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Peace and Conflict in a Time of Globalisation

Sopron, Hungary, 5-9 July 2004

Friday, 9 July 2004, 11:00 - 12:30

Plenary: Peace and Ecology

Hans Günter Brauch

Free University of Berlin, OSI & AFES-PRESS

Global Environmental and Climate Change and Conflicts:

Towards a Peace Research Agenda for Environmental Conflict Avoidance in the 21st Century

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Contents

1. Environment and Security Linkages

2 key questions: Are there linkages between Global Environmental & Climate Change and Conflicts?

- **How to analyse them from a security perspective?**
- **Environment:** ***Encyclopaedia Britannica*** **(1998) defined 'environment':**

"complex of physical, chemical, & biotic factors that act upon an organism or an ecological community & ultimately determine its form and survival".

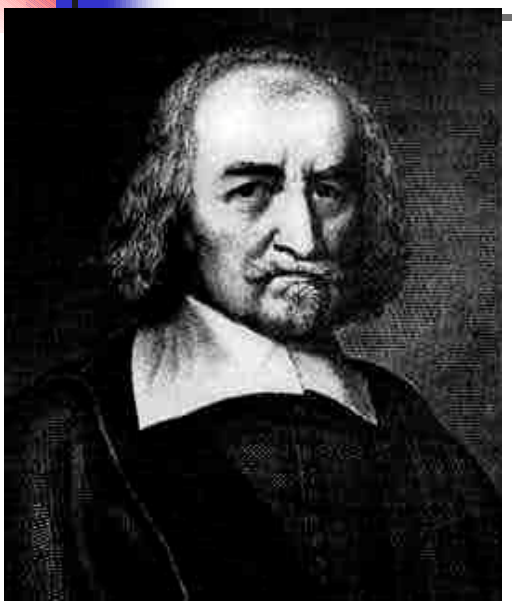
- **Neo-Malthusian: Resource scarcity (Lester Brown, Norman Myers)**
- **Cornucopian: Abundance (B.Lomborg: Skeptical Environmentalist)**
- **Pragmatic multilteralist: cooperation in int. organisations matters**

Arnold Wolfers (1962): objective vs. subjective security:

„Security, in an *objective sense*, measures the absence of threats to acquired values, in a *subjective sense*, the absence of fear that such values will be attacked."

Subjective security perception depends on worldviews or traditions.

1.1. English School: Hobbes, Grotius & Kant



Hobbes (1588-1679)

Grotius (1583-1645)

Kant (1724-1804)

Security perceptions depend on worldviews or traditions

- **Hobbessian pessimist:** ***power*** **is the key category (narrow concept)**
- **Grotian pragmatist:** ***cooperation*** **is vital (wide security concept)**
- **Kantian optimist:** ***international law*** **and** ***human rights*** **are crucial**

1.2. Ideal type worldviews on security and standpoints on environment

Worldview / Tradition on security (✍) Standpoints on environmental issues (✍)	Machiavelli, Hobbes, Morgenthau, Waltz (pessimist, realist school)	Grotius, *Cooperation is needed, matters* (pragmatist)	Kant *International law matters and prevails (Democratic peace)* (neoliberal institu-tionalistoptimist)
Neomalthusian *Resource scarcity* (pessimist)	I George W. Bush-Administration ?	II ✍	III ✍
Reformer, *Multila-teral cooperation solves challenges* (pragmatist)	IV	V UN system most EU states (my position)	VI
Cornucopian *Technological inge-nuity solves issues* (neoliberal optimist)	VII George W. Bush-Administration ?	VIII Bill J. Clinton Administration ?	IX Wilsonian liberal optimism

1.3. Widening of Security Concepts: Towards Environmental Security

4 trends in reconceptualisation of security since 1990:

- **Widening** (dimensions, sectors), **Deepening** (levels, actors)
- **Sectorialisation** (energy, food, health), **Shrinking** (WMD, terrorists)

Dimensions & Levels of a Wide Security Concept

Security dimension? ? Level of interaction	Mili-tary	Politi-cal	Economic	Environ-mental ?	Societal
Human individual ?			Food/health	Cause & Victim	Food/health
Societal / Community				✍✍	
National	Shrinking		Energy se.	✍✍	
Internat. / Regional				✍✍	
Global / Planetary ?				GEC	

1.4. Environmental & Human Security

Expanded Concepts of Security (© Møller, 2003)

Label	Reference object	Value at risk	Source(s) of threat
National security	The State	Territ. integrity	State,substate actors
Societal security	Societal groups	Nation. identity	Nations, migrants
Human security	Individ., mankind	Survival	Nature, state, global.
Environmental sec.	Ecosystem	Sustainability	Humankind

Human security: Referent: individuals and humankind. [Human Security Network]

- **Values at risk: survival of human beings and their quality of life.**
- **Major source of threat: nature (global environmental change), globalisation, nation state with its ability to cope with this dual challenge.**

Environmental Security: Referent: Ecosystem; Value at risk is sustainability.

- **Major challenges: global environmental change & humankind,**
- **Focus: Interactions between ecosystem & humankind, impact of global environmental change on environmental degradation, of increasing demand on environmental scarcity & environmental stress. [No Environment Security Network of States, & IGOs & NGOs]**

1.5. Human Security Network Members

NATO	EU	Third World
Canada		Chile Jordan Mali Thailand South Africa (observer)
Greece Nether-lands	Austria Ireland Slovenia	
Norway	Switzerl	

Anti-pers. Landmines, Intern. Criminal Court, protection of children in armed conflict, control of small arms & light weapons, fight against transnat organized crime, human development, human rights educat., HIV/AIDS, implement. of intern. humanitarian & human rights law, conflict prevention

So far no environmental security issues on the agenda of this HS-Network.

The Network has an interregional & multiple agenda perspective, strong links to civil society & academia.

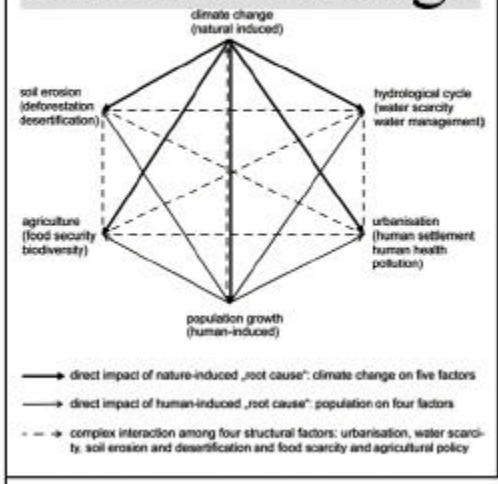
The Network emerged from landmines campaign at a Ministerial, Norway,1999.

Conferences at Foreign Ministers level in Bergen, Norway (1999), in Lucerne, Switzerland (2000), Petra, Jordan (2001) Santiago de Chile (2002), Graz (2003), Bamako, Mali (May 2004).

2. Three Stages of Research on Environmental Security (1983 - 2004)

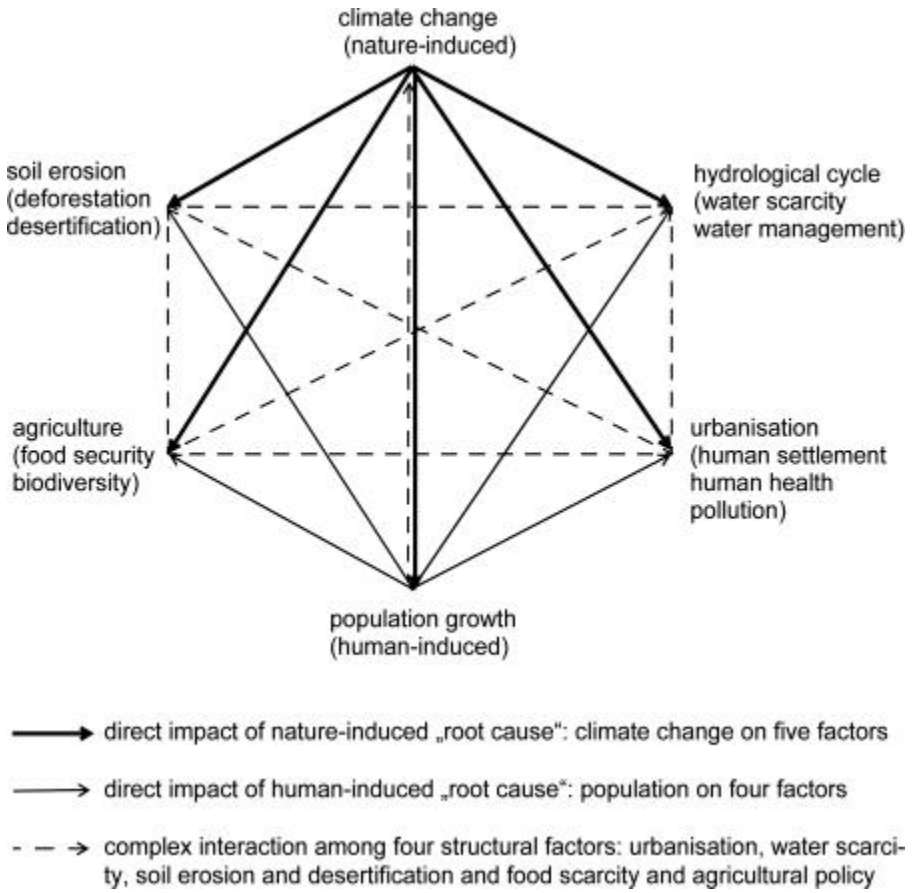
- **First conceptual phase (1983-1990): Impacts of wars on environment (Westing), since 2001: UNEP-PCAU debate on env. security as a national security issue (Ullman, 1983; Mathews, 1989, N. Myers, 1989)**
- **Second empirical phase (1991-2000): Canadian (Th. Homer-Dixon) & Swiss (ENCOP, Bächler): case studies on env. scarcity, degradation as causes of environmental stress & conflicts and env. cooperation (ENCOP)**
- **Third Phase: methodological diversity (since ca. 1995: e.g. GECHS, state failure project, Swiss project: mitigating syndroms of global change, PRIO: Civil War research: ongoing, many directions, little synthesis)**

3. Model: Global Environmental Change, Environmental Stress & Fatal Outcomes

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

3.1. Environmental Challenges in the 21st Century: Survival Hexagon

Survival Hexagon: 6 factors



Environmental security is affected by

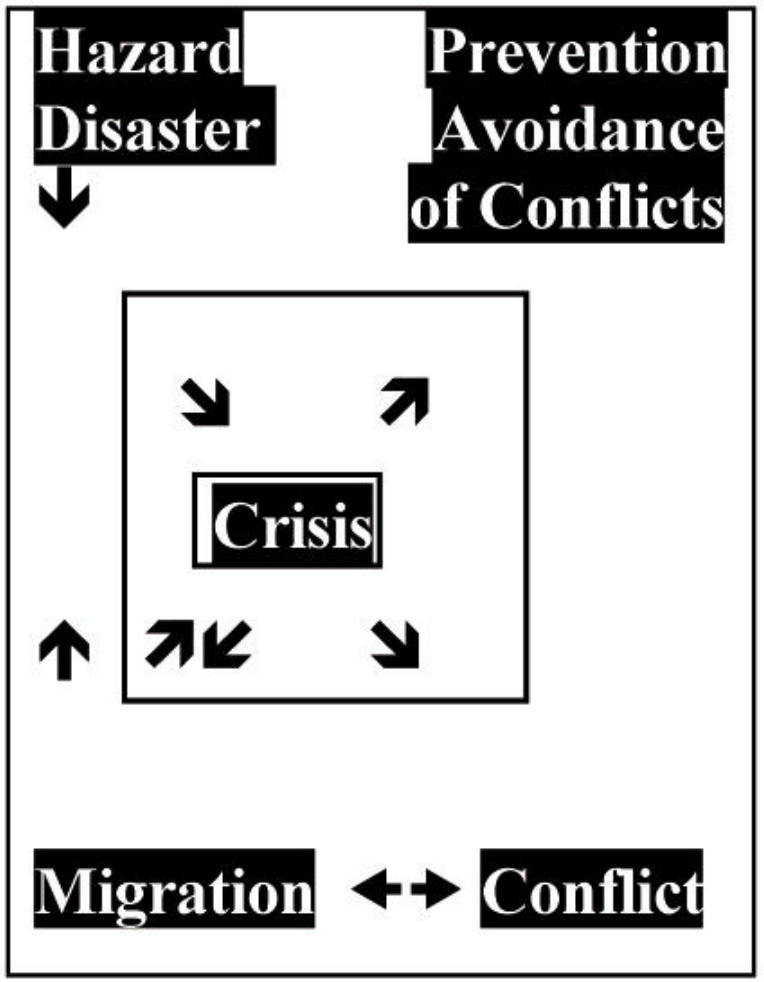
Nature & human-induced

- **Air:** Global climate change
- **Soil** degrad., desertificat.
- **Water** scarcity, hydrological cycle

Human-induced factors

- Population growth
- Urbanisation
- Food & Agriculture

3.2. Fatal Outcomes: Linking Natural Disasters with Societal Consequences



- Much knowledge on the factors:
  - Hazards, migration, crises, conflicts
- Lack of knowledge on linkages among fatal outcomes
  - Disasters & disaster-ind. migration
  - Famine & environm.-ind. migration
  - Conflicts & conflict-induced migration
- Lack of knowledge on societal consequences: crises / conflicts
  - Domestic / internat. crises / conflicts
  - Environmentally or war-induced migration as a cause or consequence of crises and conflicts

4. Climate Change and Conflicts

Hobbesian: http://halfgeek.net/weblog/special/gwreport/Pentagon.html

Grotian: http://www.bmu.de/files/climges.pdf

- H.G. Brauch (AFES-PRESS)
- Contract Study for German Environment Ministry, Nov. 2002
- *The purpose is to provide empirical evidence on climate change and conflicts & to contribute to the national & international debate on climate protection.*
- Contribute to crisis prevention & crisis management & provide additional arguments for precautionary & ambitious climate protection policy.

- Peter Schwartz/Doug Randall
- Contract Study for DoD, Net Assessment, Oct. 2003
- *The purpose of this report is to imagine the unthinkable – to push the boundaries of current research on climate change so we may better understand the potential implications on United States national security.*
- Vantage point: Hobbesian
- Neo-Malthusian pessimist & Cornucopian optimist
- Pentagon, US national security

4.1. Global Warming vs. Cooling: Slow-Onset vs. Abrupt Climate Change

- Science Context: 3 IPCC Assessment Reports (10990, 1995 & 2001) & Reports
- Arhennius Hypothesis of 1896: burning of hydrocarbons con-tributes to global warming
- Basis of political agenda set-ting of Reagan Administ. 1988
- Increase in energy consump-tion contributes to: a) temper ature increase. b) sea level rise
- Basis: of UNFCCC & IPCC

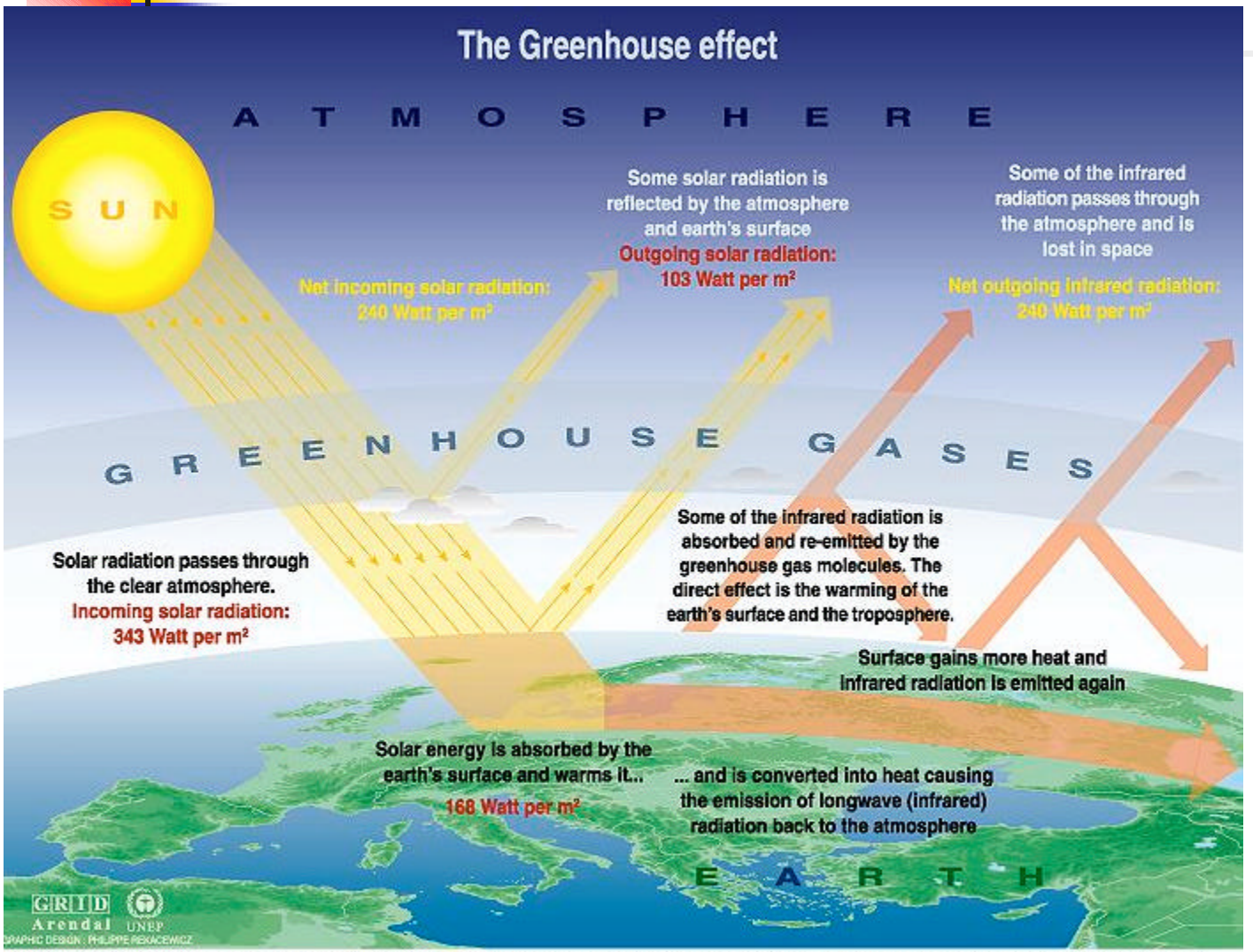
- Scíence Context: Rahmstorf (PIK) hypothesis: on sudden change in the Gulf stream,
- US Nat. Academy of Science: *Abrupt Climate Change: Inevitable Surprises* (2002)
- J. Marotzke,Kiel (1990, 2000)
- Mike Hume: Tyndall Centre
- Robert Gagosian, President of Woods Hole Oceanographic Institute (2004)
- Pittinger/Gagosian (10/2003)

4. 2. Climate Change and Conflicts? Hobbesian vs. Grotian Perspectives

- **Hobbesian diagnosis: P.Schwartz, Doug Randall: *An Abrupt Climate Change Scenario and Its Implications for US National Sccurity*, Oct 2003, for DoD, NA (worst case)**
- **Focus: on one specific possible consequence of Global Warming: Regio nal Chilling (Gulf Stream collapse)**
- **US: European migration to US,**
- **Climate Refugees from Northern and Central Europe to the Mediterranean and to North Africa**

- **Grotian Diagnosis: H.G. Brauch: *Climate Change, Environmental Stress and Conflicts, Fed. German Min. of Environment* (Nov. 2002)**
- **Focus: Interaction between Global Environmental Change and Fatal Outcomes, case studies: Mexico, Bangladesh, Egypt, Mediterranean**
- **Distress migration: from Nile Basin, across the Mediterranean, major human disasters, increase in hydro-meteorological hazards in the Mediterranean: storms, droughts, flash floods.**

4.3. Greenhouse Hypothesis



Sources: Okanagan university college in Canada, Department of geography, University of Oxford, school of geography; United States Environmental Protection Agency (EPA), Washington; Climate change 1995, The science of climate change, contribution of working group 1 to the second assessment report of the intergovernmental panel on climate change, UNEP and WMO, Cambridge university press, 1996.

- **Burning of hydrocarbons (coal, oil, gas) increases the concentration of CO2 in the atmosphere**
- **Results in in-creasing aver. temperature & sea level rise**
- **Serious impacts: precipitation, desertification & food yields**

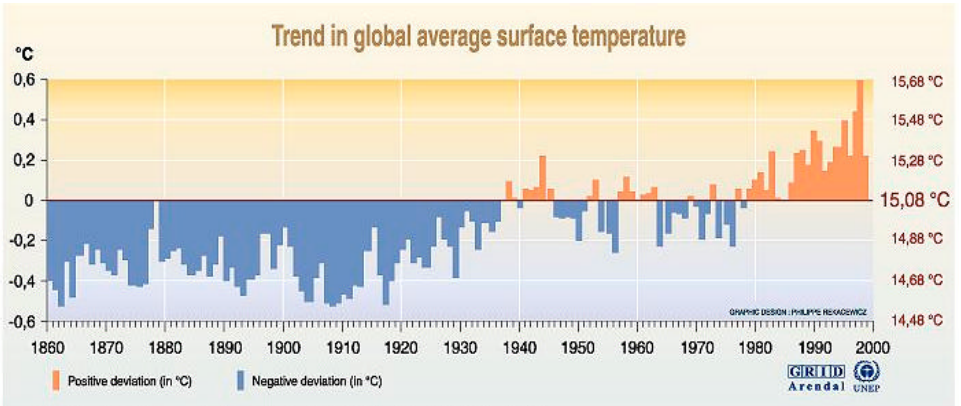
4.4. Global Climate Change: Temperature Increases & Sea Level Rise

Climate Change Impacts: Temperature & Sea Level Rise

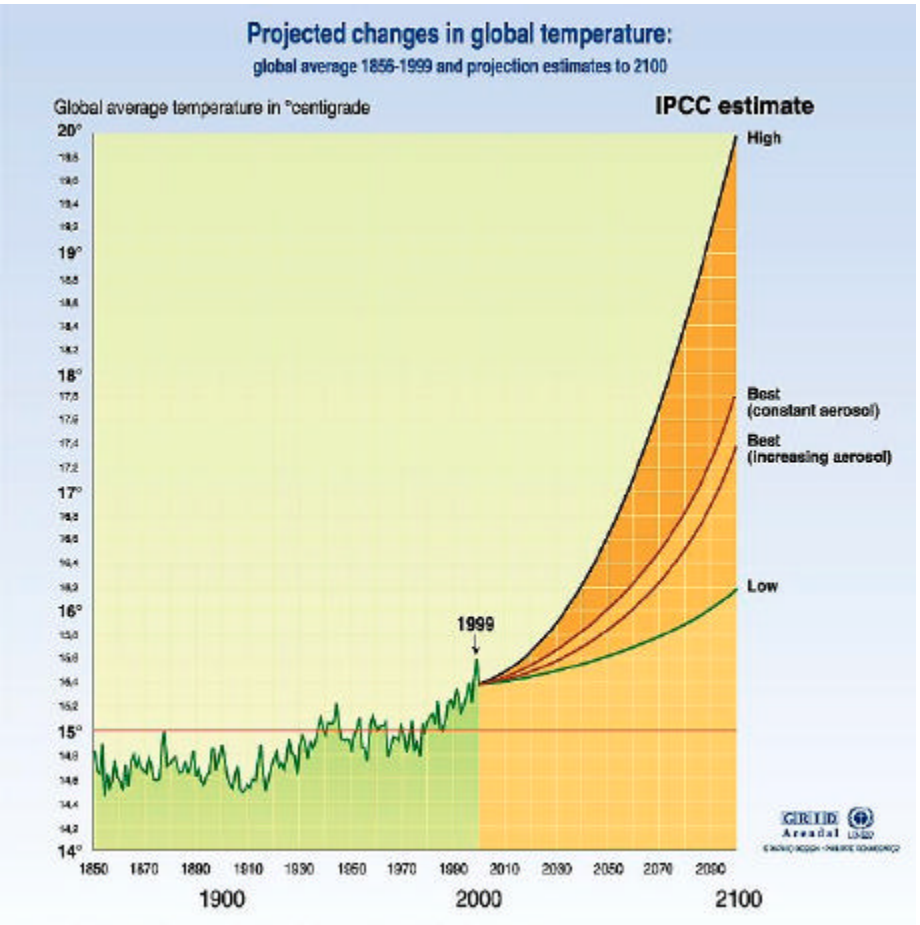
- **Global average temperature rise in 20th century: + 0.6°C**
- **Proj. temperature rise: 1990-2100: +1.4 – 5. 8°C**

SLR 1860-2000: 0.1 – 0.2 m;
SLR: 1990-2100: 0.09-0,88 m

Sources: IPCC 1990, 1995, 2001

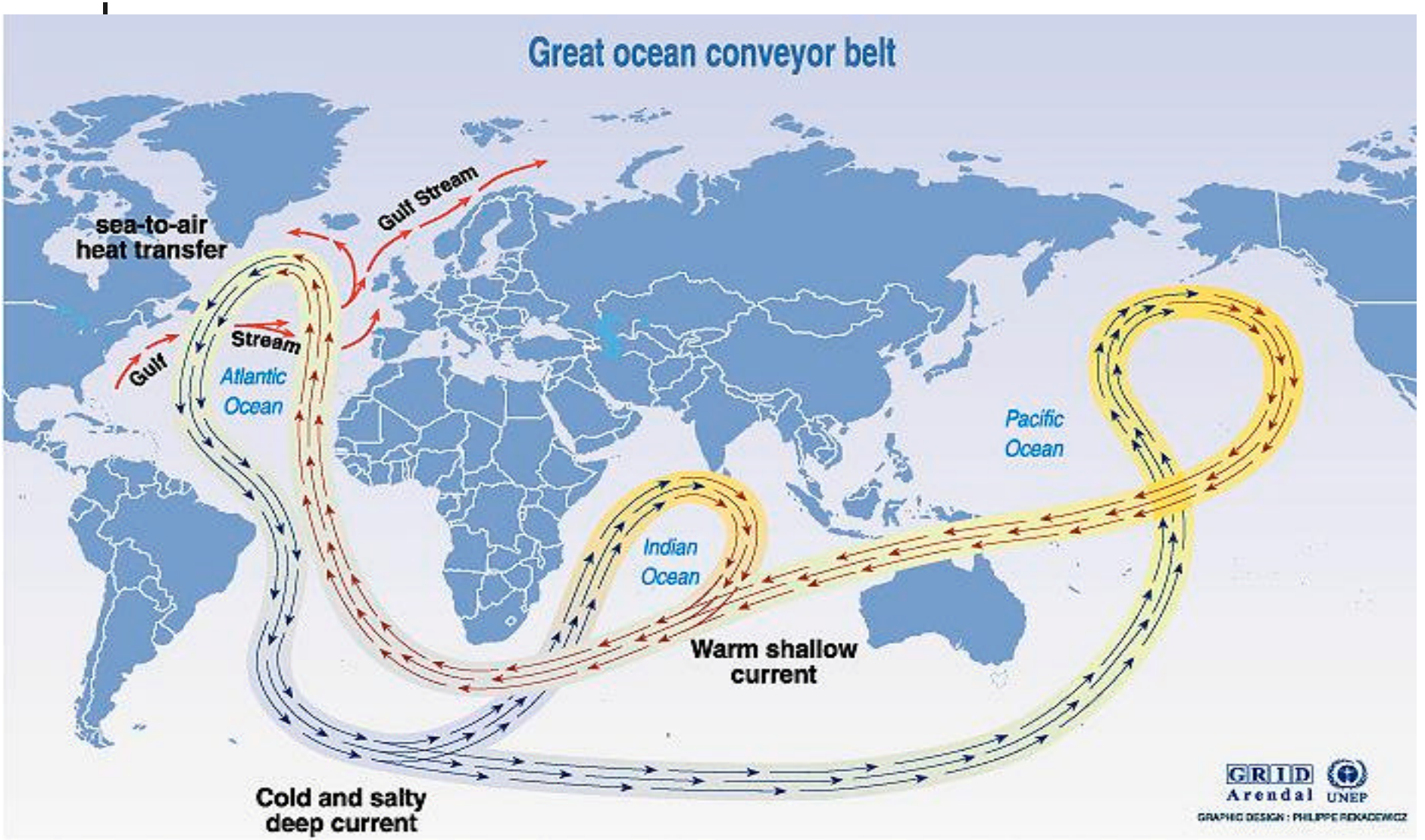


Source: School of environmental sciences, climatic research unit, university of East Anglia, Norwich, United Kingdom, 1999.



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

4.5. Change in Conveyer Belt & Gulf Stream



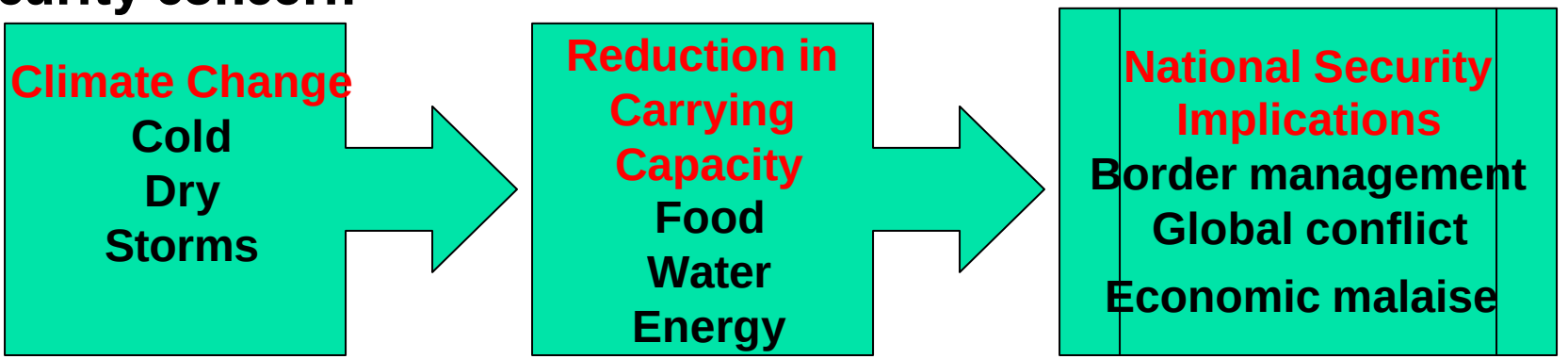
Source: Broecker, 1991, in Climate change 1995, Impacts, adaptations and mitigation of climate change: scientific-technical analyses, contribution of working group 2 to the second assessment report of the intergovernmental panel on climate change, UNEP and WMO, Cambridge press university, 1996.

4.6. Abrupt Climate Change Research

- **GLOBAL CHANGE NEWS (U.S. Global Change Data & Information System, 25 June 2004** [http://globalchange.gov/]
- **Abrupt Climate Change**: New Research Supports Hypothesis that Ocean Currents Redistributed Heat During Rapid Warming and Cooling. A paper published this week in the journal **Science** supports the hypothesis that **heat transfer by ocean currents**--rather than global heating or cooling--may have been responsible for the global temperature patterns associated with the **abrupt climate changes seen in the North Atlantic during the past 80,000 years**. Authored by the University of Bremen's Frank Lamy and colleagues, the paper provides new evidence that **Southern Hemisphere climate** may not have changed in step **with Northern Hemisphere climate**. http://globalchange.gov/#Abrupt-Climate-Change

4.7. Peter Schwartz and Doug Randall: Climate Change as a U.S. Security Concern

- Indications today that global warming has reached the threshold where the **thermohaline circulation could start** to be significantly impacted. These indications include observations documenting that North Atlantic is increasingly being freshened by melting glaciers, increased precipitation, and fresh water runoff making it substantially less salty over the past 40 years.
- **Report suggests that, due to pot.dire consequences, the risk of abrupt climate change, although uncertain & quite possibly small, should be elevated beyond a scientific debate to a U.S. national security concern**



4.8. Peter Schwartz and Doug Randall Abrupt Climate Change Scenario

- As an alternative to the scenarios of gradual climatic warming they outline an abrupt climate change scenario patterned after the 100-year event that occurred about 8,200 years ago. This abrupt change scenario is characterized by the following conditions:
- Annual average temperatures drop by up to 5° Fahrenheit (2,8°C) over Asia and North America and 6 ° F. (3,3°C) in Northern Europe
- Annual average temperatures increase by up to 4° F. (2,2°C) in key areas in Australia, South America, and southern Africa.
- Drought persists for most of the decade in critical agricultural regions and in the water resource regions for major population centers in Europe and eastern North America.
- Winter storms and winds intensify, amplifying the impacts of the changes. Western Europe and the North Pacific experience enhanced winds.

4.9. Assumed Regional Impacts for Europe & U.S. (Worst Case Analysis)

Europe. Hit hardest by climatic change, average annual temperatures drop by 6° F (-3,3°C). in a decade, with more dramatic shifts on NW coast. **Climate in NW Europe is colder, drier, windier, making it more like Siberia.** Southern Europe less change but suffers from sharp intermittent cooling and rapid temperature shifts. **Reduced precipitation causes soil loss to become a problem throughout Europe**, ✍ **food shortages**. **Europe struggles to stem emigration out of Northern Europe and immigration from hard-hit countries in Africa and elsewhere.**

United States. Colder, windier, and drier weather ✍ growing seasons shorter & less productive in NW United States, & longer & drier in SW. **Desert areas face increasing windstorms, while agricultural areas suffer from soil loss due to higher wind speeds & reduced soil moisture**. The change toward a drier climate in the S. states. Coastal areas remain at risk, as rising ocean levels continues along shores. **US turns inward, feeding its own population, shoring-up its borders, managing increasing global tension.**

4.10. Impact on Natural Resources

- Changing weather patterns & ocean temperatures affect **agriculture, fish, wildlife, water &energy**. **Crop yields fall 10-25%** and are less predictable as key regions shift from a warming to a cooling trend.
- Some agricultural pests die due to temp. changes, other species spread more readily due to **dryness & windiness** –alternative pesticides.
- **Commercial fishermen that typically have rights to fish in specific areas will be ill equipped for the massive migration of their prey.**
- With only **five or six key grain-growing regions** in the world (US, Australia, Argentina, Russia, China, India), **surplus in global food supplies** to offset severe weather conditions in a few regions at the same time – let alone four or five. **World's economic interdependence make US vulnerable to econ. disruption created by local weather shifts in key agricult. & high popul, areas around the world. Catastrophic shortages of water & energy supply cannot be quickly overcome**.

4.11. Impact on U.S. National Security

- **Violence and disruption** stemming from the stresses created by abrupt changes in the climate pose a different threat to national security than today. **Military confrontation may be triggered by need for natural resources: energy, food & water** than **over ideology, relig.**,
- **Academic debate** on **resource constraints & environmental challenges lead to inter-state conflict**. A) can lead nations to attack one another, b) they act as a trigger of conflict. **Severe environmental problems are likely to escalate degree of global conflict.**
- **Gleick: 3 most fund. challenges abrupt CC poses for nat. sec.:**
  1. **Food shortages due to decreases in agricultural production**
  2. **Decreased availability and quality of fresh water due to flooding, droughts**
  3. **Disrupted access to strategic minerals due to ice and storms**
- **Abrupt CC, food, water, energy res. constraints will be managed by econ., pol. & diplomatic means (treaties & trade) Over time, conflicts over land & water will become more severe & violent.**

4.12. Worst Case Conflict Scenario due to Climate Change (2010-2020)

Europe	Asia	United States
2012: Severe drought and cold push Scandinavian populations southward, push back from EU **2015:** Conflict within the EU over food and water supply leads to skirmishes and strained diplomatic relations **2018:** Russia joins EU, providing energy resources **2020:** Migration from northern countries such as Holland and Germany toward Spain and Italy	**2010:** Border skirmishes & conflict in Bangladesh, India, and China, as mass migration occurs toward Burma **2012:** Regional instability leads Japan to develop force projection capability **2015:** Strategic agreement between Japan & Russia for Siberia & Sakhalin energy resources **2018:** China intervenes in Kazakhstan to protect pipelines regularly disrupted by rebels & criminals	**2010:** Disagreements with Canada & Mexico over water increase tension **2012:** Flood of refugees to southeast U.S. & Mexico from Caribbean islands **2015:** European migration to United States (mostly wealthy) **2016:** Conflict with Europeans over fishing rights **2018:** Securing North America, U.S. forms integrated security alliance with Canada &Mexico **2020:** DoD manages borders & refugees from Caribbean & Europe.

4.13. Worst Case Conflict Scenario due to Climate Change (2020-2030)

Europe	Asia	United States
2020: Increasing: skirmishes over water & immigration	**2020:** Persistent conflict in South East Asia; Burma, Laos, Vietnam, India, China	**2020:** Oil prices increase as security of supply is threatened by conflicts in Persian Gulf and Caspian
2022: Skirmish between France&Germany over commerc. access to Rhine		
2025: EU nears collapse	**2025:** Internal conditions in China deteriorate dramatically leading to civil war and border wars.	**2025:** Internal struggle in Saudi Arabia brings Chinese and U.S. naval forces to Gulf in direct confrontation
2027: Increasing migration to Medit. countries such as Algeria, Morocco, Egypt, and Israel		
2030: Nearly 10% of European pop. moves to a different country	**2030:** Tension growing between China and Japan over Russian energy	

4.14. Comparing both Studies

- **Assumptions:** Ramerstorf, & National Academy study
- **Worldview**: Hobbessian
- **Concept:** US nat. security
- **Referent: U.S. DoD, elite**
- **Method**: Worst case socio-political scenario
- **Criticism:** events cannot be predicted
- **Plausibility**: relatively low
- **Research Needs:** basic research on probability

- **Assumption:** IPCC hypothesis
- **Worldview:** Grotian
- **Concept:** environmental and human security
- **Referent:** GEC, individual
- **Method:** socio-economic, qualitative, hermeneutic, projection of trends by IGOs
- **Plausibility:** higher
- **Research Needs**: strategies of environmental conflict avoidance

4.15. Hobbesian Conclusions on Climate Change & Conflicts

- **Both studies agree: climate change matters & has impacts that may result in conflicts in the 21st century**
- **DoD-Study**: assumes rapid change of t Gulf Stream (reg. cooling)
- The report explores how such an abrupt climate change scenario could potentially destabilize the geo-political environment, leading to skirmishes, battles, even war due to resource constraints such as:
- **Food shortages** due to decreases in net global agricultural production
- **Decreased availability and quality of fresh water** in key regions due to shifted precipitation patters, causing more frequent **floods and droughts**
- **Disrupted access to energy supplies** due to extensive sea ice and **storminess**
- **Problem of military policy**: **Nuclear proliferation is inevitable, conflicts over energy resources**. **„Managing the military and political tension, occasional skirmishes, and threat of war will be a challenge."**

4.16. Hobbesian Policy Recommendations (DoD Study)

Scenario poses new challenges for US, suggests sev. steps to be taken

- **Improve predictive climate models to allow investigation of a wider range of scenarios and to anticipate how and where changes could occur**
- **Assemble comprehensive predictive models of potential impacts of abrupt climate change to improve projections of how climate could influence food, water & energy**
- **Create vulnerability metrics to anticipate which countries are most vul-nerable to climate change and could contribute materially to an increa-singly disorderly and potentially violent world.**
- **Identify no-regrets strategies such as enhancing capabilities for water management**
- **Rehearse adaptive responses**
- **Explore local implications**
- **Explore geo-engineering options that control the climate.**

4.17. Grotian Study on Climate Change & Conflicts

- **Report analyses the conflict dimension of societal & political implications of climate change in interaction with five primarily nature-induced (soil erosion, hydrological cycle & water scarcity) & human-induced (population growth, urbanisation, agriculture and food) factors.**
- **Nature- & human-induced effects of climate change may lead to *environmental degradation* (soil & agriculture) & *environmental scarcity* (water & food) that may result in *enviromental stress*.**
- **Given the specific global context & country specific socio-economic, ethnic & religious context & the history of conflict in selected regions, *environmental stress* may contribute to five probable outcomes:**
- **a) natural and manmade hazards and disasters,**
- **b) to distress migration, internally displaced per-sons and environmental refugees,**
- **c) to severe societal, economic and political crises; some of them may either escalate d) to violent conflicts, that may be avoided by efforts for**
- **e) conflict resolution, and prevention by the initiation of a process of de-escalation.**

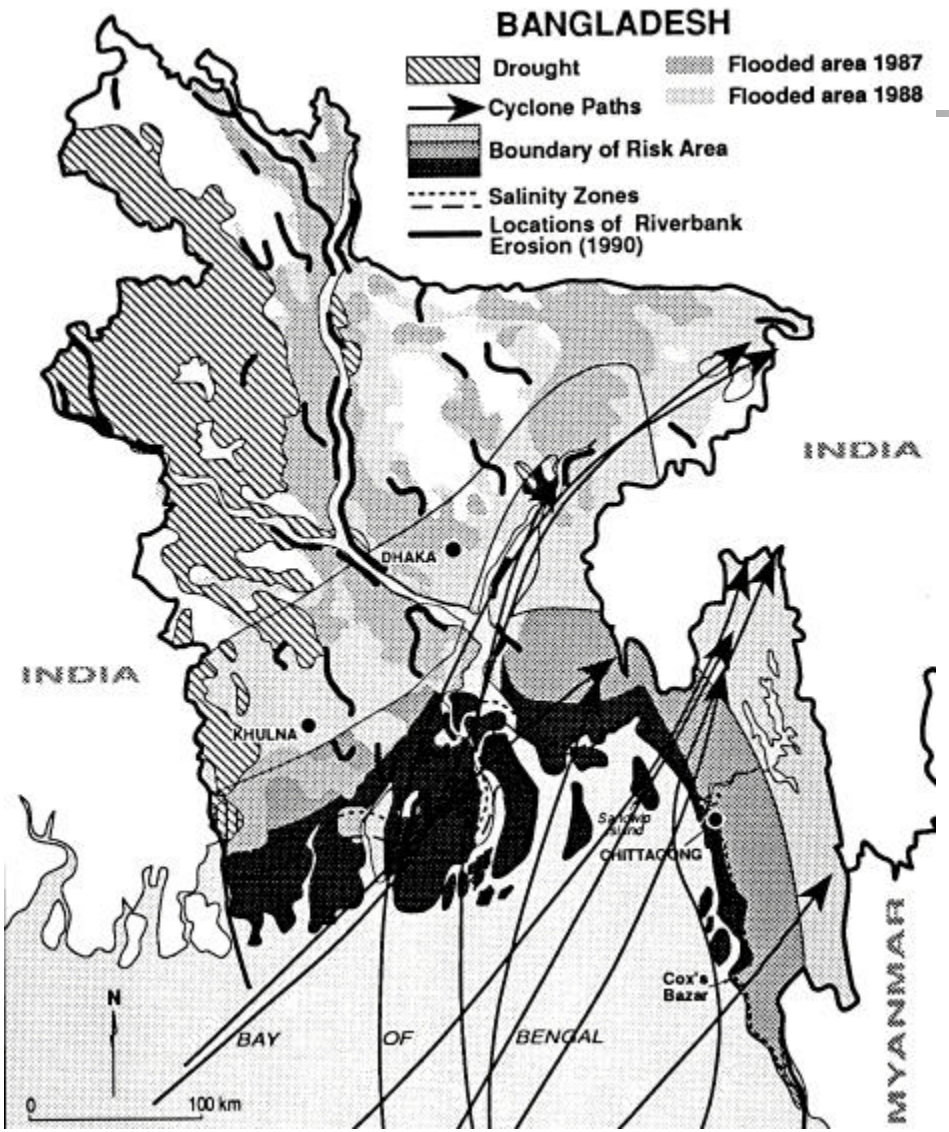
4.18. BMU Study Design

- Case studies on Mexico, Bangladesh, Egypt & regional study on the Mediterranean focus on different climate zones, eco-regions or biomes (tropical, sub-tropical, semi-arid & arid).
- Impacts of sea-level rise, temp. increase & extreme weather events, storms, flooding, forest fires & drought.
- Probable consequences of environmental impacts on conflict dimension may affect different levels from global, internat., regional to national, societal & human level *(human security).*
- 5 case studies apply same criteria, they include most recent UN data of projections of population growth until 2050, urbanisation until 2030 and for specific cities until 2015.

4.19. Second Case Study on Mexico

- Case study on Mexico distinguishes impacts for northern, central & southern region of Mexico on desertification, declining precipitation & increasing demand for water due to population growth & urbanisation.
- Included is the projected decline in the areas suitable for the production of maize without irrigation and on the decline in the yield of some agricultural products.
- Due to projected trends & impact of severe weather events that have caused severe damages in Central America during 1990s, pressure for (trans) migration from Central America to Mexico & to the United States & Canada will increase in the decades to come.

4.20. Case of Bangladesh: disaster & conflicts



Multiple hazards: floods, cyclones, droughts and sea-level rise.

- Since 1945: 1 million deaths
- Extreme weather forced people to migrate: IDPs & emigration
- Conflicts: migrants - tribal people in Chittagong Hills & in Assam

Long-term Warning Indicators

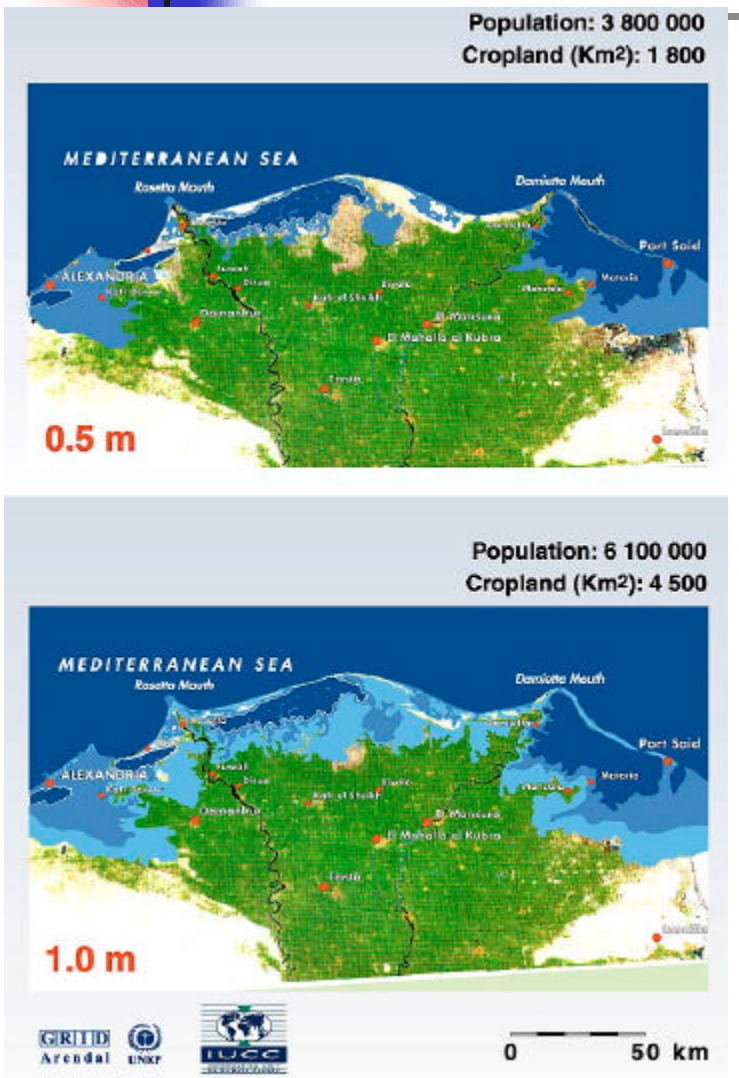
- 1 m SLR rise will inundate 17%
- Temp. Increase 2 - 5°C to 2100. more severe droughts
- More intense cyclones & floods
- Health: water pathogens,Dengue

Population	1950	2000	2050
Bangladesh	29.0	137.4	265.4

4.21. Third Case Study on Bangladesh

- **Case study on Bangladesh focuses on one of the poorest, very densely populated countries of the world that has become the major victim of extreme weather events: of cyclones, floods & drought. A 1m increase in the sea-level could inundate about 17% of Bangladesh, destroy agricultural land due to progressing intrusion of seawater (salination). Based on studies by scientists from Bangladesh & data by International Federation of Red Cross & Red Crescent Societies the vulnerabilities have been analysed:**
- **During the 1980s, each year ca. 22.9 million, during the 1990s, ca. 9 million, & in 2000, close to 3 million people were affected by extreme weather events.**
- **Since 1960, ca. 600,000 persons have died of cyclones, storm surges, floods & ca. 1 million (1945-2001). Human & economic loss for the poorest most severe.**
- **There have been violent events both within Bangladesh & between emigrating Bangladeshi & tribal people clashed in Northern India (Assam) several 1000 people died.**
- **Struggle for survival against the impacts of global environmental change has been real for decades. Without more intensive efforts to address the root causes a major human catastrophe may be possible affecting neighbouring states (India, Myanmar) & OECD.**

4.22. Effects of Climate Change for Egypt & Nile Delta



Climate Change Impacts for Egypt (integ. CC study):

- Nil Delta: 50cm, 2 mio. persons, 214.000 jobs
- Temp.Cairo 2000- 2060: + 4°C
- Self-sufficiency rate (SSR) for cereals: 1990-2060: decline from 60 to 10 %
- Projected yield decline for wheat due to climate change: 2000 - 2050: -18 %
- Population growth: 67.8 Mio. (2000) to 127.4 Mio. in 2050

4.23. Fourth Case Study on Egypt

- Egypt is affected by temperature increases and sea-level rises
- The first will increase evapotranspiration & water needs of agric.
  - in declining yields for agricultural food products.
- Climate change may also intensify the process of desertification.
- The sea-level rise in the Nile Delta will inundate some of the most fertile agricultural land and most densely populated regions.
- Population growth in Egypt and in the other nine riparian countries of the Nile will increase the demand for scarce water.
- In the framework of the Nile Basin Initiative the international community, with major support from the World Bank, has been active to avoid future water conflicts from arising.
- Egypt has become a country of emigration (to other Arab countries) but also of increas. immigration from Sub-Saharan Africa.

4.24. Grotian Conclusions on Climate Change & Conflicts (BMU Study)

Grotian: IPCC Assessments (global warming) focus at interactions among 6 factors of Surv. Hexagon): linkages between climate change impacts, environm. stress & conflict dimensions with the following hypotheses on climate change impacts:

- **There is no mono-causal linkage between climate change and conflicts.**
- **do not pose military threat cannot be solved with traditional mindsets nor by milit, means.**
- **will contribute to environmental stress & become a pot. cause of conflict constellations.**
- **may challenge the survival of human beings: challenge to human security.**
- **persuade or force human beings to leave their rural home (urbanisation, migrtation).**
- **pose challenges for countries effected by of sea level rise in delta areas but also by complex interactions of increasing temp. & declining precipitation in arid- & semi-arid regions.**
- **may contribute to an escalation of social, ethnic or religious tension that may erupt in violent temporal riots or result in a long-lasting domestic civil strife or civil war.**
- **in combination with disputes on scarce water resources may contribute to conflicts.**
- **may lead to N-S tensions on migration issues, admission of refugees in neigh-bouring or in industrialised countries and on domestic treatment of immigrant communities.**
- **posed by the impact of climate change requires bilateral or multilateral international cooperation, support for adaptive capabilities and a massive technology transfer.**

4.25. Grotian Policy Recommendations

- **Main thesis of study is that cooperative climate *mitigation* strategies are needed that must be linked to policies to assist most affected countries (poverty eradic.).**
- **This requires policies that contain the manifold causes of insecurity & instability & that aim at a regional peace based on equity and strategies of sustainable development that may also be associated with the concept of a "sustainable peace".**
- **These policies should assist these countries to *adapt to* and to *cope with* these projected effects of extreme weather events and long-term climate change impacts**

5. Tasks for a Fourth Phase of Research on Environment & Security

- **Fourth Phase: My proposal: Human & Environmental Security and Peace (HESP): chapt. 2 and 51 (2003), in: Brauch: in: Security & Env. in the Mediterranean**
- **Broaden research stakeholders: Bring together those working on human & environmental security issues with the peace research, development, environmental research communities.**
- **Broaden empirical focus: on six causes of the Survival Hexagon & interactions (nat. sciences: simulation techniques, modelling).**
- **Focus on fatal outcomes & interactions: disaster, migration, crises, conflict & efforts for resolution, prevention & avoidance.**
- **Broaden policy constituency: climate change, disaster & early warning (disaster & conflict) & conflict prevention community.**
- **Support mainstreaming of policy initiatives: early warning, adaptation & mitigation & conflict prevention,**
- Requires: Multidisciplinarity & horizontal cooperation

5.1. Broaden Research Stakeholders: Integrate Human & Environmental Security Concerns into a Peace Research Agenda

Environmental Security

- First phase: (Ullman, Matthew & Myers): make environmental security primarily as a national security concern.
- Fourth Phase: make environmental security challenges also a human security concern.

Human Security

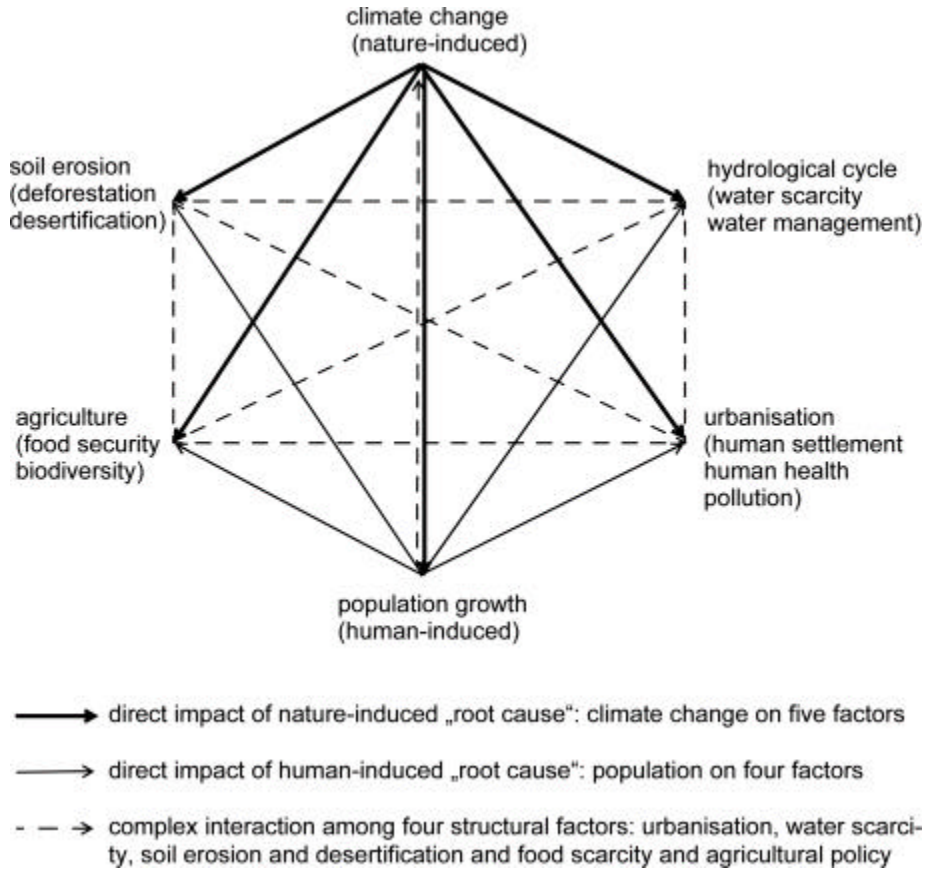
- Environmental security challenges were so far no human security concern (missing on agenda of Human Security Network, but also in HSC: Human Security Now).

Peace Research

- Authors from peace research have contributed to both debates and could rather build conceptual bridges than authors with an Hobbesian outlook in Security Studies.

5.2. Broaden Empirical Focus on Causes of Global Change: Survival Hexagon & Interactions (Simulation Techniques, Modelling)

Survival Hexagon: 6 factors



Six key causes of GEC:

Nature & human-induced

- **Air:** Global climate change
- **Soil** degrad.,desertificat.
- **Water** scarcity, hydrologic cycle

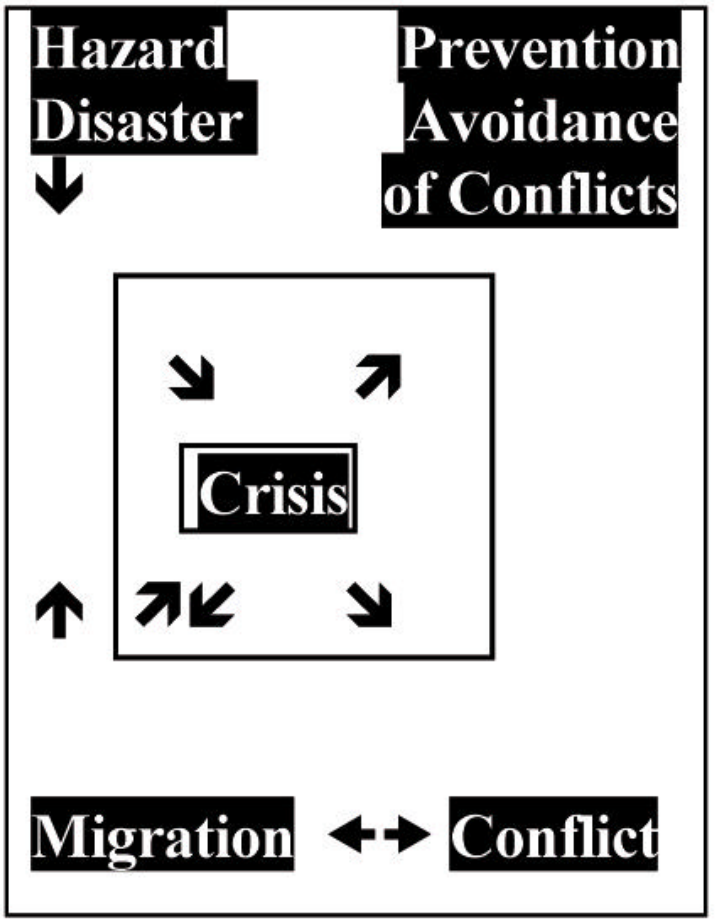
Human-induced factors

- **Population** growth
- **Urbanisation** (health, pollution)
- **Food (**Agriculture

Little knowledge on interaction among 6 factors on the global, regional, national & local level.

Need for natural science research (modelling, simulation techniq.)

5.3. Focus on fatal outcomes & interactions of disaster, migration, crises, conflict & efforts for resolution, prevention & avoidance



Much knowledge on four factors:

- Hazards, migration, crises, conflicts

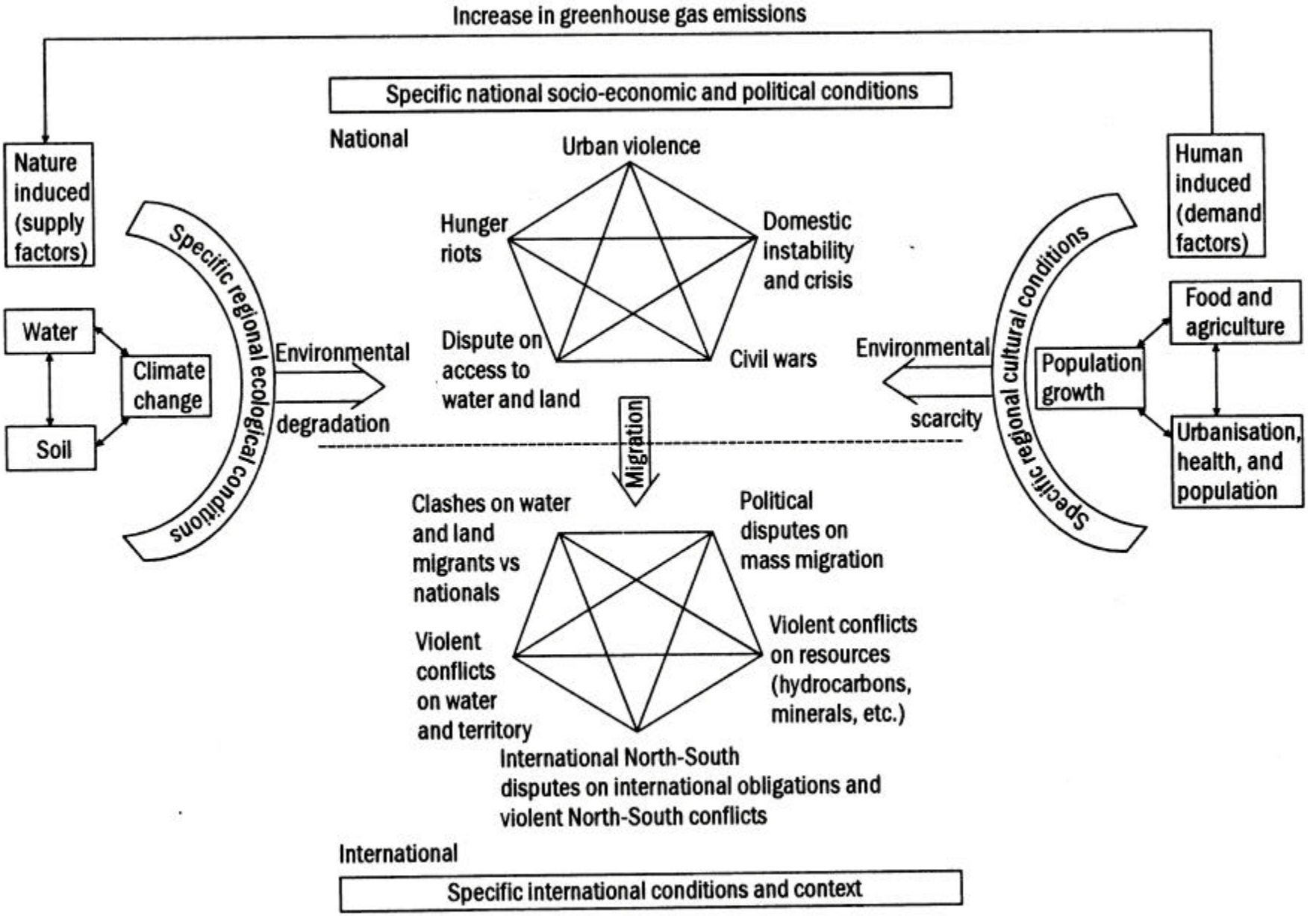
Lack of knowledge on linkages among fatal outcomes

- Disasters & disaster-ind. migration
- Famine & environm.-ind. migration
- Conflicts & conflict-induced migration

Lack of knowledge on societal consequences: crises/conflicts

- Domestic & internat. crises & conflicts
- Environmentally or war-induced migration as a cause or consequence of crises and conflicts

5.4. Types of Low-level Violence & Conflicts



5.5. Diagnosis: Cooccurence among Outcomes

Decision Tool Based : ECHO-Human Needs Index (GINA, 2002)

	Country Ranking		I		II		III		IV	
	Priority List of Humanitarian Needs	ODA Aver.	HDI	HPI	Natur disast	Con-flicts	Refu gees	IDP	Food need	Under 5
1	Burundi (Nile Basin)	2,857	3	x	2	3	3	3	3	3
2	Somalia	2,833	x	x	3	3	2	3	3	3
3	Ethiopia (Nile Basin)	2,625	3	3	3	2	3	1	3	3
4	Sudan (Nile Basin)	2,625	3	2	3	3	3	3	2	2
5	Angola	2,571	3	x	1	3	2	3	3	3
6	Afghanistan	2,500	x	x	3	3	1	2	3	3
7	Liberia	2,500	x	x	1	3	3	2	3	3
8	Rwanda (Nile Basin)	2,500	3	3	2	3	3	0	3	3
9	Bangladesh	2,375	3	3	3	2	2	2	2	2

5.6. Increase in Human Disasters and Conflicts

Will these fatal outcomes of global environmental change (GEC) and climate change (CC) lead to conflicts?

Three Preliminary Working Hypotheses

- Thesis 1: Population growth, urbanisation & persistent high poverty will increase the societal vulnerability to hazards and disasters.
- Thesis 2: Extreme weather events will very likely increase environmental vulnerability to hydro-meteorological hazards (droughts, flash floods and storms).
- Thesis 3: Environmental stress and hazards may trigger distress migration and low level conflict potentials in societies and among states (with high vulnerabilty).

5.7. Broaden Policy Constituency: Climate Change, Disaster & Early Warning (disaster & conflict) & Conflict Prevention Community)

Four constituencies without scientific & policy interaction

- **Early Warning communities (global, regional)**
  - **of natural hazards and disasters (UNISDR, EWC)**
  - **of crises and conflicts**
- **Adaptation and Mitigation efforts**
  - **Against climate change (IPCC community)**
  - **Against natural hazards and disasters (UNISDR, GDIN, etc.)**
  - **2 conferences in June 2002: by Dutch (Actor specific) & German (research specific) Foreign Minístries**
- **Mainstreaming of these efforts is needed**
  - **early warning of hazards, crises & conflicts (IPCC community)**
  - **Against natural hazards and disasters (UNISDR, GDIN, etc.)**
- **Major Clients: EU-ECHO: funder & UN-OCHA: coordin.**

6. Goals for the Fourth Research Phase

- A **"people-centred" human security perspective** from individual to global level to develop strategies for adaptation & mitigation to reduce likelihood and impact of & vulnerability to these outcomes by strengthening resilience .
- **Normative orientation** at the dual policy goals of sustainable development & sustainable peace requires the scientific development of complex **know-ledge, a societal and political problem awareness, anticipatory learn-ing and "ingenuity" in the framework of a "culture of preven-tion".**
- **Practical purpose & policy relevance** of a 4th phase of research is to re-cognise **early-warning indicators**, to examine both the **environmental consequences of wars & existing conflicts over scarce resources** that may lead to environmental stress to **prevent that they escalate into vio-lence** and to **develop longer-term priorities for European countries, as well as for international organisations** to avoid environmental outcomes from occurring, to contribute to **regional environm. good governance.**

7. From Research to Action: Enhancing Environmental & Human Security

Towards Environmental Conflict Avoidance

- **Primary Goal:** **address fatal outcomes of GEC: hazards and disasters, migration, crises & conflicts that may have been caused, triggered, induced, influenced by: a) environmental stress and b) extreme weather events,**
- **Enhance Environmental Security:** Address human behaviour that contributes to GEC via climate change, soil degradation, water pollution & scarcity: sustainable strategies
- **Enhance Human Security:** address factors of GEC that challenge survival of individuals, families, villages, ethnic groups
- **Avoid Environmentally-induced Conflicts:** address structural or causal factors (of Survival Hexagon), e.g. climate policy, combat desertification, cope with water stress.

8. Mainstreaming: Adaptation & Mitigation Against Climate Change & Disaster

Advantages of linking early warning: disasters & conflicts

- **Successful early warning of hazards will also mitigate conflicts**
- **Successful early warning of conflicts will reduce vulner. to hazards**

Need for three-fold mainstreaming of early warning efforts:

a) Vertical: global – regional – national – local, e.g. UNISDR, EU

b) Horizontal: disaster reduction and conflict prevention

- **Technical (natural disasters) vs. political (conflicts)**
- **Impediments: knowledge gap on linkages between fatal outcomes of global environmental change and their societal consequences**
- **Learning from case studies both success and failure**

c) Actors: Political & scientific community: time- & theory-driven efforts

Who will benefit? Humanitarian organisations: **IFRC-RCS** et al. and sponsors: **ECHO** (50% of humanitarian aid), **OCHA** et al.

9. Environmental Conflict Avoidance: Addressing Causes & Fatal Outcomes

- **Environmental and human security strategies: address the two values at risk a) sustainability (environmental security); and b) survival (human security);**
- **Deal with the different referent objects of security: a) ecosystem (environmental security); and b) individual & mankind (human security);**
- **Address the different causes of threat, challenge, vulnerability and risk: a) mankind (environm. security); and b) nature, state, globalisation (human securirty);**
- **We need sustainable development strategies (development, environment policies addressing 6 GEC-factors).**
- **We need survival strategies** (protection & empowerment).

9.1. The Human & Environmental Security and Peace Project (HESP)

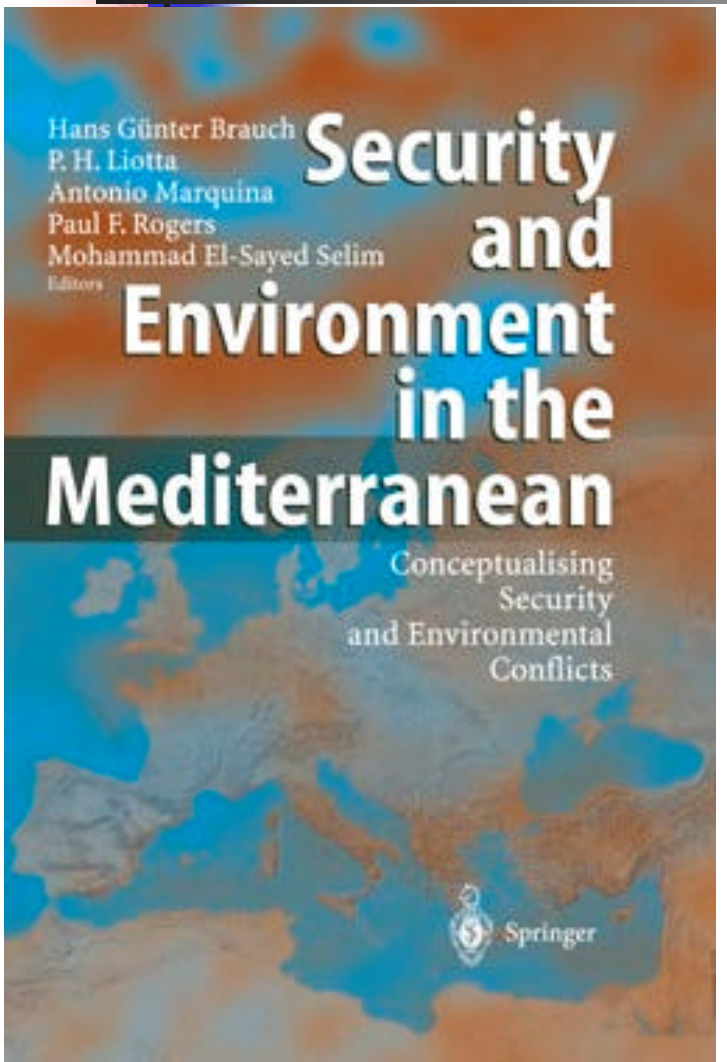
- **Synthesis of four approaches:**
  - a) Grotian approach: multilateral, international law based
  - b) environmental security debate (environmental dimension)
  - c) human security (human being: cause & victim of GEC)
  - d) proactive focus: conflict avoidance (structural factors)
- **AFES-PRESS contributions to 4th Research Phase on Environment and Security Linkages:**
  - a) HEXAGON Series on Human & Environmental Security and Peace Project (HESP) with Springer (Berlin – NY - London - Tokyo)
    - vol. 1: Environment & Security in the Mediterranean (2001-2003), 2nd ed.
    - vol. 2: Reconceptualisation of Security in 21st Century (2004-2006)
    - vol. 3: Global Environmental Change and Env. Conflict Avoidance (?)
    - vol. 4: Redefining Security Interests and Structures (2006-2008)
  - b) Context: GMOSS contributing to GMES (2008 operational)

10. Towards a Peace Research Agenda for Environmental Conflict Avoidance in the 21st Century

- **Major task for Peace Research: res. on avoiding & preventing violent conflicts (UN Panel on Threats, Challenges)**
- **Multicisciplinary approach: bring natural & geosciences in (e.g. climate, disaster, IHDP, GECHS community)**
- **Difficulty & obstacles: Narrow disciplinary views of referees.**
- **IR: fallen victim of a narrow theory-oriented professionalism**
- **Agenda setting: scientific & political to motivate change**
- **Anticipatory learning: as educators have a task to enhance knowledge about adaptive and mitigation capabilities.**
- **Not lack of resources, but wrong priorities & allocation**
- **Ideas mattered for global turn of 1989/1990 and will matter in the future. Peace Res. community should become again a driver of policy relevant ideas promoting changes in policy.**

Sources:

http://www.afespress.de/html/download_hgb.html



- **Brauch: *Climate Change and Conflics* (Berlin: BMU 2002) (http://www.bmu.de/en/800/js/download/b_climges/)**
- **Brauch-Liotta-Marquina-Rogers-Selim (Eds.): *Security and Environment in the Mediterranean* (Berlin – New York – Paris – London -Milan: Springer 2003) (http://www.afes-press.de/_html/_bk_book_of_year.html)**
- **Next workshop: The Hague,9-11 Sept. 2004: Reconceptualising Security in an Era of Globalisation (5th Paneuro-pean Conference on Int. Relations)**

(http://www.afes-press.de/html/the_hague.html)