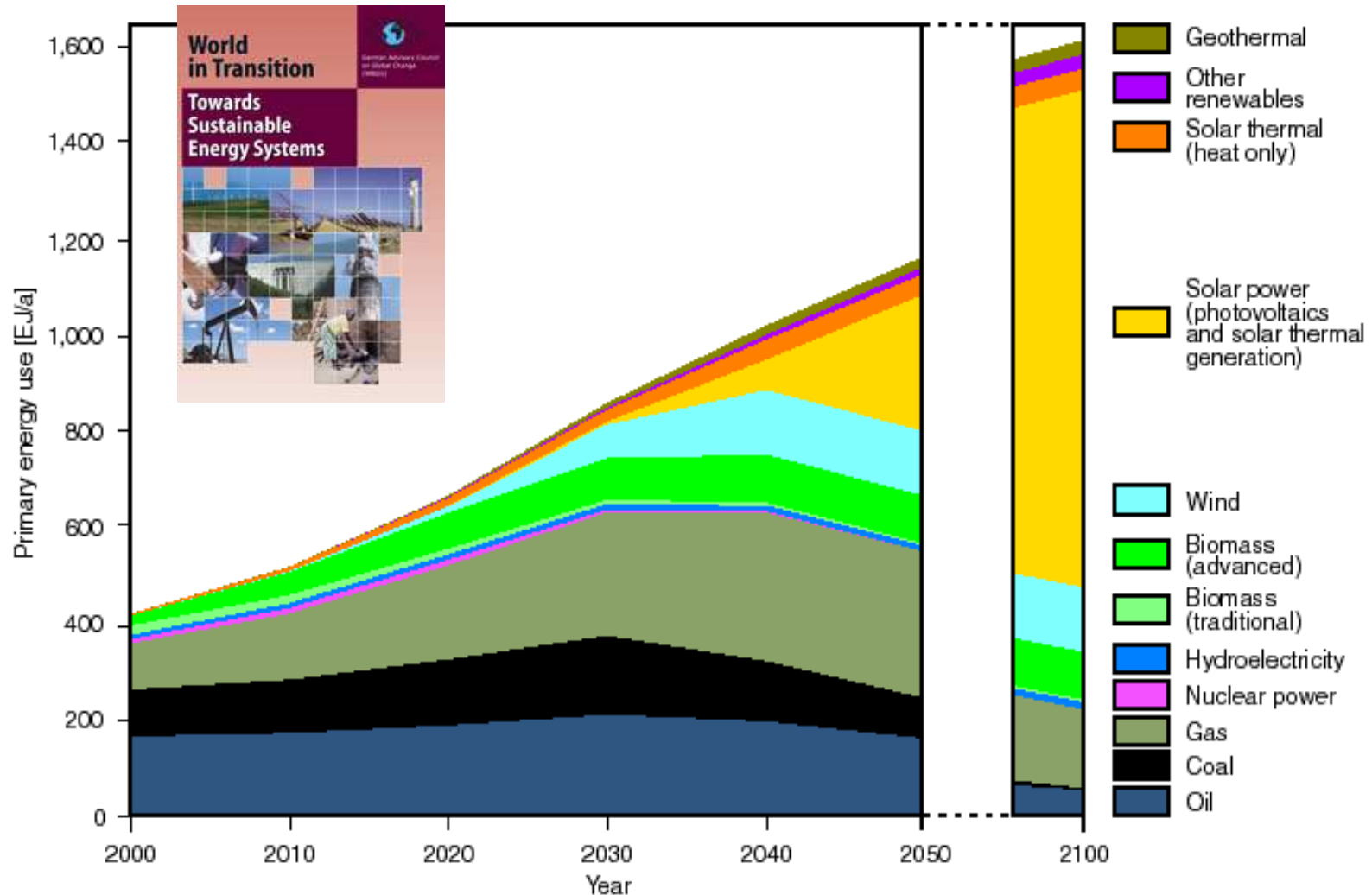
- 1) Germany: 22,247
- 2) USA: 16,818
- 3) Spain: 15,145
- 4) India: 8,000
- 5) China: 6,045

Increase in 2007:

- 1) USA: 5,244 MW
- 2) Spain: 3,522 MW
- 3) China: 3,449 MW
- 4) India: 1,730 MW
- 5) Germany: 1,667 MW



10.5. WBGU Exemplary Path: Global Energy Mix



10.6. Solar Thermal Technologies for Electricity Generation in the Deserts

Concentrating Solar Power Technologies:

- ❖ alternatives: a) Fresnel concentrators, b) parabolic trough (400-600 °C), c) solar tower concept with surrounding heliostat field (1200 °C, up to 50 MW), d) solar dish (for small applications up to 50 kW); e) photovoltaic concentrator (Israel)





10.7. R. Pachauri (IPCC Chair): Solutions & Key Science Questions

A technological society has two choices. First it can wait until catastrophic failures expose systemic deficiencies, distortion and self-deceptions...

Secondly, a culture can provide social checks and balances to correct for systemic distortion prior to catastrophic failures.

Solutions

- **A wide variety of policies and instruments are available to governments to create the incentives for mitigation action.**
- **Stabilisation levels assessed can be achieved by deployment of a portfolio of technologies that are either currently available or expected to be commercialised in coming decades**
- **An effective carbon-price signal could realise significant mitigation potential in all sectors**

Key Science Questions

- **How do we define what constitutes “dangerous anthropogenic”?**
- **How do we prepare the human race to face sea level rise & a world with new geographical features?**
- **Is the current pace and pattern of development sustainable?**
- **What changes in lifestyles, behaviour patterns and management practices are needed, and by when?**

10.8. Towards a Sustainable Peace based on Sustainable Developments

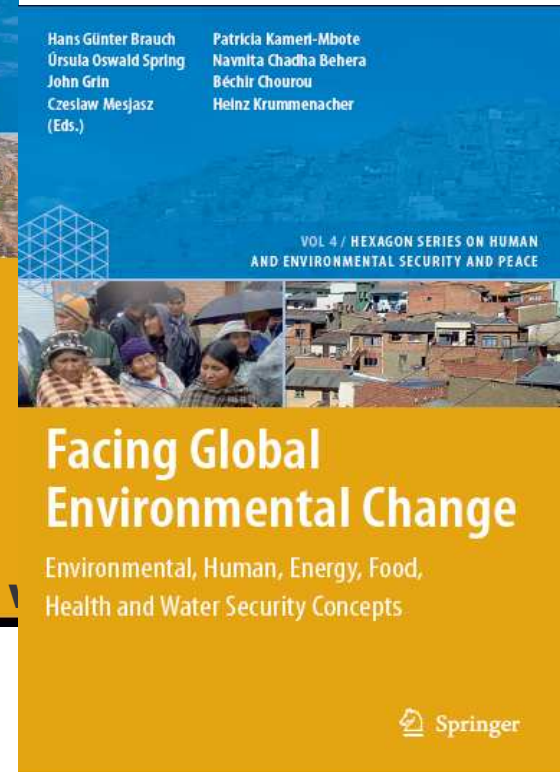
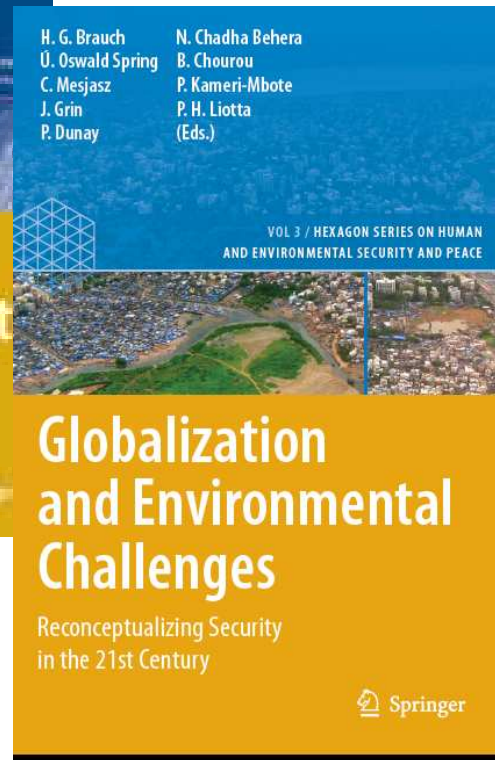
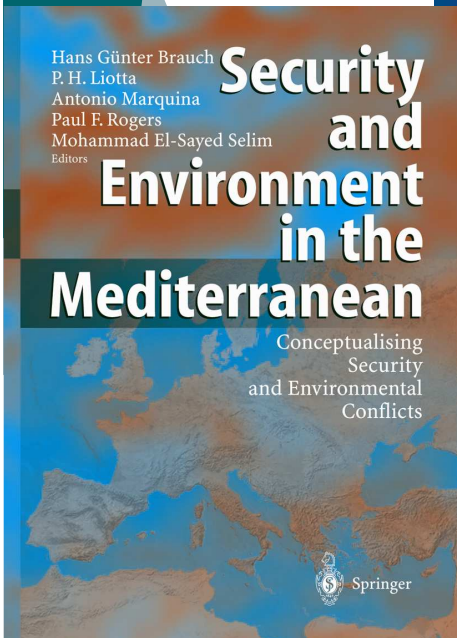
- **Coping with the challenges of GEC requires peace with nature: „ahimsa“**
- **Proactive Environmental Security Policy:**
 - Avoids future energy wars on access and control of scarce hydrocarbon energy sources
 - Transformation is fully underway: India is one of 5 lead nations, e.g. in wind power
 - Economic sector: Indian companies are developing potential
- **Proactive Human Security Policy:**
 - Empower people by enhancing their resilience



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