



The Arava Institute for Environmental Studies
מכון הערבה ללימודי הסביבה
معهد وادي عربة للدراسات البيئية

Integrated Water Resource Management and Security in the Middle East

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Security and Environment in the Mediterranean and Middle East

© Hans Günter Brauch,
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A satellite-style map of the Mediterranean and Middle East region, showing the sea in dark blue and the land in various shades of green and brown. The text is overlaid on the map.

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Security and Environment in the Mediterranean and Middle East

**Part I: Reconceptualising Security: Concepts and PEISOR Model on
Global Environmental Change, Effects & Impacts**

**Part III: Environmental Challenges to Security & Survival in the
Mediterranean and the Middle East**

**Part V: Cooperative Opportunities: Addressing Environmental Secur
Challenges on Water, Soil, Food and Energy**

Security and Environment in the Mediterranean and Middle East

Questions of the day for the small group discussion:

1. How do environmental threats create national (military, political, economic) security risks?
2. How do environmental threats create domestic (societal and human) security risks?
3. Are there special environmental security risks to the poor, young, women, and minorities?
4. What are the threats, challenges, vulnerabilities and risks to environmental security in the Middle East?

Contents of Part 1

- 1. Basic Concepts and Questions**
- 2. Reconceptualising Security**
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- 6. Wider Security Focus: Non-military Challenges**
- 7. PEISOR Model: Global Environment. Change,**
- 8. Environmental Scarcity, Degradation & Stress**
- 9. Hazard Impacts & Extreme Social Outcomes**
- 10. Compilation of Environmental 'Threats',
'Challenges', 'Vulnerabilities' & 'Risks'**

1. Basic Concepts and Questions

- ❖ **In the Middle East Perception Prevails: National Security is Essential for Survival**
- ❖ **Consensus: Environmental Challenges are not Perceived as Crucial National Security Issues**
- What do we mean with „Security“?
- What has changed since **1989** and **2001**?
- Did the global change trigger a „Reconceptualisation of Security“?
- What are the new dangers to „Security“: **Threats, Challenges, Vulnerabilities, Risks?**
- Did the change of definition & perceptions trigger a change in the definition of „security interests and institutions“?
- **What does this debate mean for the Middle East?**

1.1. What do we mean with „Security“?

- Security (Lat.: 'securus', 'securitas', 'se cura')
- philosophical and psychological **state of mind**,
- subjective feeling of **freedom from sorrow**.
- Political concept of 'Pax Romana': **stability** in era of Augustus.
- Western thinking 'security' synonymous: 'certitudo' ('**certainty**')
- Since Augustus, and Middle Ages, 'securitas' was linked with '**pax**' & '**libertas**' that was associated with '**quieteness**'.
- 19th century, '**state**' is key security institution governed by law.
- 20th century, security associated with preventing internal & external dangers; police & courts (*internal: justice & home affairs*) & political, econ., military measures (*external: security/defence*).
- a general 'societal idea of value', a universally employed '**normative concept**', different meanings in affirmative manner.
- **political value**, is related to individual or societal value systems

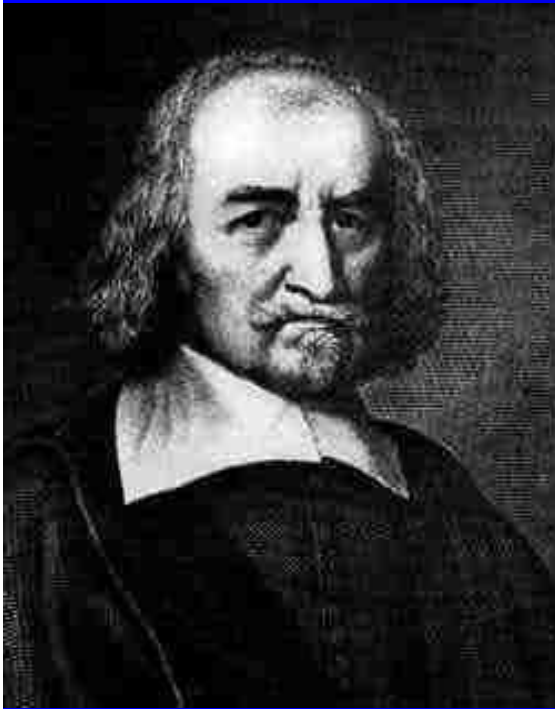
1.2. Objective, Subjective, Intersubjective Security

- **Wolfers (1962)** pointed to two sides of the security concept: "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**".
- From a constructivist approach in internat. relations 'security' is the outcome of a process of social & political interaction where social values & norms, collective identities % cultural traditions are essential. Security: *intersubjective* or "what actors make of it".
- Copenhagen school: security as a "speech act", "where a securitising actor designates a threat to a specified reference object and declares an existential threat implying a right to use extraordinary means to fend it off".
- Such a process of "securitisation" is successful when the construction of an "existential threat" by a policy maker is socially accepted and where "survival" against existential threats is crucial.

1.3. Security Perception: Worldviews and Mind-sets

- **Perceptions of security threats, challenges, vulnerabilities, risks depend on worldviews of analyst & mind-set of policy-maker.**
- **Mind-set (Ken Booth):** have often distorted perception of new challenges: include ethnocentrism, realism, ideological fundamentalism, strategic reductionism
- **Booth:** Mind-sets freeze international relations into crude images, portray its processes as mechanistic responses of power and characterise other nations as stereotypes.

1.4. 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

1.5. Concepts of Security in Relation with Peace, Environment and Development

● Pillars & linkage concepts within the quartet

IR research programs	Conceptual Quartet	Conceptual Linkages
<ul style="list-style-type: none"> ■ Peace Research ■ Security Studies ■ Development Studies ■ Environment Studies <p>4 conceptual pillars</p> <ul style="list-style-type: none"> ■ I: <i>Security dilemma</i> ■ II: <i>Survival dilemma</i> ■ III: <i>Sust. developm.</i> ■ IV: <i>Sustain. peace</i> 	<p>Peace Security</p> <p>● I: <i>Security dilemma</i></p> <p>● ● ● ●</p> <p>IV</p> <p>Development Environment</p> <p>III: <i>Sustainable development</i></p>	<ul style="list-style-type: none"> ● Policy use of concepts & Theoretical debates on six dyadic linkages ● L1: Peace & security ● L 2: Peace & development ● L 3: Peace & environment ● L 4: Devel. & security ● L 5: Devel. & environment ● L 6: Security & environm. <p>[six chapters reviewing & assessing the debates]</p>

1.6. Security vs. Survival Dilemma?

Security dilemma

- A security dilemma exists “where the policy pursued by a **state** to achieve security proves to be an unsatisfactory one” and states were confronted “with a choice between two equal and undesirable alternatives”.
- **Collins (95): 5 def. of this dilemma**
 - decrease in the security of others;
 - decrease in the security of all;
 - uncertainty of intention;
 - no appropriate policies;
 - required insecurity.
- **The first four relate to one another & form a coherent explanation of a traditional security dilemma.**

Survival dilemma

- What is the *dilemma* about & what are choices for whom?
- Whose *survival* is at stake: **humankind, state, own ethnic group, family or individual?**
- What is the *referent* of such a “**survival dilemma**”: **international anarchy, nation state, society, the own ethnic or religious group, clan, village, family or the individual?**
- What are the *reasons* that necessitate a choice between leaving the home or *fighting* (decline, disintegration)?
- Is this Surv. D. socially or environmentally driven or both?

2. Reconceptualising Security

- What has been the primary cause of a reconceptualisation of security?
- Contextual political change or conceptual innovation?
- Has this dual change occurred and does it matter in the Mediterranean and in the Middle East?
- Does Global Environmental Change pose security threats, challenges, vulnerabilities and risks?
- What does this change imply for environmental and human security?

2.1. Global Contextual Change & Scientific Conceptual Change?

- **Global Contextual Change: 9 November 1989 or 11 September 2001:** Berlin or New York?
- Fall of the Berlin Wall: End of the bipolar competition of social systems and alliances
- 11 September 2001, 11 March 2003, 7 July 2005: New York – Madrid – London: Invisible threat by non-state actors
- **Global Environmental Change:** A New Security Danger: Humankind as cause and victim
- **Scientific Changes:** Constructivist Approaches and Global Risk Society

2.2. Global Contextual Change: 9 November 1989 or 11 September 2001:

- End of the Cold War?



Berlin

- New threats, challenges, vulnerabilities & risks?



New York

- Reunification of Germany (1989)
- Enlargement of the EU (2004)

2.3. Widening of Security Concepts

Table: Dimensions (Sectors) & Levels of a Wide Security Concept

Security dimension ⇒ ↓ Level of interaction	Military	Political	Economic	Environmental ↓	Societal
Human individual ⇒				victim	
Societal/Community				↓↑	
National	MENA region			↓↑	
International/Regional				↓↑	
Global/Planetary ⇒				GEC	

Table: Expanded Concepts of Security (© Bjørn Møller, 2003)

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

2.4. Combing Perspectives on Security & Environment

Table: Ideal type worldviews on security and standpoints on the environment

Worldview/Tradition on security (→) Standpoints on environmental issues (↓)	Machiavelli, Hobbes, Morgenthau, Waltz (pessimist, realist) <i>Power matters</i>	Grotius, (pragmatist) <i>Cooperation is needed, matters</i>	Kant, neoliberal institutionalist (optimist) <i>International law matters and prevails (Democratic peace)</i>
Neomalthusian <i>Resource scarcity</i> (pessimist)	I Perspective of many MENA states	II ←	III ↙
Reformer, <i>Multilateral cooperation solves chall.</i> (pragmatist)	IV	V UN system most EU states (my position)	VI
Cornucopian <i>Technological ingenuity solves issues</i> (neoliberal optimist)	VII George W. Bush-Administration ?	VIII Bill J. Clinton Administration ?	IX Wilsonian liberal optimism

3. Four Security Dangers: Threats, Challenges, Vulnerabilities & Risks

- 4 Buzzwords with many distinct meanings:
- **Threats:** ‘hard sec.’: military, political, economic, ‘soft sec.’: societal, environmental, (human);
- **Challenges:** all five dimensions of security;
- **Vulnerabilities:** all five dimensions: security, GEC, climate change, hazard community;
- **Risks:** multiple applications: 5 sec. dimensions: GEC, climate change, hazard community (sociology: risk society; political science, IR: risk politics; economics, psychology, geosciences)

3.1. Five Security Dimensions and Four Security Dangers

Security Dimensions → ↓ Security Dangers	Military	Political	Economic	Social	Environmental	Human
Threat	Hobbesian perspective: national/alliance security during Cold War (CW)			Grotian perspective: wider security concept in post Cold War era		
Challenges	Narrow 'hard' security concept			Wider 'soft' security concepts		
Vulnerabilities	Old & new security agenda: change in actors & meaning prior & after CW				New agenda: GEC, Global warming, hazard and disasters	
Risks	multiple applications in scientific & political communities prior & after Cold War					

3.2. Reconceptualising 'Security Threats' since 1990: 'Term' & Security Threats

- 'Threat', 'menace' (Lat: 'trudere' push, thrust: "communication of a disagreeable alternative to individual or group by one in authority").
- **Buzan**: threat to state (capabilities) and ideas (ideology); Understanding threats means understanding state's vulnerabilities.
- **Since 1990 threat perception has fundamentally changed.** Threat refers to dangers the planet earth is confronted with due to manifold destructive potentials of the environment & global consequences.
- **German defence document (1994)**: "risk analysis of future developments must be based on a broad concept of security. They must

3.3. New Security Threats in Post Cold War World

- **Ullman (1983)**: environmental threats to US national security;
- **Al Gore (1992)**: strategic threats: Global warming & ozone depletion
- **US-QDR 30.9.2001**: “shift ... defence planning from a ‘threat-based’ to a ‘capabilities-based’ model in the future ... ”
- **US National Security Strategy (2002)**: Weapons of Mass Destruction, rogue states and terrorists and organised crime networks;
- **EU Solana Strategy (2003)**: key threats: terrorism, WMD, regional conflicts, state failure, organised crime
- **UN High Level Panel on Threats (2004)**: economic, social (poverty, infectious disease, *environmental degradation*, inter-state & internal conflict, WMD, terrorism and transnational organised crime.
- **Kofi Annan: In larger freedom (2005)**: a) preventing catastrophic terrorism; b) organised crime; c) nuclear, biological & chemical weapons; d) reducing the risk and prevalence of war.

3.4. Reconceptualising ‘Security Challenges’: ‘Term’ & New Security Challenges : UNU

- **Challenge:** (Lat.: ‘calumnia’, false accusation; Synonyms: “confrontation, defiance, interrogation, provocation, question, summons to contest, test, trial, ultimatum”, “questioning, dispute, stand opposition; difficult task, test trial”).
- **Dodds & Schnabel (2001):** ‘new’, ‘non-traditional’ security challenges. Public’s security environment has altered dramatically in new millennium.”
 - a) increasing level of globalisation;
 - b) a growing sense of vulnerability to ... remote threats, such as distant conflicts, contagions, crop failures and currency fluctuations.”
- **Van Ginkel and Velasquez (2001):** environmental challenges:
 - a) ozone depletion;
 - b) impact of toxic chemicals on global ecosystem;
 - c) increasing greenhouse emissions
 - d) “uncertainty about the future and an element of surprise”.

3.5. Reconceptualising Security

Vulnerabilities: Term & Scientific Concept

- **English dictionaries:** synonyms ‘vulnerability’ (Lat.: ‘vulnus’ or: ‘vulnera-bilis’; ‘vulnerable’: accessible, assailable, defenceless, exposed, open to attack, sensitive, susceptible, tender, thin-skinned, unprotected, weak;
- **Vulnerability:** “poverty, exclusion, marginalisation & inequities in material cons.”, is generated by “social, economic & political processes”.
- **Oliver-Smith (2004)** “vulnerability: a political ecological concept. ... it can become a key concept in translating that multidisciplinary into the concrete circumstances of life that account for a disaster.”
- **Disasters** “are channelled and distributed in the form of risk within society to political, social and economic practices and institutions. ... Vulnerability is ... located at interaction of nature and culture” that also links “social and economic structures, cultural norms and values and environmental hazards.”

3.6. Reconceptualising 'Security Risks': Term and Political & Scientific Concept

- 'Risk' (Lat.: 'risicare' navigate around cliffs; danger, peril, jeopardy, hazard; chance, gamble, possibility, speculation, uncertainty, venture; unpredictability, precarious-ness, instability, insecurity, perilousness, riskiness, probability, likelihood, threat, menace, fear, prospect.
- Quantitative measurement of risks, simple risk indicators are used: **Risk estimates** involve a prospective estimate based on probability, frequency & intensity of damages that are based on specific '**risk analyses**'.
- '**Risk assessment**' is used in daily practice in many disciplines & is influenced by personal risk acceptance. **RA** of nuclear technologies differs among groups & countries.
- '**Risk factors**': social medicine, public health & epidemiology to point to factors increasing probability to get affected by a disease, **risk indicators** may be indirect contributing factors (e.g. social conditions for breakout of a disease).
- Beck's 'risk society' initiated a global debate in social sciences that impacts on security risks. 'Risk policy and politics' as well as 'risk management' comprise all measures of an enterprise to improve its financial performance.

3.7. Debate on 'Risk' and 'Risk Society' in the Social Sciences

- **Giddens:** Reason for distrust: growing relevance of globalisation.
- **Beck (1986):** 'Risk society' influenced debate in social sciences. Risk is increasing with complexity of technology. Research on mental models gained in importance focusing on misperceptions of different kinds of risks.
- **Bonss (1995):** development of 'sociology of risk' since late 1960s (Seveso, Harrisburg, Bhopal & Tschernobyl) broadened risk debate:
 - linkage betw. risk & technology to be analysed as a problem of insecurity;
 - from a historical perspective treatment of uncertainty should be re-constructed.

4. Environmental Security Challenges: Environmental Impacts of Wars and Environmental Stress as Causes of Conflicts

- **Dual Relations between Environment and Conflict:**
 - War as a Cause of Environmental Damage
 - Environmental Change as a Cause of Crises and Conflicts
- **Research on Environmental War Impacts: since 1970s**
 - UNEP supported Research on Environmental Consequences of the Vietnam War of Arthur Westing at SIPRI and PRIO (Oslo)
 - Today: UNEP Post-Conflict Assessment Unit (UNEP-PCAU)
- **Environmental Causes of Conflicts: since 1990s**
 - Environmental Degradation & Scarcity of Resources as a Cause & Trigger of Conflicts
 - Climate Changes as a Cause for the Decline of Civilisations
 - **Bad harvests and famine prior to 1789 and 1848 contributed to the emergence of revolutionary situations in Europe!**

5. Four Human Security Concepts

- **"Freedom from want"** by reducing societal vulnerability through poverty eradication programs (UNDP '94; CHS 03: Ogata/Sen: Human Security Now, **Japanese**);
- **"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: Human Security Report (2005)**
- **"Freedom to live in dignity"**: Annan: Larger Freedom

● **"Freedom from hazard impact"** by reducing

5.2. Human Security Network Members

NATO	EU	Third World
Canada		Chile
Greece	Austria	Jordan
Netherlands	Ireland	Mali
Slovenia		Thailand
Norway	Switzerland	South Africa (observer)

The Network has an inter-region. & multiple agenda perspective, strong links: civil society & academia.

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

Conferences at Foreign Ministers level in Bergen, Norway (1999), in Lucerne,

Anti-pers. Landmines, Intern. Criminal Court, protection of children in armed conflict, control of small arms & light weapons, fight against transnational 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.

5.3. Human Security Commission (2003): Ogata/Sen: Human Security Now

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

6. Wider Security Focus: Non-military Challenges

Global Environmental Change (GEC): Environment & Security Linkages

Ecosphere

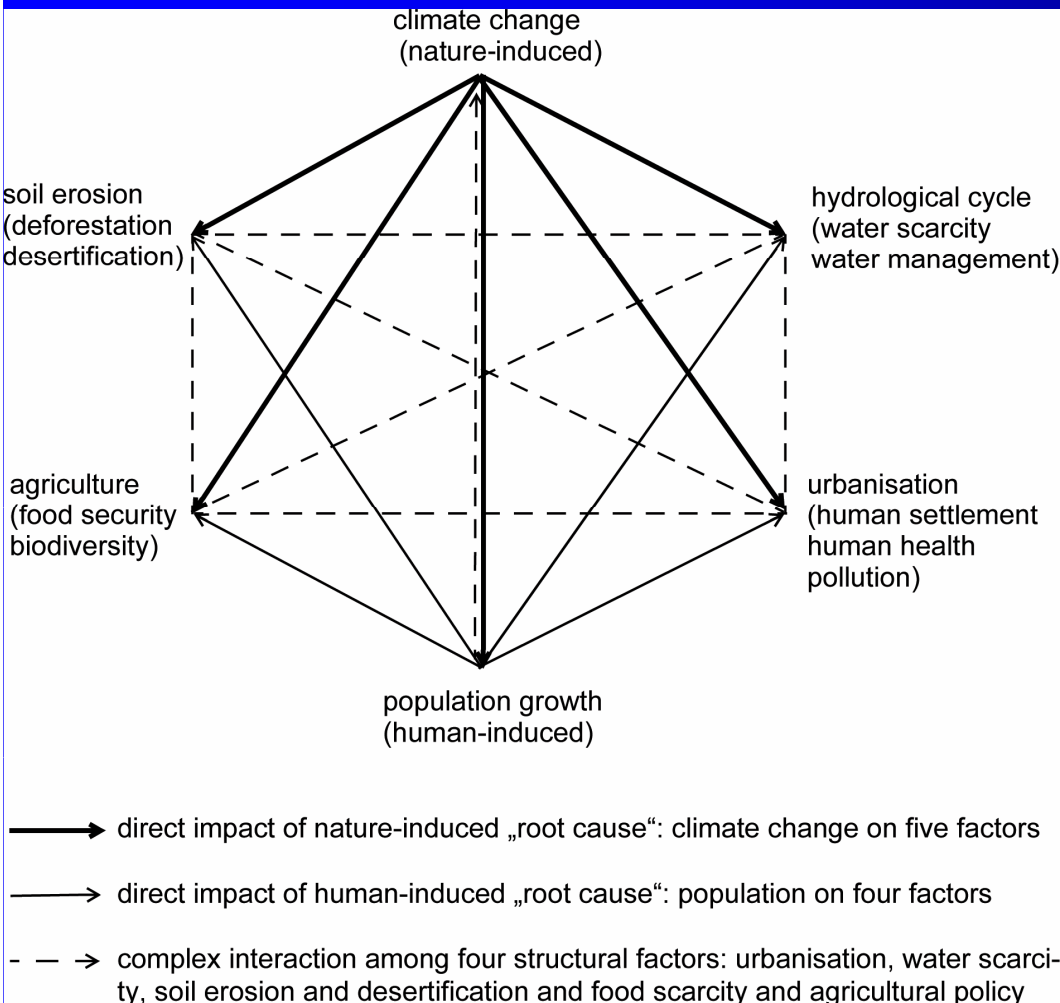
Antrophosphere



GEC poses a threat, challenge, vulnerabilities and risks for human security and survival.

6.1. Survival Hexagon of Global Envir. Change

Survival Hexagon: 6 key factors



Environmental security in the Middle East is affected by both Global Environmental Change & by human activities (including economic globalisation)

Nature & human-induced

- ❖ Air: Global climate change
- ❖ Soil degradation, desertification
- ❖ Water: hydrological cycle,

Human-induced factors

- ❖ Population growth
- ❖ Urbanisation
- ❖ Food & Agriculture
- Economic production & consumption patterns (impacts of econ. globalisation) on Global Environmental Change (GEC).

6.2. Water and Food Scarcity as Security Issues

- **Water scarcity is a basic human security issue**
 - Affects the individual, his survival and his family that is at risk
 - In OPT manifold causes for this HS challenge: water access rights & distribution etc. (see: water panel in peace process)
 - Water scarcity affects societal, economic and political security!
- **Water pollution: basic health security issue**
 - Overpumping, salinisation and pollution (contaminated & waste water) is a cause of water related diseases (in OPT)
 - Water degradation has become a major health security issue.
- **Food scarcity: basic human (need) security iss.**
 - Decline in food production (supply) & demand (lack of access)
- **Food scarcity: basic health security issue**
 - Malnutrition & anaemia, among children & women in OPT is getting worse: has become a health security issue.

6.3. Food, Health, Livelihood & Energy Security

Food Security (FAO, WFP)

- ❖ **FAO:** access for all people to enough food for active, healthy life.
- ❖ (1) the adequacy of food availability (effective supply); (2) the adequacy of food access (effective demand); and (3) the reliability of both.
- ❖ Desertification and drought affect the supply side of food security.

Health Security (WHO)

- ❖ **WHO:** guarantee of accessible and affordable health care to all
- ❖ **WHO: *Global Health Security*** (Epidemic Alert & Response) global partnership: a) contain risks, b) respond to unexpected, c) improve prepared-ness

Livelihood Security (OECD, Third World countries)

- ❖ **Livelihood security:** used by NGOs, humanitarian aid organisations
- ❖ “Missing link” between poverty, environmental degradation & conflict.

Energy Security (IEA)

- ❖ **North:** Supply diversification, source substitution, decoupling of econ. growth from increases of energy consumption due to energy efficiency improvements
- ❖ **South:** Demand and supply security (access to electricity etc.)

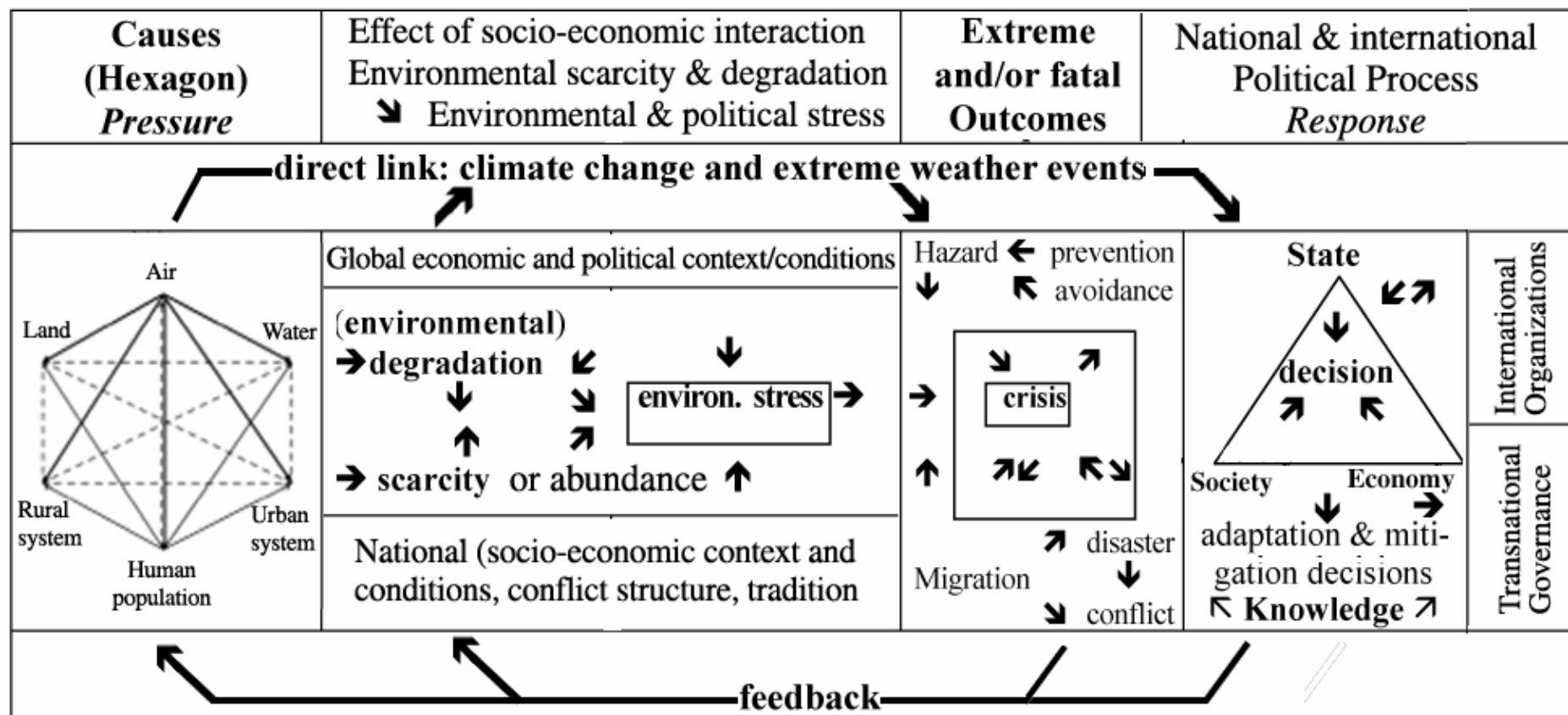
7. Model: Global Environmental Change, Environm. Stress & Societal Outcomes

Climate Change > Desertification → Extreme Weather Events
 > Hydro-meteorolog. hazards/disasters (drought & famine)

Causes (Hexagon)	Effect (Interaction)	Environmen- tal Stress	Probable Outcomes
↗ → → → → Extreme Weather Events → → → ↘			
<p>Desertification</p> <p> climate change (natural induced) soil erosion (deforestation desertification) hydrological cycle (water scarcity water management) agriculture (food security biodiversity) urbanisation (human settlement human health pollution) population growth (human-induced) </p> <p> ——— 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 scarcity, soil erosion and desertification and food scarcity and agricultural policy </p>	<p>environmental</p> <p>→ degradation (soil, water)</p> <p>↓ ↑ →</p> <p>→ scarcity (water, food, housing)</p>	<p>global cond.</p> <p>↓</p> <div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>Environ- mental stress</p> </div> <p>↑</p> <p>nation. cond.</p>	<p>drought & famine</p> <p>↗ ↘</p> <p>→ Crisis</p> <p>↘ ↗</p> <p>migration</p> <p>conflict</p>

7.1. The **P**ressure (Cause), **E**ffect, **I**mpact, **S**ocietal **O**utcome & **R**esponse (**PEISOR**) Model: GEC and Extreme/Fatal Outcomes

Source: Brauch 2005, in: UNESCO-EOLSS, UNU-EHS



7.2. Securitisation of Causes, Impacts and Socio-economic Impacts of GEC:

From a „pressure response“ to a “**PEISOR**” Model

- The model distinguished among 5 stages:
 - **P:** Causes of GEC („pressure“): Survival hexagon
 - **E:** Effect: environm. scarcity, degradation & stress
 - **I:** Extreme or fatal ourcome („impact“): hazards
 - **S:** Societal **O**utcomes: disaster, migration, crisis, conflict, state failure etc.
 - **R:** Response by the state, society, the economic sector and by using traditional and modern know-ledge to enhance coping capacity 6 resilience

8. Environmental Scarcity, Degradation, Stress

Four Phases of Research since 1983 - 2003

1. Phase: Conceptual Phase: Concept Environmental Security

- ❖ Inclusion of environmental factors in US national security agenda
- ❖ Ullmann (1983), Myers (1989), Mathews (1989)
- ❖ Brundtland-Commission (1987), Gorbachev (1987), NATO (1996-99)

2. Phase: Empirical Phase: Case studies: Scarcity - Conflict

- Toronto: Th. Homer-Dixon: since 1991: 3 Projects (Case: Gaza, conflict)
- Zürich/Bern: Günther Bächler, K.Spillmann (Jordan River, Conflict resolut.)

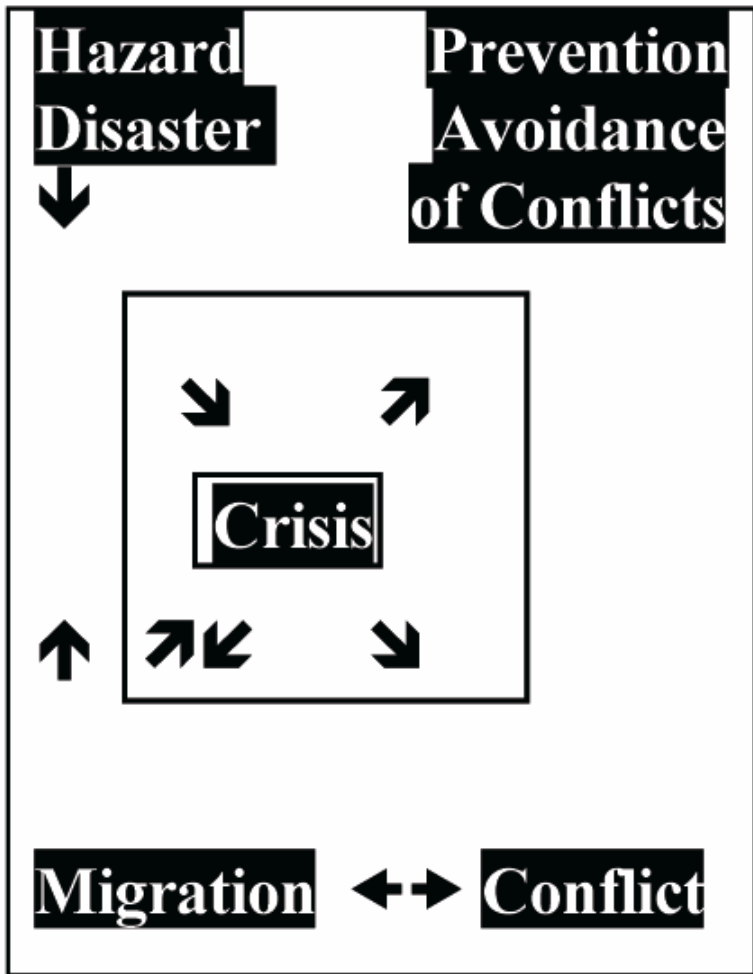
3. Phase: Manifold Research without Integration (1995 - pres.)

- Resource scarcity or abundance as a cause of conflict

4. Phase: Human & Environment. Security & Peace (HESP)

- ✓ My proposal: focus on linkages between global environmental change and fatal outcomes (hazards, migration, crises and conflicts).
- ✓ Brauch, chapt. 2 & 51 of: *Security & Environment in the Mediterranean.*

9. Interactions among Outcomes: Linking Drought & Famine with Societal Consequences



Much knowledge on these factors:

- ✓ Drought, migration, crises, conflicts

Lack of knowledge on linkages among fatal outcomes

- Drought & drought-ind. migration
- Famine & environm.-ind. migration
- Conflicts & conflict-induced migration

Lack of knowledge on societal consequences: crises/conflicts

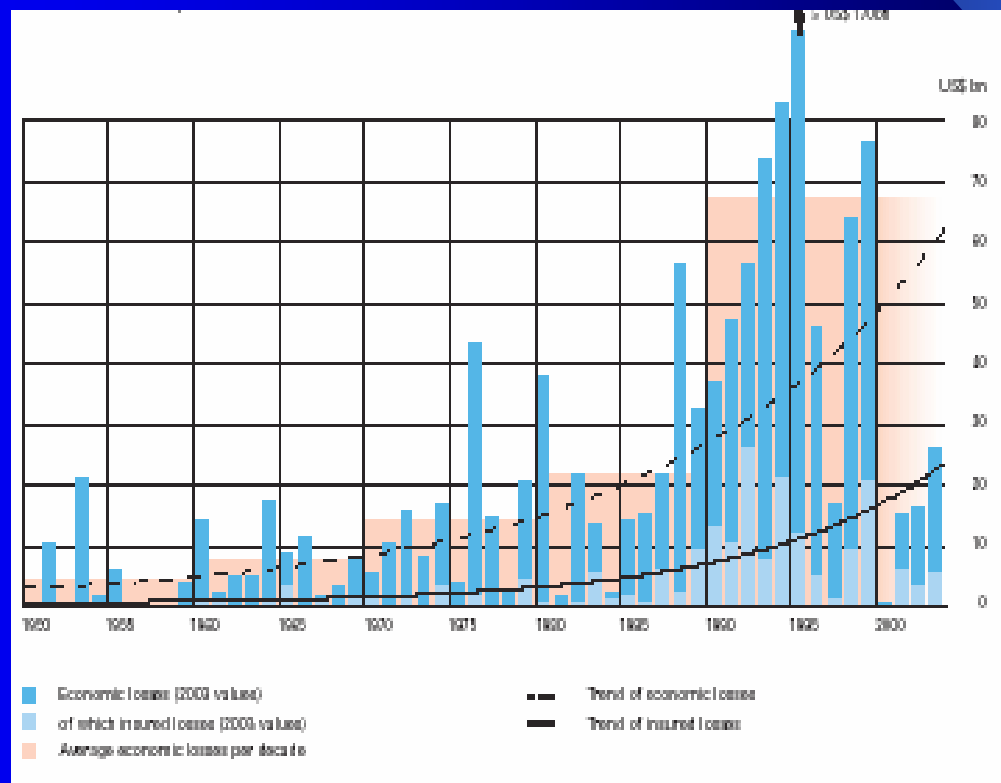
- Domestic/international crises/conflicts
- Environmentally or war-induced migration as a cause or consequence of crises and conflicts

Distribution of natural disasters: by origin (1900-2003, by decades*)

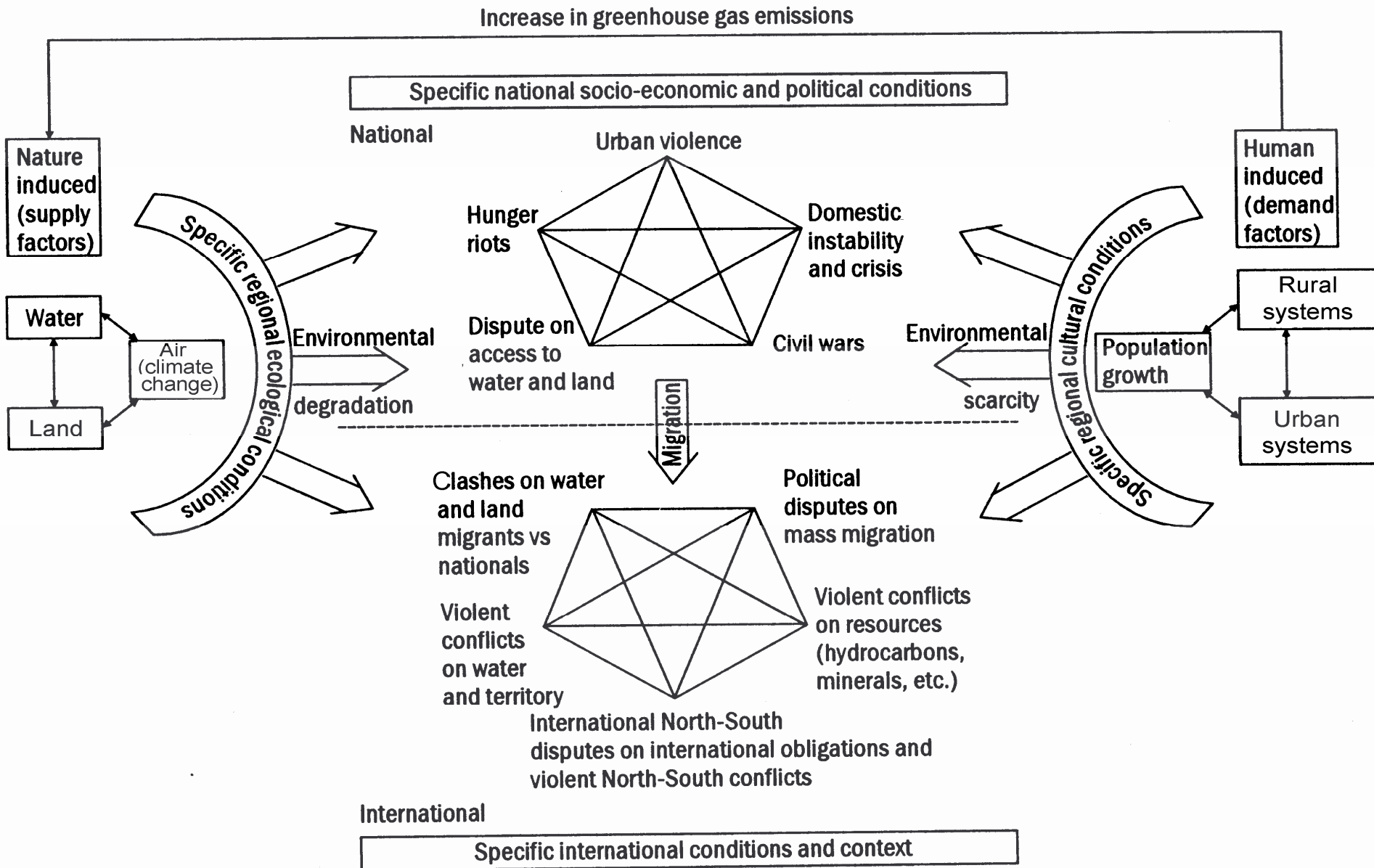
	1900-1909	1910-1919	1920-1929	1930-1939	1940-1949	1950-1959	1960-1969	1970-1979	1980-1989	1990-1999	2000-2003	Total
Hydrometeorological	28	75	56	74	128	280	511	795	1575	2139	1444	7105
Geological	36	26	32	38	53	58	94	128	234	283	152	1134
Biological	5	12	10	3	3	3	40	65	167	351	297	956
Total	69	113	98	115	184	341	645	988	1976	2773	1893	9195

650 990 2000 2800 4700

9.1. Global Impacts of Natural Hazards



9.2. Pentagon of Extreme Outcomes



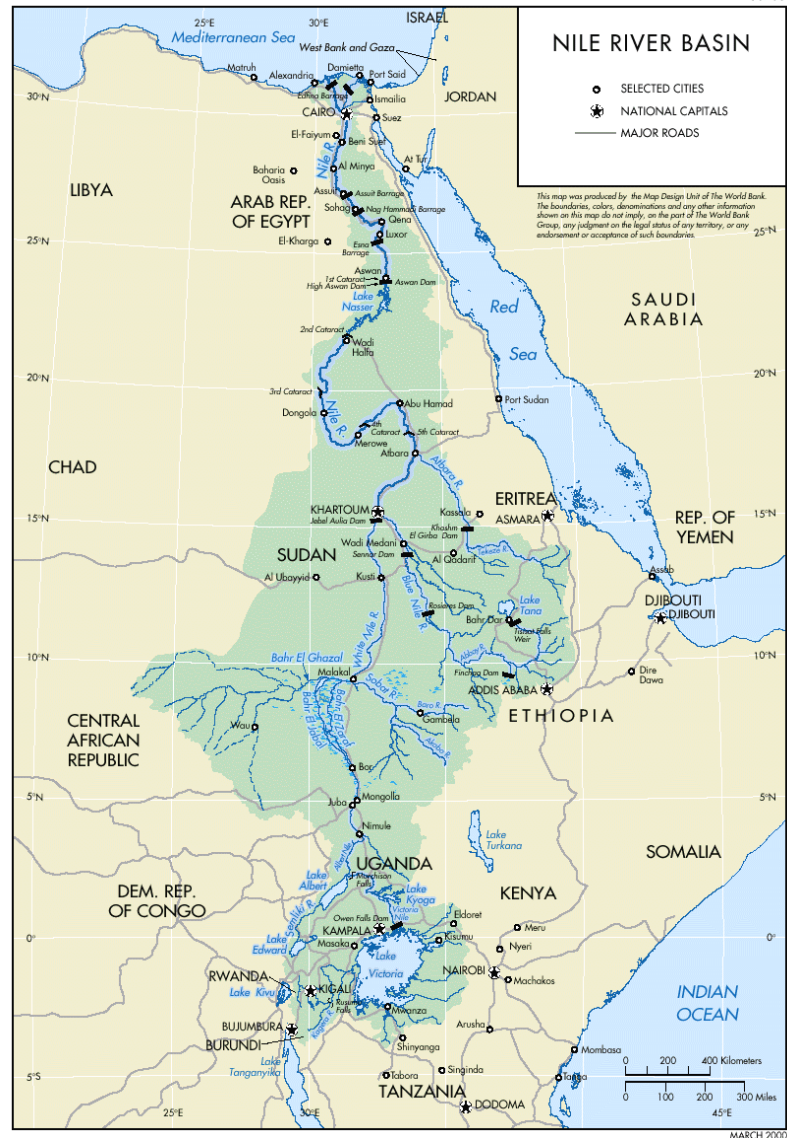
9.3.Diagnosis: Coexistence of Outcomes

Decision Tool Based: ECHO-Human Needs Index (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	Un-der 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

9.4. Case of Vulnerable: Nile Basin Countries

IBRD 30785



4 of 9 countries are in Nile Basin

High: drought, famine. migration, conflicts

Today: major recipients of food aid.

Early warning systems: GIEWS (FAO), FEWS (USAID) HEWS, IRIN. FEWER,

Long-term indicator population growth

	1950	2000	2050	2000-50
Sudan	9,2	31,1	63,5	32,435
Ethiopia	18,4	62,9	186,5	123,544
Ruanda	2,1	7,6	18,5	10,914
Burundi	2,5	6,4	20,2	13,862
Sum (1-4)	32,2	108,0	288,7	+180,755
Sum (1-9)	86,7	280,8	855,8	574,967

10. Compilation of Environmental 'Threats', 'Challenges', 'Vulnerabilities' & 'Risks'

Environmental causes, stressors, effects and natural hazards pose	Natural and economic factors		Societal impact factors (exposure)	
	Substantial threats for	Challenges affecting	Vulnerabilities for	Risks for
	Security objects (for what or whom?)			
Climate change - temperature increase (creeping, long-term)	<ul style="list-style-type: none"> - Human health - agriculture (yield decline) - biodiversity - desertification 	<ul style="list-style-type: none"> - tourism - food security - fisheries - government action - economic action 	<ul style="list-style-type: none"> - infectious disease - damage to crops - natural systems - water scarcity - forest fire 	<ul style="list-style-type: none"> - human populations - the poor, old people and children due to heat waves
Climate change - sea level rise (creeping, long-term)	<ul style="list-style-type: none"> - Small island states - marine ecosystem, - indigenous communities, - industry, energy 	<ul style="list-style-type: none"> - deltas - coastal zones - marine, freshwater ecosystems 	<ul style="list-style-type: none"> - coastal cities, habitats, infrastructure, jobs - cities, homes, jobs 	<ul style="list-style-type: none"> - livelihood - poor people, - insurance, - financial services

10.1. Human Security Threats, Challenges, Vulnerabilities & Risks

- **Four human security concepts:**
 - Freedom from want (UNDP, HSC: Ogata/Sen: Human Security Now, 2003)
 - Freedom from fear (Human Security Network, since 1999)
 - Freedom to live a life in dignity (K. Annan: In larger freedom)
 - Freedom from hazard impact (Bogardi/Brauch: UNU-EHS proposed)
- **Global scientific and political debate on human security:**
 - UNESCO: Africa, Latin America, Arab world, South & Southeast Asia
 - Reviewed & assessed in volume 4 in Hexagon Series
- **Towards Human-centred Environmental Security Concept**
 - IHDP Programme GECHS (1999), Barnett (2001),
 - UNU-EHS: Bogardi/Brauch (2005), Brauch 2005

Thank you

**for inviting me and giving me an opportunity to
share with you these emerging conceptual ideas.**

Thank you

for your attention and patience.

Send your comments to:

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Sources

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



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- Brauch: *Climate Change and Conflicts* (2002) (http://www.bmu.de/en/800/js/download/b_climges/)
- Brauch-Liotta-Marquina-Rogers-Selim (Eds.): *Security and Environment in the Mediterranean* (Springer 2003) (http://www.afes-press.de/html/bk_book_of_year.html)
- Download of previous talks by H.G. Brauch: (http://www.afes-press.de/html/download_hgb.html)