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German Foreign Ministry

Symposium on Disaster Reduction and Global Environmental Change

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Vulnerabilities due to Environmental Degradation

A Human Security Perspective on Disaster Reduction

1. Focus and Key Questions

➔I will address **three themes**:

- A **human security** perspective
- **Vulnerability due to environmental degradation** resulting from **climate change** and other factors
- **Disaster reduction** and **disaster preparedness**

➔**Focus: Impacts** due to **environmental degradation** and on **vulnerabilities** due to **underdevelopment**

- **Vulnerability due to climate change impacts**
- **Hydro-meteorological hazards and disasters**: cyclones, storms, floods, drought, forest fires etc.
- **Simultaneous policy approach**: linking disaster reduction, preparedness and development to **reduce vulnerabilities** and to **prevent/avoid** escalation of **conflicts**

➔**What are possible linkages between global environmental change and natural disasters?**

➔**How can impacts and vulnerabilities be reduced?**

Different conceptual communities:

- **Global environmental change & climate change:** UNEP, UNDP; UNFCCC, IPCC, GEF, on implementation of Kyoto Protocol: adaptation, mitigation
- **Disaster reduction and preparedness:** states, humanitarian organisations, e.g. Red Cross (impacts)
- **Development:** OECD, World Bank (means, strategies)
- **Social sciences:** working on human, environmental and food security: **lenses, concepts, policy process**

2. Traditions, Standpoints, a Wide Security Concept: Human, Environmental and Food Security

- **Our perceptions depend on our conceptual lenses**, that are influenced by our world views (**traditions**) and our **standpoints on environmental problems**

- **On international (security) policy three traditions** may be distinguished in the English school**:**
  - **Hobbessian** pessimist: *power* is the key category
  - **Kantian** optimist: *international law* is crucial
  - **Grotian** pragmatist: *Cooperation* is vital

- **On international environment policy three standpoints** may be distinguished**:**
  - **Neo-Malthusian** pessimist: resource scarcity rises
  - **Cornucopian** optimist: technology will solve
  - **Reformist** pragmatist: cooperation will solve

Table 1: Worldviews & Environmental Standpoints

Worldviews/Traditions on security (→) / **Standpoints on environmental issues (↓)**	**Machiavelli, Hobbes, pessimist** ***Power matters***	**Grotius pragmatist** ***Cooperation is needed & matters***	**Kant (optimist)** ***International law matters and prevails***
Neomalthusian pessimist ***Resource scarcity***	**I dual pessimism**	**II**	**III**
Reformer, distributionist ***Multilat. cooperation***	**IV**	**V: UN EU states?**	**VI**
Cornucopian (plenty) (neo-liberal optimist)	**VII**	**VIII**	**IX dual optimist Wilsonian?**

In the 1990s the security concept was widened.

From a reformist Grotian perspective (V) I distinguish:

Table 2: Horizontal & Vertical Security Dimensions

Security dimension ⇒ / **Level of interaction ⇓**	**Mili-tary**	**Politi-cal**	**Eco-nomic**	**Environ-mental ↓**	**Socie-tal**
Human ➔			**FAO: Food security**		
Societal/Community			**OECD: Livelihood security**		
National	**US focus**		**Northern focus**		
International/Regional	**(NATO, EU countries)**				
Global/Planetary					

Focus of this talk:

- **Security dimension:** *environmental security* (UNEP)
- **Level or perspective:** *human security* (UNDP)
- **Sector**: *food security* (FAO)
- **Problem** (coastal zone): *livelihood security* (OECD)

Objects of this talk:

- **A *human security perspective*:** of the victims of nat. hazards & disasters who experience food insecurity
- **Disasters as an outcome** of global environm. change
- **Vulnerability** due to environmental degradation/stress resulting from extreme weather events (climate change)
- **Case Study on: Bangladesh: Survival at risk?**
- **Climate Change Impacts and Disaster Reduction:** Broadening the scope and communities by inter-issue linkages, searching for short-, medium- and long-term ***proactive*** and ***anticipatory policy strategies***.

Definitions

Human security concept used by **UNDP HDR (1994)**:

- **focus:** security of **peoples lives,** or: **human well-being** & **survival of people**, regardless of affiliations;

- **Kofi Annan (2001) defined 'human security' as a** people-centred concept based on **three pillars: freedom** from **starvation, poverty & injustice**.
- **Thomas/Tow** (2002): **victims** of war, poverty, **nat. disaster**
- Global Environm. Change & Human Security (**GECHS**).
  - **Links:** environm. change, impoverishment, insecurity;
  - **Empirical Studies:** env. change as threat to human sec.
  - **Include:** inequality, poverty in envir. – security links;
  - **Methods:** early warning of envir. change & human impacts
  - **GECHS Science Plan**: no reference to disaster reduction
- **UNU-RTC in Bonn on Environment and Human Security**
  - **Focus:** causes of natural hazards, forest fire, floods,
  - **Goal:** early recognition and prevention of disasters
  - **W. Mannhard (**Univ. Freiburg): feasibility study on **vulnerability** and **environmental degradation**.

Environmental Security: focuses on impacts of wars on environment and on consequences of environmental degradation, scarcity, stress on security & conflicts

Food Security: **FAO (1996) defined: "as access for all people** at all times to enough food for an active, healthy life".

- adequacy of **food availability** (**effective supply**);
- adequacy of **food access**, ability of the indiv. to acquire sufficient food (**effective demand**) & **reliability** of both

Livelihood Security: **OECD (2002)** at local level refers to '**archetypal livelihoods**', typical for particul. country, achieve: **poverty** eradication, **envir.** conservation:

3. Model: Causes, Effects and Outcome: Disaster

Fig. 1: Causes, Effects & Outcomes of Environmental Stress

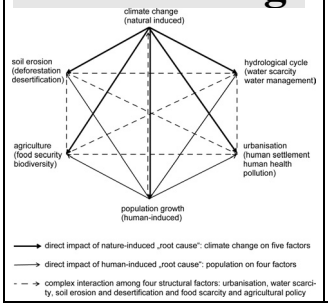
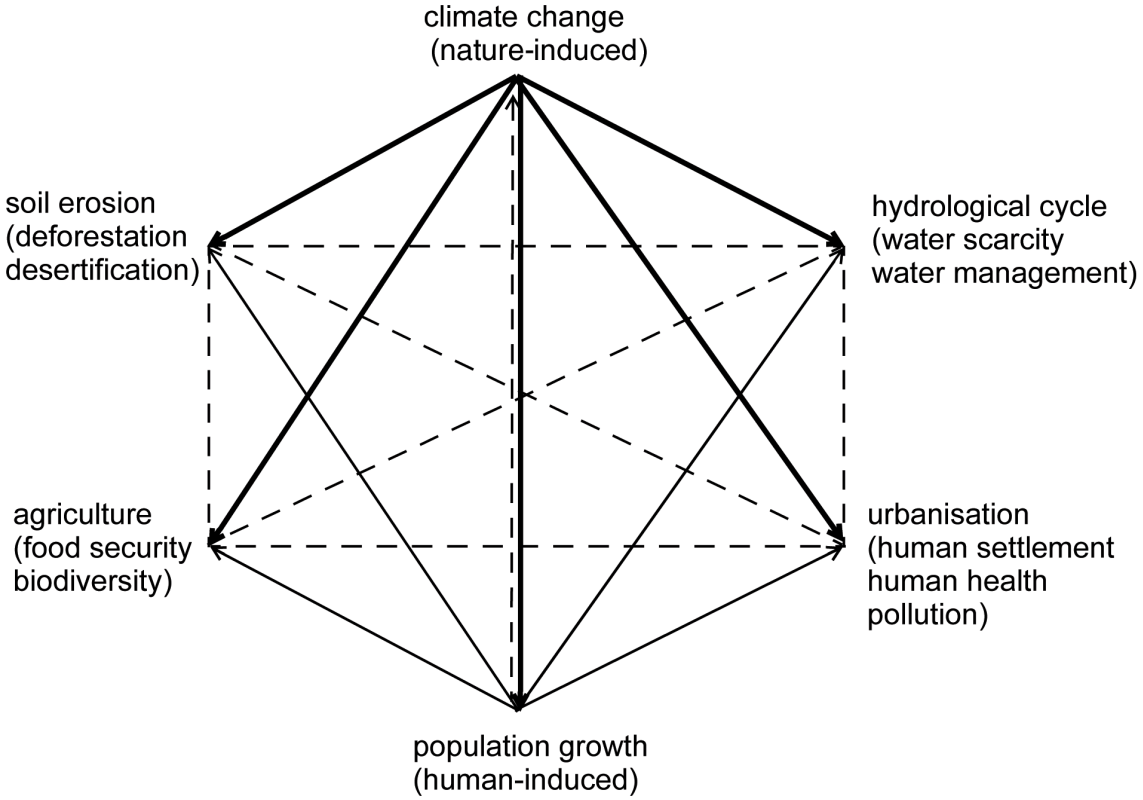
Causes (Hexagon)	Effect (Interaction)	Environmen-tal Stress	Probable Outcomes
Climate change 	**environmental** → **degradation** **(soil, water)** ↓↑→ → **scarcity** (water, food, housing)	global cond. ↓ Environ-mental stress ↑ nation. cond.	**disaster** conflict avoidance ↗ ↗ → Crisis ↘ ↘ **migration** **conflict**

Fig. 2: Interactions of Six Factors of "Survival Hexagon"



→ direct impact of nature-induced „root cause": climate change on five factors

→ direct impact of human-induced „root cause": population on four factors

- — → complex interaction among four structural factors: urbanisation, water scarci-ty, soil erosion and desertification and food scarcity and agricultural policy

Six factors of *Global Environmental Change*:

- **Nature-induced** (Earth system, physical, chemical dimensions of GEC, or **supply-side**): climate change, water, soil →*environmental degradation* (**natural** sciences: **IGBP, WCRP, DIVERSITAS);**
- **Human-induced** (biological, ecological dimensions of GEC or **demand-side**): population growth, urbanisation, food contribute to *environmental scarcity* (object: **social** sciences, **IHDP - GECHS**).

- ***Environmental degradation & scarcity*** interact, reinforce each other & produce: ***environmental stress*** that may result in **disasters, migration**, **crises**.
- The **impact** of extreme weather events due to ***Environmental degradation*** (partly due to climate change) depends on the specific vulnerabilities of societies

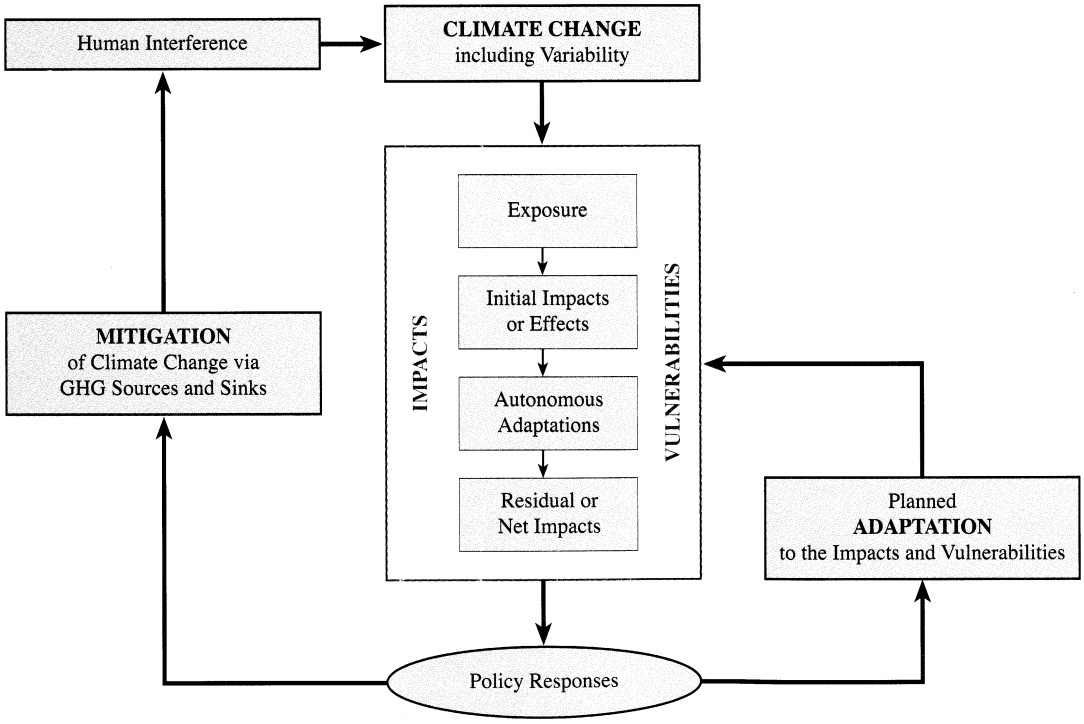
Fig. 3: Climate change impacts & vulnerability to disasters

Causes	Effect	Impacts & vulnerabilities	Outcome: hazard, disaster
▪ **temperature 2100: 1.4-5.8°C** ▪ **sea level rise: 2100: 9-88 cm**	**environmental →degradation (desertification, precipitation) ↓↑ → → scarcity**	**extreme weather events ↓ ↑ vulnerabilities** of affected regions, countr.	**Natural disasters** ▪ **storms** ▪ **floods** ▪ **drought** ▪ **forest fire**

- **Disaster reduction**: ***reduce damage*** by reducing vulnerability: short- and medium-term;
- **Disaster preparedness**: ***contain causes*** (climate ch.) & ***reduce impacts*** (extreme weather events: long-term)

4. Impact and Vulnerability due to Climate Change

Fig. 4: IPCC's assessment of climate change impacts



IPCC WG II: impacts, adaptation & vulnerability:

- assess **vulnerability** of ecological systems, socio-economic sectors, human health to climate change,
- and examine **feasibility to adaptation** (& mitigation)

Figure 5: Extreme weather events in the 21st century

Confidence in observed changes (latter half of the 20th century)	Changes in Phenomenon	Confidence in projected changes (during the 21st century)
Likely[7]	**Higher maximum temperatures and more hot days over nearly all land areas**	Very likely[7]
Very likely[7]	**Higher minimum temperatures, fewer cold days and frost days over nearly all land areas**	Very likely[7]
Very likely[7]	**Reduced diurnal temperature range over most land areas**	Very likely[7]
Likely[7], over many areas	**Increase of heat index[12] over land areas**	Very likely[7], over most areas
Likely[7], over many Northern Hemisphere mid- to high latitude land areas	**More intense precipitation events[b]**	Very likely[7], over many areas
Likely[7], in a few areas	**Increased summer continental drying and associated risk of drought**	Likely[7], over most mid-latitude continental interiors. (Lack of consistent projections in other areas)
Not observed in the few analyses available	**Increase in tropical cyclone peak wind intensities[c]**	Likely[7], over some areas
Insufficient data for assessment	**Increase in tropical cyclone mean and peak precipitation intensities[c]**	Likely[7], over some areas

IPCC WG II (2001): assessment of vulnerability of sectors, systems and regions to climate change:

- **extent** to which a natural or soc. system is susceptible to sustaining **damage from climate change**;
- vulnerability is a **function of the sensitivity** of a **system to changes in climate** (degree of response);
- **adaptive capacity:** adjustments in practices, processes, structures, offset potential of damage;
- degree of **exposure** of a system to climatic hazards;
- **Resilience:** insensitive to CC & high adaptive capacity.

Table 3: Vulnerability of key sectors to CC in Asia

Regions	Food &fiber	Biodi-versity	Water resources	Coastal ecosystems	Human health	Settle-ments
Boreal	+ ***	***	+ ***	+ **	**	***
Central	****	**	***	**	***	***
Tibet	**	***	**	not applic.	no inf.	no inf.
Temperate	****	***	****	****	***	****
South A.	****	***	****	****	***	***
South East	****	***	****	****	***	***

****** highly, *** and ** moderately vulnerable , + slightly resilient**

Table 4: Potential land loss & population exposed in Asia

Country	SLR (cm)	Potential land loss		Population exposed	
		km^2	%	million	%
Bangladesh	45	15,668	10.9	5.5	5.0
		29,846	20.7	14.8	13.5
India	100	5,763	0.4	7.1	0.8
Indonesia	60	34,000	1.9	2.0	1.1
Japan	50	1,412	0.4	2.9	2.3
Malaysia	100	7,000	2.1	>0.05	>0.3
Pakistan	20	1.700	0.2	n.a.	n.a.
Vietnam	100	40,000	12.1	17.1	23.1

5. Vulnerabilities & Risk due to Environm. Degradation

Literature: threat, challenge, ***vulnerability*** and ***risk***.

⇨**In GEC research *vulnerability assessment* refers to** the evaluation of the ***sensitivity of a particular ecosystem***, ***resource or activity*** to a broad range of environmental & socio-economic ***stresses***. **Kasperson:** Assessment could be conducted through critical thresholds of different stresses & risks.

- **Hewitt:** vulnerability perspective considers how communities are exposed to dangers, the ways in which they are readily harmed, and the protection that they lack.

➔**Vulnerability to a hazard** is created by **social order** on division of labour, **cultural values** & on **legal rights**. **Relative condition**, defined & assessed with safety of others.

- **Ulrich Beck** distinguished: predictable ***risks*** & unpredictable ***threats***, 3 global threats: 1) ***wealth-driven*** ecological destruction & technological-industrial dangers (global warming); 2) risks related to ***poverty*** (envir. destruction); 3) *weapons of mass destruction*.

➔**Michael Zürn:** difference environmental destruction due to **well-being** (consumption) & **poverty** (famine).

Kasperson/Kasperson distinguish *systemic* risks (glo - bal warming) & *cumulative environmental change* that may cause short- and long-term consequences.

- **Global environmental risks** "threaten internat. security & peaceful relations among states" contribute to differentiation of wealth, competition, tensions, conflict".
- **Criticality** from lesser environmental threats: environ mental *endangerment, impoverishment, sustainability*.

- **Such regions**: *environmental degradation* (water, air, soil), *wealth* (GNP), *well-being* (longevity, mortality rates) *economic and technological substitutability*.
- Before environmental criticality: **warning signals** alert experts & society to impending/**recurring damage**.
- **Response** depends on political & societal **sensitivity**, on available **resources** to cope with challenges.
- **Key driving forces**: a) **population growth**, b) **technological capacity**, c) **affluence/poverty**, d) **political-economic forces** e) **beliefs and attitudes**.
- External factors were more important. They criticised **overstressing affluence and neglecting poverty**.
- **Regional level**: 1. *Vulnerability and overshoot* … 2. *market conditions and overcapitalisation*… 3. *loss of options and safety nets*."
- Discussed **societal responses,** specificity, context, relationship between environmental degradation, improved reg. well-being, symptoms of emerging criticality, spatial and temporal categories a) *peripheral or marginal situations,* b) *agglomerated environm. stressors*.
- On **causality** they noted a variety of human causation, **no single dominant human driving force** can explain environm degradation or complexity of change.
- **Impacts of environmental degradation/stress:**
  - **Water**: ocean circulation; sea level; water cycle;
  - **Food**: carbon & nutrient cycles; air quality; product.;
  - **Soil**: product. of agricultural, grazing, timber lands;
  - **Geographic** distribution, survival of plant & animals,
  - **Health:** including vectors, human disease.

GCDR: 90% of fatalities in the South**: high vulnerability**

IDNDR Coping Study on Risk & Society (1999): **Africa:**

- Disasters increase due to increasing vulnerability to hazards
- **Vulnerability** to disasters due to impoverishment of rural poor:
  - **Circle of survival**: *growing population*;
  - increasing *utilisation of natural resources*;
  - land clearing, firewood, overgrazing, soil erosion, desertification; collapse of ecosystems, hunger, malnutrition & partial recovery from drought (**cycle repeats**);
  - **migration** to cities by rural poor and refugees,
  - unplanned occupation of **high risk peri-urban** areas
  - few jobs, rising crime rate, breakdown of civil administration, **political instability**, civil war, cross-border conflict, **anarchy** (state failure).

UNDP: Linking Poverty Reduction Environm. Managem.

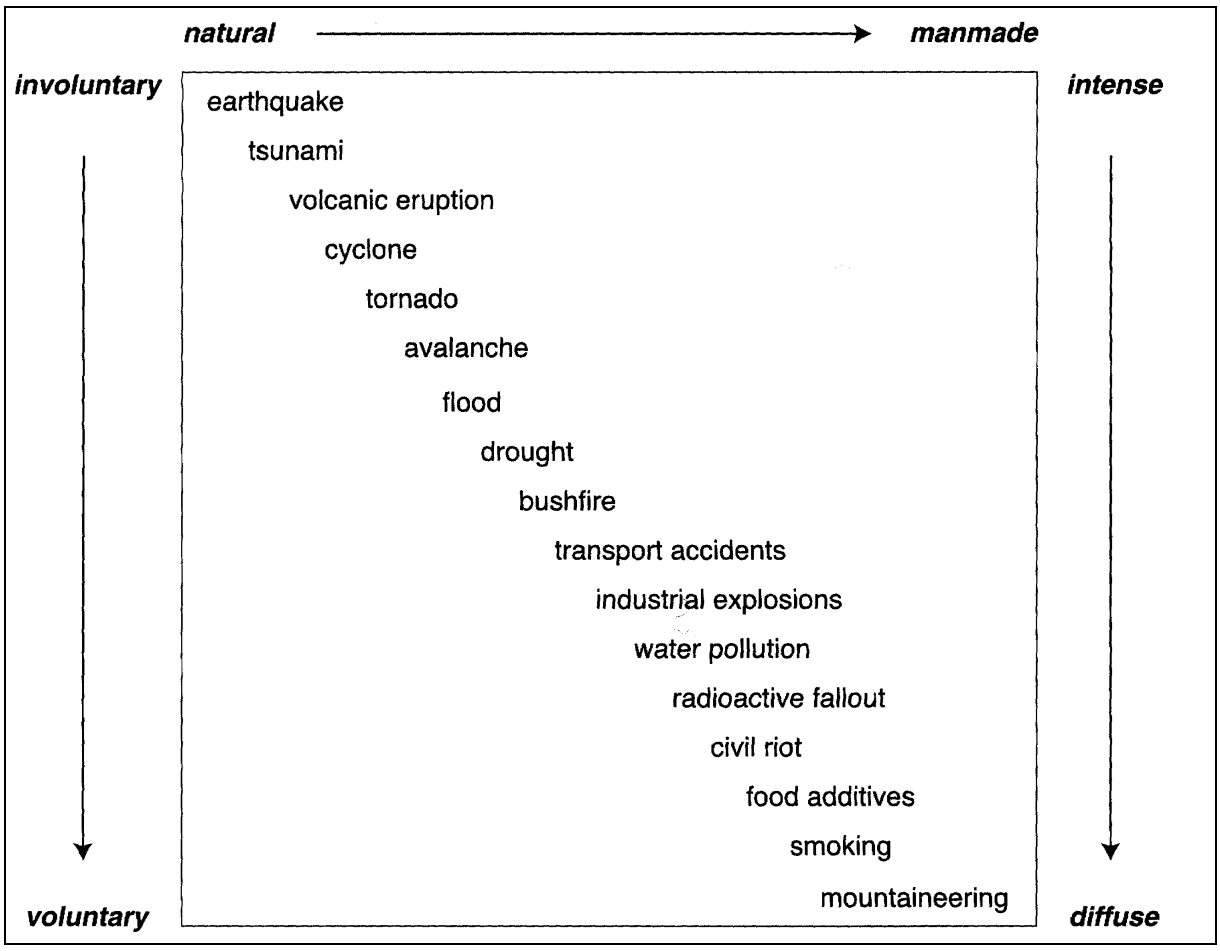
- **Poor people** are highly **vulnerable to environmental disasters** & to environment-related **conflict**. Drought, floods & other disasters can wipe out any development gains that poor people make. **Frequency & severity is expected to increase with climate change**.
- **Competition for scarce natural resources** contributes to **conflict** and **complex humanitarian crises**.
- ***Ecological fragility & likelihood of natural disasters*** **contribute to *vulnerability*** (to natural **disasters**).
- Expanded social protection, better access to climate information & related measures to protect infrastructure and **improved disaster preparedness** can help to **reduce and mitigate the poor's exposure to risk** and **vulnerability to environmental shocks**.

6. Hazards & Disasters due to Environmental Degradation

Hazard: result of a natural event or of a human induced process that can be increased/reduced by human actions.

- **Hazards impact on**: *people* (death, injury, diseases); *goods* (property damage, economic loss); c) *environment* (loss of flora, fauna, pollution, loss of amenity).
- **Environmental hazards** may be both **natural** or **man-made** with *intensive* or *defuse* effects.
- **Natural environm. hazards:** caused by external forces.
- **Human sensitivity** to hazards: combination of *physical exposure* & *human vulnerability* (due to poverty).
- ***Technological* hazards** or disasters are created by the spread and failure of high-risk technologies.
- **K. Smith**: working definition of **environm. hazards**: Extreme geophysical events, biological processes, major technolog. accidents: concentrated releases of energy or materials, pose an unexpected **threat to human life** & can cause **significant damage** to goods & environment.
- **Five types** of environmental hazards: a) ***atmospheric*** (rain, hail, storm); b) ***hydrologic*** (floods, drought); c) *geologic* (landslides, earthquake, volcanic eruption); d) *biologic* (epidemic, forest fires); e) *technological.*
- Source: **hydro-meteorological**, geophysical, manmade
- Scope: ***accidents***: local; ***disasters***: regional, global.
- Time: ***short-term* (local); *medium-term*: LUC, deforestation; *long-term* (global):** climate change: temperature rise, SLR
- **Environmental disasters**: result of **human factors** & **physical triggers** (environmental events),
- Natural disasters result of "**ecologically destructive practices & from putting ourselves in harm's way"**

Fig. 6: Smith: Spectrum of environmental hazards



Climate, extreme weather rel. hydrometeorological events

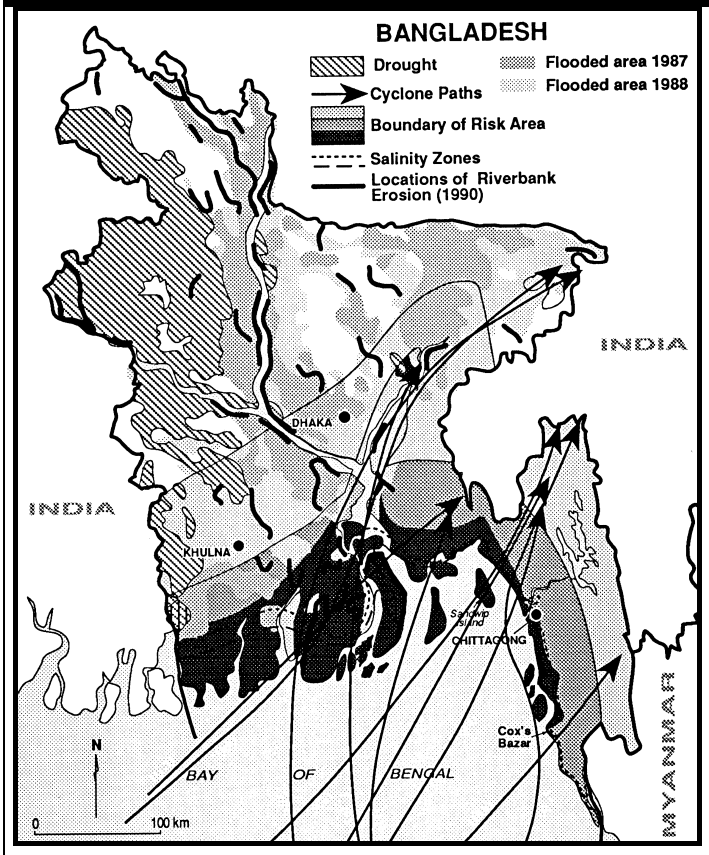
- **Cyclones** (with storm surges): most destructive storm, affect coast communities in (sub)tropical countries with high population; **progress** in forecasting & early warning to **reduce their impact** (WWRP)
- **Storms** (large-scale extra tropical, local st., tornados):
- **Floods:** in river floodplains & coastal regions; **progress** in forecasting, early warning, preparedness
- **Extreme temp.** (cold, hot): deaths, drought, forest fire
- **Drought:** natural & human causes (population growth, agricultural, forestry practices, poor planning, war) ⇨**famine, migration, environmental degradation**

7. Bangladesh Case: Human Survival at Risk?

➔**Short-term hazards**: cyclones, floods, drought

➔**Long-term challenges**: SLR and population growth

7: Climate-related Natural Events



8: SLR Scenarios for Bangladesh

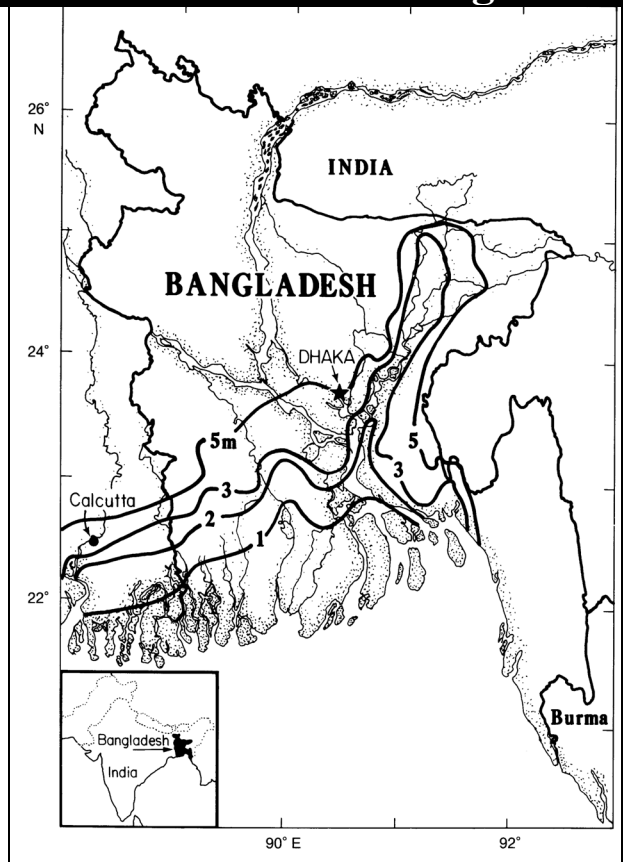


Table 5: Impacts of Climate Change on Security & Survival

	II: Bangladesh	III: Egypt
Climate zone	tropical zone	semi-arid, arid
Impacts	water scarcity	SLR, temper. rise, drought
Impacts on soil, water, agriculture, settlements, health	loss by SLR cyclones, water diseases	loss of best land, yield decline, heat waves, diseases
Security perspective	human security	nat./reg. security

Bangladesh: critical vulnerability to SLR due to low elevation, **high population density** (1950: **290;** 2000: **891**; 2050: **1,515 pers./km^2**), critical impacts on wetlands, crops. **HDI**: 132 (UNDP 2001); **GDP**: **336 $** ('95); **1.570 $** (ppp.)

Bangladesh: severe natural hazards & 4 natural events:

- **Cyclones, floods, riverbank erosion**, salinity problems
- **Droughts, floods, riverbank erosion** in MW to NW;
- **Flooding & riverbank erosion** in *river-margins zone*.
- **Major cities** & **life-line systems:** several nat. events.

Table 6: People Killed and Affected by Disasters

	1981-1990		1991-2000		2000
	people	average	people	average	people
killed	27,903	2,790	147,753	14,775	681
affected	228,794,460	22,879,446	90,473,239	9,047,324	2,826,122

Since 1960: 600,000 died from cyclones & storm urges.

Bangladesh is a *primary victim of extreme weather events* that forced people to leave homes, rural areas & country.

Future vulnerability to CC without effective counter-measures over the next 40-60 years:

- **Multi-hazard areas** would continue as such.
- **Cyclone, flooding, riverbank erosion**, salinity in *coastal zone* may intensify, more frequent & spatially extended.
- **SLR would exacerbate effects on coastal margin** by alerting erosion rates; saline intrusion further inland; 'shrinking' protective barriers; increasing flooding by cyclone storm surges.
- **Flooding, riverbank erosion** in *river-margins zone* may intensify, become more frequent. Design levels of existing protective barriers would 'shrink'.
- **Drought** in *mid-western zone* may reduce in frequency & intensity, although severe flooding & riverbank erosion would be maintained and may even increase.
- Outside ***multi-hazard core zones***, severe events may become more frequent & intense, except for drought.

Table 7: Popul. Growth in Million, 1950-2050 (Med. V.)

Countries↓	1900	1950	2000	2015	2050
Bangladesh	29.0	41.783	137.439	183.159	265.432

Urb.: Bangladesh, 1950: 4,2%, 2000: 21,2% , 2030: 40.6%

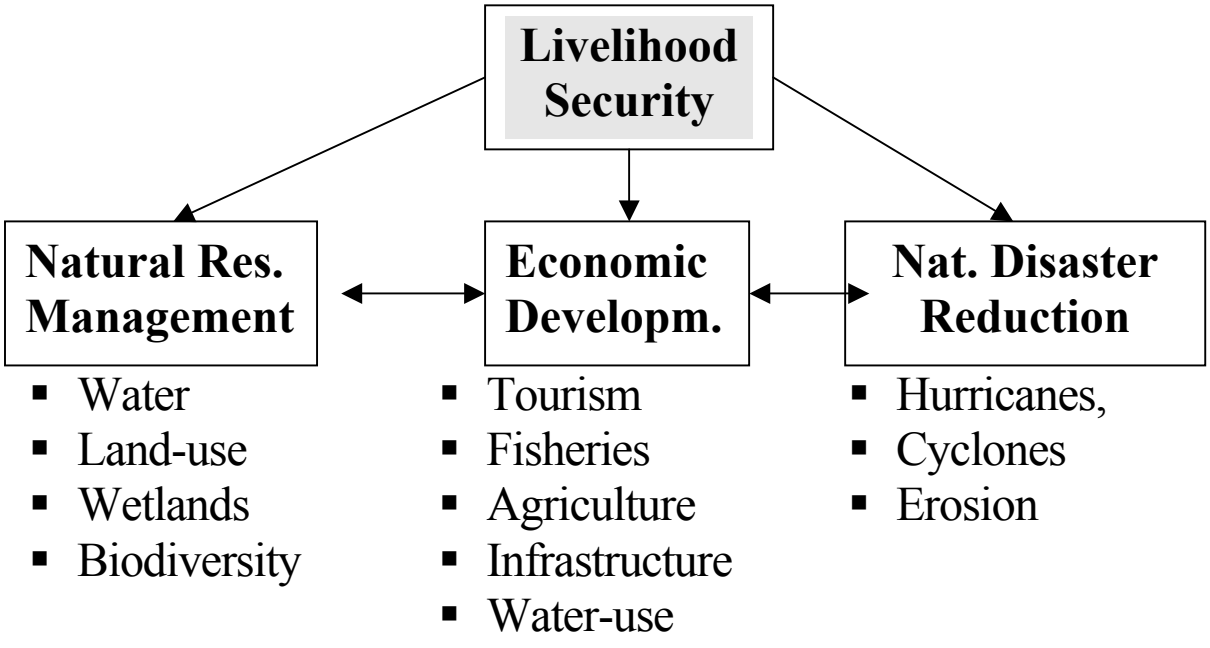
City	1950	1975	2000	2005	2010	2015	'75-'00	'00-'15
Dhaka	0.42	2.17	12.3	15.4	18.4	21.1	6.9%	3.6%

On Coastal Zone Management OECD EnPoC (2002) suggested to link poverty reduction & environment protection: synergies in investment on adaptation measures.

Livelihood security: through 3 types of activities:

- Natural resource management (water, land-use, biod.)
- Economic development (tourism, fisheries, agriculture, infrastructure/settlements, land-use.
- Nat. disaster management: reduce vulnerability to hurricanes/cyclones, storms/floods, coastal erosions.

Figure 9: Climate & development connections in coastl.



OECD: adaptation to current climate variability: assess vulnerability to CC, linkage between adaptation options & sustainable development in coastal zones.

- Nat. catastrophes from **1947-2001 killed ca. 1 mill**.
- **Several million Bangladeshi** migrated since 1947 to India, West Pakistan, Persian Gulf, to OECD countr.
- B. had severe **social challenges** & **nat. catastrophes**.
- **Social tension** repeatedly led to coups, murder of key politicians, violent clashes between internal refugees with tribal people & between B. immigrants in India.

Saleemul Huq, Chairman, Bangladesh Center for Advanced Studies in Dhaka, on climate change **impacts for Bangladesh**:

- ***Sea Level Rise*:** 1 m SLR rise will inundate 17 % of Bangl. 20 million people live there. Impact of rising salinity in coastal lands & waters will affect agriculture & fresh water.
- ***Increased temperatures*:** rise in global temperat. of 2 - 5°C until 2100. ⇨ Increase in extreme temperatures will lead to more **frequent and more severe droughts**. Bangladesh may be hit **more severely by droughts than by floods**. …
- ***More intense cyclones*:** Models differ on frequency of tropical cyclones**. Intensity & destructive power of cyclones** are likely to be **greater** as sea surface temperature rises.
- ***Greater flood intensity*:** Exact impact of **global temp**. on S. **Asian monsoon** rains are difficult to predict, monsoon is likely to become **more erratic with climate change**. Possibility of more frequent & more intense floods are likely in Bangladesh, through combination of **monsoon rainfall** with increased **snow melt** from Himalayan mountains. Global CC will cause more flooding & more droughts in Bangladesh**.**
- ***Health impacts*:** CC impact on health remains **uncertain**. IPCC report states that **increased incidence of vector borne** as well as **water borne pathogens** are likely with CC. … The recent outbreak of **Dengue fever** in Bangladesh may be a harbinger of things to come.

8. Disaster Reduction and Preparedness

Basic Terminology on Disaster Management

Pre-disaster Phase (Disaster Reduction): Activities

- **Prevention:** for permanent protection from disasters, physical protective measures, legislative measures
- **Mitigation:** advance measures to decrease or eliminate impact on society and environment
- **Preparedness:** minimize loss of life & damage, temporary removal of people & property from threatened location & facilitate effective rescue, relief, rehabilitation

☞**Avoidance:** avoid the impact and reduce the vulnerability to extreme weather events due to climate change

Post-disaster Phase (Disaster Response)

- **Relief:** assistance during, after disaster to meet life preservation and subsistence needs (emergency)
- **Rehabilitation:** restore a stricken community to former living conditions, encourage adjustments
- **Reconstruction (recovery):** re-establish a community after a period or rehabilitation after a disaster: perman. housing, full restoration of services, pre-disaster state

GCDR: Rio + 10: Reasons for increasing disasters:

- **Population growth** and increasing poverty in DCs;
- **Migration** due to destruction of basis for livelihood;
- Increase of **vulnerability of infrastructure**;
- **Resource depletion** & **environmental pollution**

AA: Disaster Prevention in support of SD :

- **Biodiversity loss:** balance resource protection & use
- Lack of integrated approach to **flood management;**
- Increased vulnerability of **urban settlements.**

9. A Comprehensive Strategy for Disaster Reduction and Preparedness by Issue and Community Linkages

Policy contexts:

- **Disaster Reduction Strategy:**
  - **IGOs:** UN: ISDR, UNDP, UNEP, DHA, OCHA, IASC;
  - **EU:** EC Humanitarian Office (ECHO);
    - **EU** statements: Council to EP;
    - **EU** interreg. summits: ASEM, EU-LA, EU-Africa;
    - Instruments:
      - **Science & technology;**
      - **Development cooperation:** effectiveness and impacts of disasters on investments
  - **NGOs:** hum. organisations: Red Cross & Red Cresc.
- **Climate Policy context:** UNFCCC, KP, IPCC;
- **Development context:** OECD, Env. Directorate, EPC, WP on Global and structural Policies (2002): connect development and climate policy: to limit vulnerability, increase adaptive capacity, implement adaptation
- **IFIs:** World Bank, EIB, GEF (UNEP/UNDP)

Elements of a disaster avoidance strategy

- **Short-term** measures: **early warning**, shelter etc.
- **Medium-term** measures: **adaptation & mitigation**
- **Long-term** measures: **climate change policy (KP)**

Many Strategies: Lack of coordination & implementation

- **UNEP** Strategic Framework on Emergency Prevention
- **UNFCCC:** adaptation & mitigation of CC impacts
- **ISDR:** International Strategy on Disaster Reduction
- **Development:** OECD: development and CC impacts

UNEP Strategic Framework on Emergency Prevention, Preparedness, Assessment, Mitigation and Response

- **UNEP Mandate:** Feb. 1997
- **1998**: env. emerg. response capacity, early warning assessm.
- **2000:** to develop strategy on environmental emergencies
  - early warning for prevention;
  - post-incident refining of policies and practices;
  - globally reinforce broad prevention agenda.
  - Integrate short, medium & long-term activities.
  - Intensify cooperation and coordination: OCHA, ISDR, UNHCR, UNDP, WMO, WHO, IMO, UNICEF, OECD, UNCHS, UN-ECE et al., World Bank et al.
  - Agenda for Action: APELL, GRID, Balkans TF:
  - Future actions:
    - Prevention and Preparedness
    - Environmental Law
    - APELL Programme
    - Cleaner Production Programme
    - Assessment and Early Warning
    - Mitigation and Response
    - Communication and Publicity
    - Resource Mobilization

Climate Change: UNFCCC, Kyoto Protocol, IPCC

Marrakesh Accords (2001): climate impact *reduction,*

- UNCCC,Art.3.3: States should take precautionary meas.
- UNFCC, Art.4.8; KP Art. 3.14: „insurance“
- UNFCC: medium & long-term measures

Bonn Agreement (2001): COP-8: insurance related action

- B.Müller (OIES): Need for climate disaster relief: for a FCCC Disaster Relief Fund (adm. by OCHA), IASC

ISDR Background Document for WSSD (2002): Disaster Risk and Development

- **Reverse Trends of vulnerability to natural hazards**
  - human vulnerability, env. degradation, impoverishment;
  - trends related to climate and disasters
  - migration and unplanned urbanisation
  - increasing infrastructure vulnerability
- **Strategies for developm. policies reduce vuln. to disasters**
- **Specific Action:** capacity building, advocacy of integration, risk assessment, public awareness programmes, comprehensive urban development strategy, early warning systems

International Strategy for Disaster Reduction (ISDR)

Draft for WSSD (Johannesburg), 9.5.2002

32. Develop and implement ISDR: internat, reg. nat. action
  - Provide necessary financial means to ISDR trust fund;
  - Address vulnerabilities to nat. disasters, multi-hazard approach, strengthen inst. Capabilities of countries, internat. joint observation, research, knowledge transfer;
  - Implement wetland restoration, better land-use planning, techniques for assessing effects of CC, assistance to vulnerable countries to mitigate this impact;
  - Dissemination of traditional, indigen. knowledge;
  - Establish a global early warning system in framework of ISDR (WMO, UNEP, FAO): nucleus of network;
  - Establish global, regional, nat. strategies & institutions on medium & long-term action to prevent, mitigate & repair damage: technical, scientific, financial assistance;
  - Promote cooperation in prevention, reduction, relief & post-disaster rehabilitation of disasters for environment

10. Conclusions: A Human Security Perspective on Disaster Reduction, Preparedness and Avoidance

IPCC, Int. Fed. of Red Cross, Insurance industry agree:

- **Natural hazards and disasters have increased**;
- **Damage**s & human **fatalities** & **affected** have risen;
- Most severe impact & **highest fatalities** where **vulnerability is highest**: in least developed countries;
- **Bangladesh**: 1 million fatalities (1950-2000) worst case;
- **Disasters** are partly the result of natural climatic variation & anthropogenic environmental stress caused by environmental degradation and scarcity.
- **Natural hazards and disasters** have enhanced human insecurity: forcing people to leave their home, village, town or country due to severe distress and in search for human survival and livelihood.
- From a **social science** perspective: **human security** focusing at **basic human needs** for **food, housing**, well-being & **survival** may be best level of analysis.
- **Food security** may be best sector approach for analysing the impacts & vulnerabilities towards disasters
- **Disaster reduction** should be added to **GECHS agenda**

Conclusions on Linkages with Disaster Reduction

- Disaster reduction must be linked to poverty eradication;
- Disaster reduction, human vulnerability, env. degradation;
- Disaster reduction, urban settlements and globalisation

Major political deficits

- Many strategies, strategic frameworks but this is lacking:
- Efficient & result oriented implementation of conceptual & scientific knowledge within & outside of UN
- Needed: Interdisciplinary and intersectoral cooperation.

Conclusions & suggestions for future research on 4th phase of environmental security studies

- **1st phase**: impacts of wars on environment (Westing);
- **2nd phase**: case studies impacts of on environmental scarcity (degradation) on conflicts (prevention): Homer-Dixon (Canada); Bächler/Spillmann (Switzerl.)
- **3rd phase:** case studies, syndromes (mitigation); simulations; water data bases; inclusion in war data bases;
- **4th phase: Environmental security & peace project**
  - ***multi- & interdisciplinary***: include natural science expertise on environmental degradation;
  - ***focus***: interregional participation: North/South;
  - ***broader scope*** on **outcomes**: besides env.-induced migration & conflicts, also: **disasters, crises**, **prev.**
  - **Mediterranean:** 2 workshops (2 Springer books)
    - o **Canterbury**: concepts, Survival Hexagon: 20th C.
    - o **Valencia**: env. challenges: Hexagon for 21st Cent.
- **Proposal for GECHS:** add disaster reduction/preparedness
- **Method: Regional and country impact studies:**
  - **CC impact research**: structured, focused comparis.
  - **Vulnerability and risk assessment**: for natural hazards and disasters (development research)
  - **OECD**: Env. Policy Com., WP on global & struct. policies

Conclusions & suggestions for future political activities

- **Dual Goal:** mitigate impact & reduce vulnerability
- **Focus: Climate protection**: adaptation & mitigation; **development policy:** disaster reduction, preparedness;
- **New Task:** for policies of crisis & conflict prevention: strategy for **environmental conflict avoidance**: scientific input crucial (***problem recognition, anticipatory learning***)