

Arid

Semi-Arid

Dry Sub-Humid

Desertification – A New Security Challenge for the Mediterranean?

Policy agenda for recognising and coping with fatal outcomes of global environmental change and potentially violent societal consequences

NATO - CCMS &
Science Committee Workshop on
**Desertification in the
Mediterranean Region.
A Security Issue**

Valencia, 2-5 December 2003

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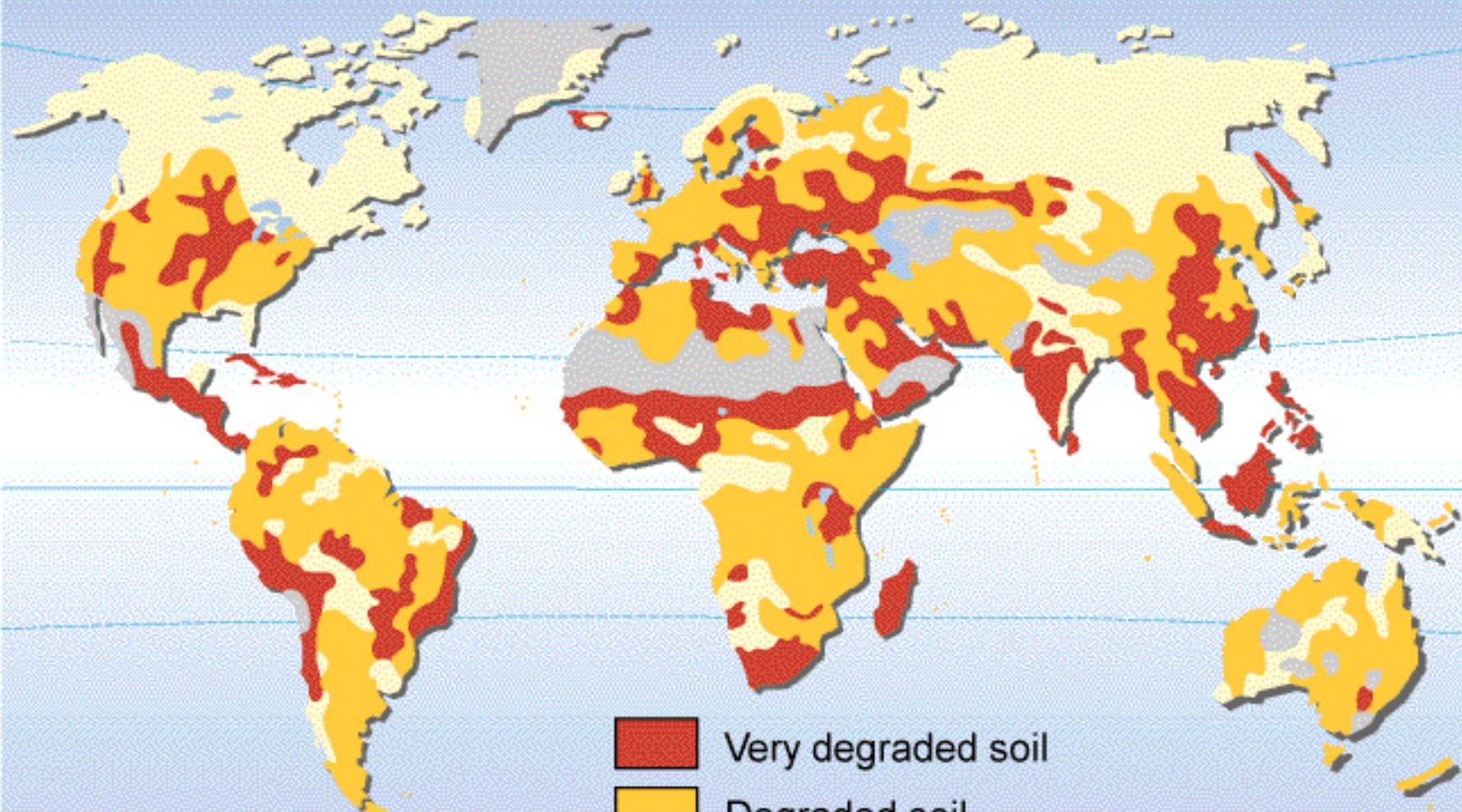


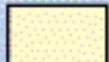
***Drought and desertification
threaten the livelihood of over 1
billion people in more than 110
countries around the world.***

Kofi Annan



Soil degradation



-  Very degraded soil
-  Degraded soil
-  Stable soil
-  Without vegetation





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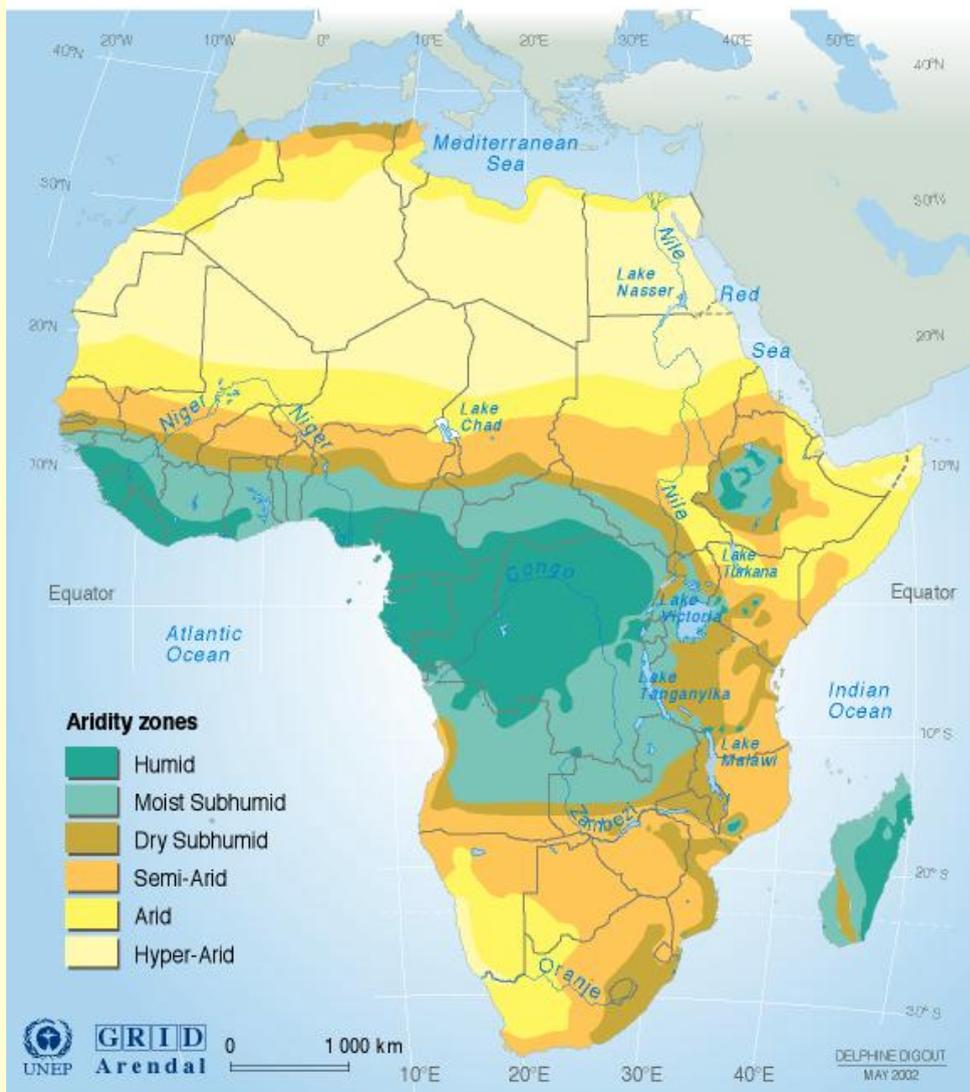
Desertification – A New Security Challenge for the Mediterranean?

Policy agenda for recognising and coping with fatal outcomes of global environmental change and potentially violent societal consequences

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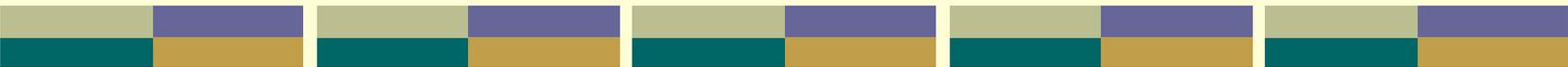
Aridity Zones



1. Basic Questions

- Concepts of desertification
- Concepts of security & environment
- What have desertification and security in common?
- Is desertification a new security issue challenge/threat?

Source: World Meteorological Organization (WMO), United Nations Environment Programme (UNEP), *Climate Change 2001: Impacts, Adaptation, and Vulnerability*, Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change (IPCC).



1.1. Basic Concept: Desertification

- Concepts of Desertification: Mainguet, 2003: 645
 - Lavauden (1927): “Desertification ... is only the **result of man.**”
 - UNEP 1977 *Plan of Action to Combat Desertification* (PACD): defined: „Desertification is the **diminution or destruction** of the biological potential of land, and can lead ultimately to **desert-like conditions**. It is an aspect of the widespread deterioration of eco-systems, has diminished or destroyed the biological potential, i.e. plant and animal production.
 - 1990 UNEP *ad hoc* group for the “Global Evaluation of Desert.“: “**Desertification is land degradation in arid, half-arid and dry sub-humid areas resulting from opposite human impact**”.
 - UNCED in Rio de Janeiro in 1992 adopted this definition: “Desertification is **land degradation in arid, half-arid and dry sub-humid areas**, resulting from various factors, including climatic variations and human activities.”
- 



1.2. Concepts: Security & Environment

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

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

Environment („medio ambiente“) & ecology (ecología):

Encyclopaedia Britannica (1998) defined ‘environment’: “the complex of physical, chemical, and biotic factors that act upon an organism or an ecological community and ultimately determine its form and survival”.

Encyclopaedia Britannica (1998) defined ‘ecology’ as: „study of the relationship between organisms and their environment“.

System ecology: natural science focus;

Human ecology: philosophical, psychological, theological, legal, social dimensions.

Desertification is an environmental security challenge!



1.3. 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, 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 most 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

2. Widening & Deepening of Security since 1989



2. Widening & Deepening of Security since 1989

- Widening of the security concept during the 1990s: adding of new **dimensions** (economic, social, **environmental**)
- Deepening of the security concept: adding new referents other than nation state (**human beings**), **levels of analysis**
- Sectorialisation** of security as **health**, energy, **food**, **livelihood** security in UN family of international organisations.

Security dimension β Level of interaction	Military	Political	Economic	Environmental β	Societal
Human individual β				victim	
Societal/Community				Desertific as a security issue	
National	MENA region				
International/Regional					
Global/Planetary β				GEC	



2.1 Different Security Concepts in the Med.

Mediterranean: competing concepts of territory & security

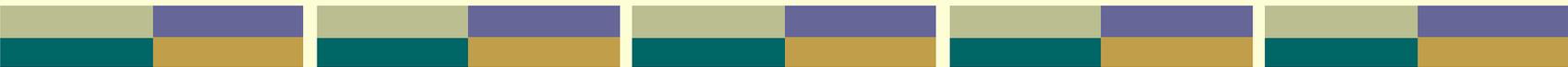
- ❖ Europe (EU): since 1990: wide security concept (dimensions), process of de-territorialisation (post-modern, post-national constellation)
- ❖ In the MENA-region: adherence to the „modern“ sovereignty concept and to a narrow concept of national political and military security.
- ❖ Commonalities: Selim: Masreq countries; Kam: Israel; Aydin: Turkey

Thesis: This narrow Hobbesian security concept used by the elites & analysts in the MENA region is a major constraint.

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 s.	Ecosystem	Sustainability	Mankind





2.2. Food, Health and Livelihood 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 known risks, b) respond to unexpected, c) improve preparedness**

Livelihood Security (OECD, Third World countries)

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



2.3. Desertification as a Security Issue

Desertification as a Food Security Issue

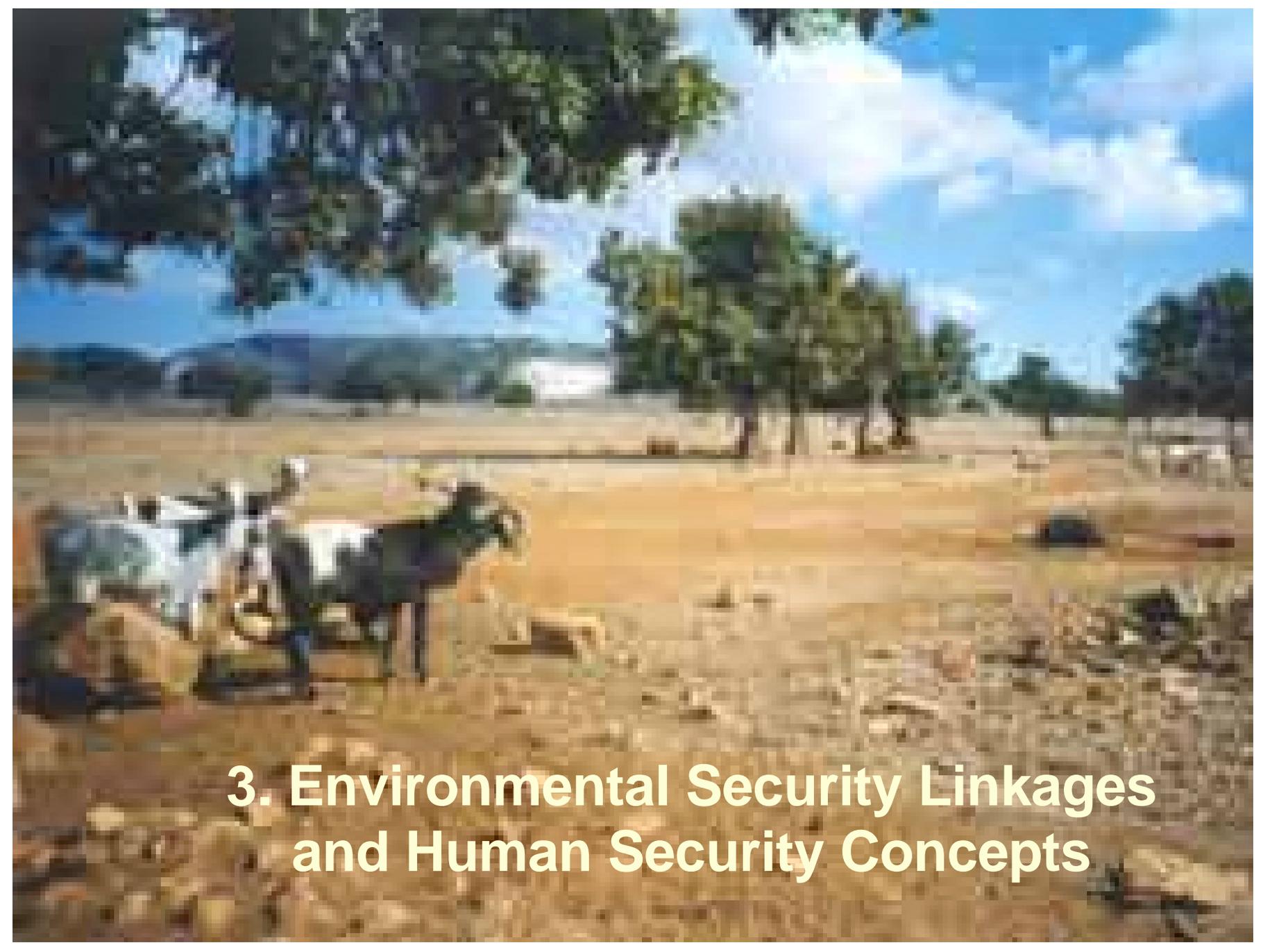
- ❖ **Desertification** (cause) & **drought** (impact: hydro-meteorologic. hazard) > **famine** > **migration**: force people to leave their home (livelihood);
- ❖ **Major actors & concept users**: FAO, WFP, OCHA, ECHO, human. NGOs
- ❖ **Solution**: short-term: food aid & long-term: sustainable agriculture

Desertification as a Health Security Issue

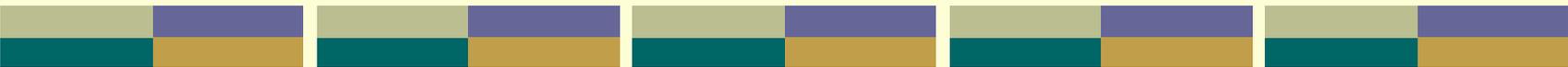
- ❖ **Famine**: undernourishment, malnutrition, high vulnerability to disease, higher rate of death among children > **becomes as health security issue**
- ❖ **Major actors & concept users**: WHO, OCHA, ECHO, humanit. NGOs
- ❖ **Solution**: short-term: medical aid & long-term: sustainable developm.

Desertification as a Livelihood Security Issue

- ❖ **Desertification, drought & famine**: force people to leave their livelihoods, homes, villages, provinces, in search for **indiv. & group survival**
 - ❖ **Major actors & concept users**: in South Asia, UK, US: disaster managers, OCHA, ECHO, humanit. NGOs
 - ❖ **Solution**: enhancement of resilience & sustainable development
- 



**3. Environmental Security Linkages
and Human Security Concepts**



3. Environmental Security Linkages and Human Security Concepts

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), Matthews (1989)
- ❖ **Brundtland-Commission (1987), Gorbatschow (1987), NATO (1996-99)**

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

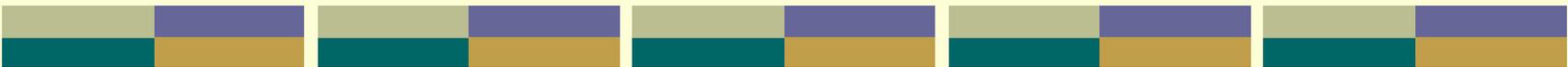
- Toronto: Th. Homer-Dixon: since 1991: 3 Projects (Focus: Conflicts)
- Zürich/Bern: **Günther Bächler, K.Spillmann** (Focus: Conflict resolution)

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*.
- 



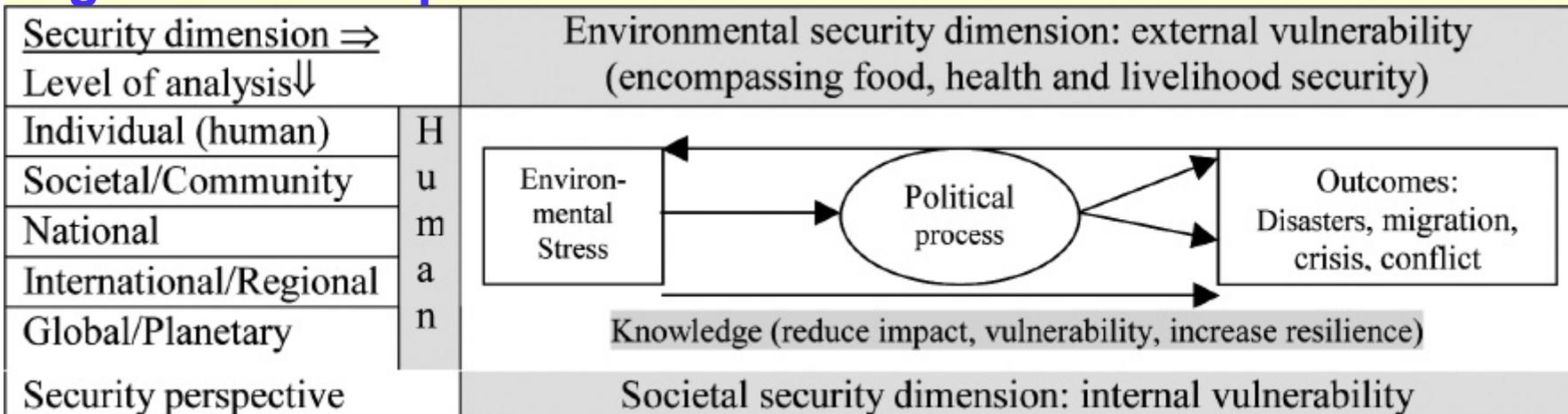
3.1. Environmental Security Dimension (Sector)

- ❖ **Focus:** interactions between **ecosystem & humankind**, impact of **global environmental change (supply factors)** on **environmental degradation**, of increasing **demand factors** (population growth, urbanisation, agriculture/food) on **environmental scarcity** that interact & contribute to **environmental stress**.
 - ❖ **Climate change > extreme weather events > drought > famine > migration.**
 - ❖ **Value at risk: sustainability** (development).
 - ❖ **Major challenges: global environmental change & humankind**, nature- and human-induced (anthropogenic) processes contributing to **environm. stress**.
- No consensus on definition of environmental or ecological security**
- ❖ **Buzan et al. (1990):** „Environmental security concerns the **maintenance of the local and the planetary biosphere** as the essential support system.“
 - ❖ **Brock (1991):** a) **environm. depletion** as a cause of violence & social conflict; b) **env. modification**, c) **ecol. cooperation** building confidence & trust; d) **military means** to enforce **env. standards**, e) **healthy environment** for **compreh. security**..
 - ❖ **Paul Kennedy (2000):** a) **geography & history**; b) **current conditions** conducive to violence, c) **can help international organisations** to identify priority cases.
 - ❖ **Pachauri (2000):** **minimisation of env. damage & promotion of sustainable developm**
- 

3.2. Human Security (HS) Perspective

- ❖ **Referent of *human security*:** individuals and humankind.
- ❖ **Values at risk:** survival of human beings and their quality of life.
- ❖ **Major source of threat:** nature (*global environmental change*), globalisation processes, nation state with its ability to cope with dual challenge.
- ❖ **Dual meaning:** a) perspective of the analyst, and b) outcome of human action (e.g. of risk reduction strategies).
- ❖ **HS encompasses all levels of analyses:** individual to global/planetary level.
- ❖ **H.G. Bohle:** desirable outcome for individuals, communities & active concept challenging inequitable structures contributing to insecurity & vulnerabilities.

Figure: HS Perspective on Environmental Stress & Outcomes





3.3. Desertification and Security Linkages

Desertification as a new security challenge?

- ❖ **Objective security:** no military threats but environmental challenges, vulnerabilities and risks to the **well-being, survival of individuals & national stability.**
- ❖ **Subjective security:** perception of an absence of fear of hunger and survival.

Desertification as a manifold security issue

- ❖ **Human Security Issue:** referent: **individual**; value at risk: **home, group survival**
- ❖ **Env. Security Issue:** referent: **ecosystem**; value at risk: **sustainability of soils**
- ❖ **Food Security issue:** referent: **social groups**; value at risk: **home, survival**

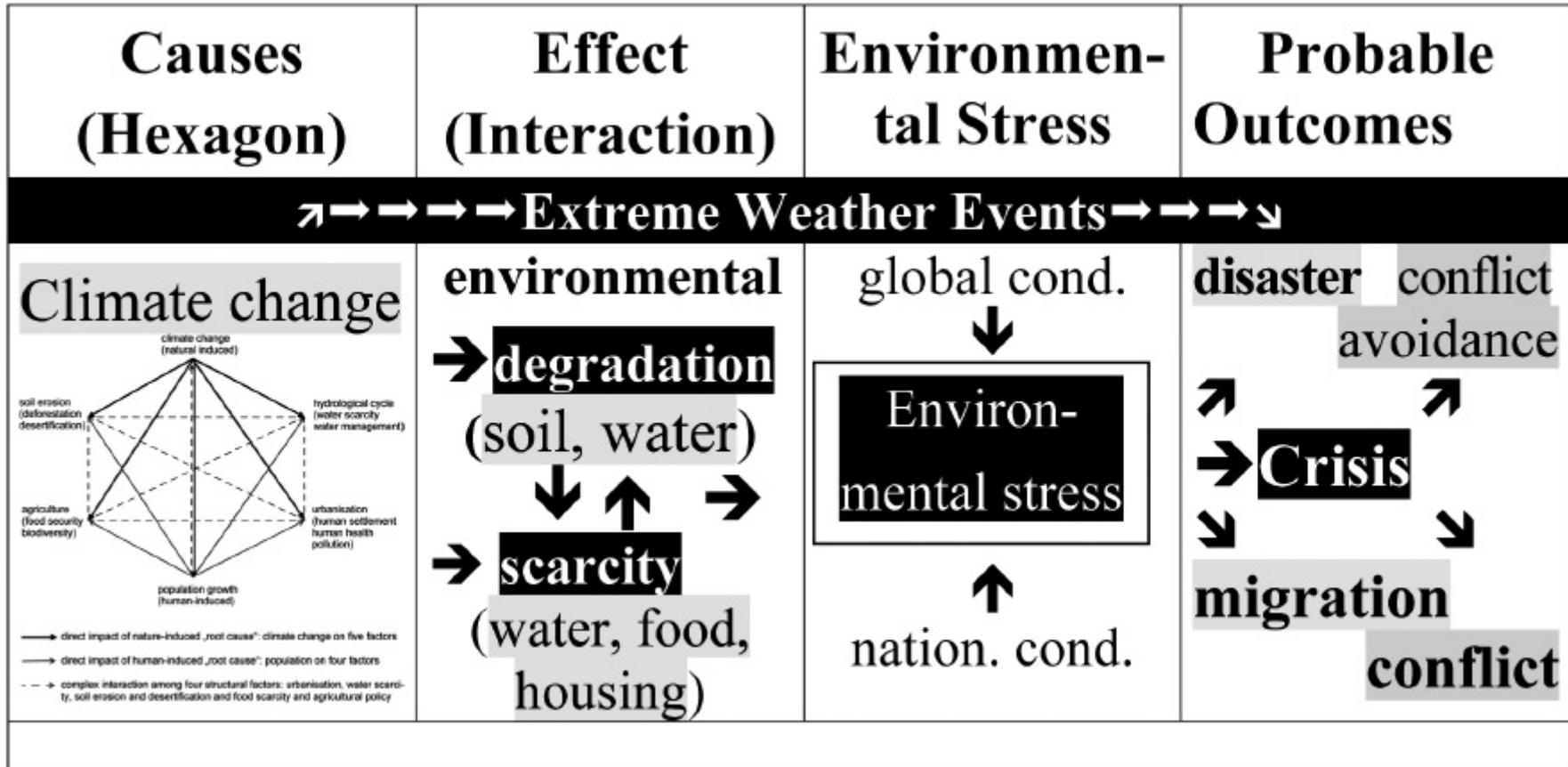
If desertification forces people to leave their home, village & country, results in

- ❖ **Social Security Issue;** referent: **soc. group**; value at risk: **nat. identity**, perceived threat: **immigrants and scarce resources: water, soil & food.**
 - ❖ **National (political, economic, military) security issue:** hunger riots; referent: **soc. group**; value at risk: regime stability, survival of governments
 - ❖ **International security Issue:** in Sahel (Africa) between nomadic tribes and resident farmers in periods of severe drought & famine: contributes to mass trans-boundary environm. induced migration & often trigger ethnic clashes
- 

4. Model: Global Environmental Change, Environmental Stress and Fatal Outcomes

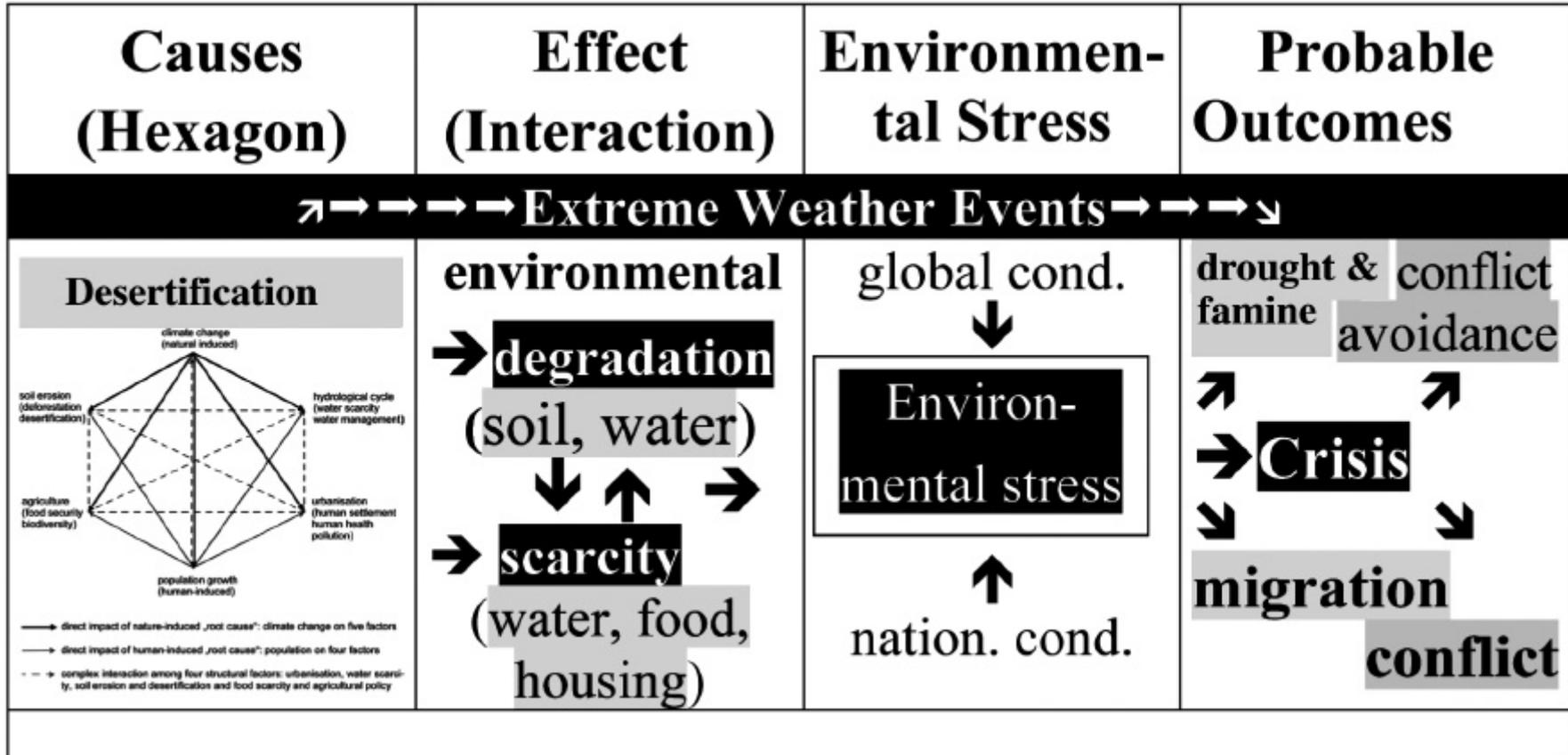


4. Model: Global Environmental Change, Environmental Stress and Fatal Outcomes

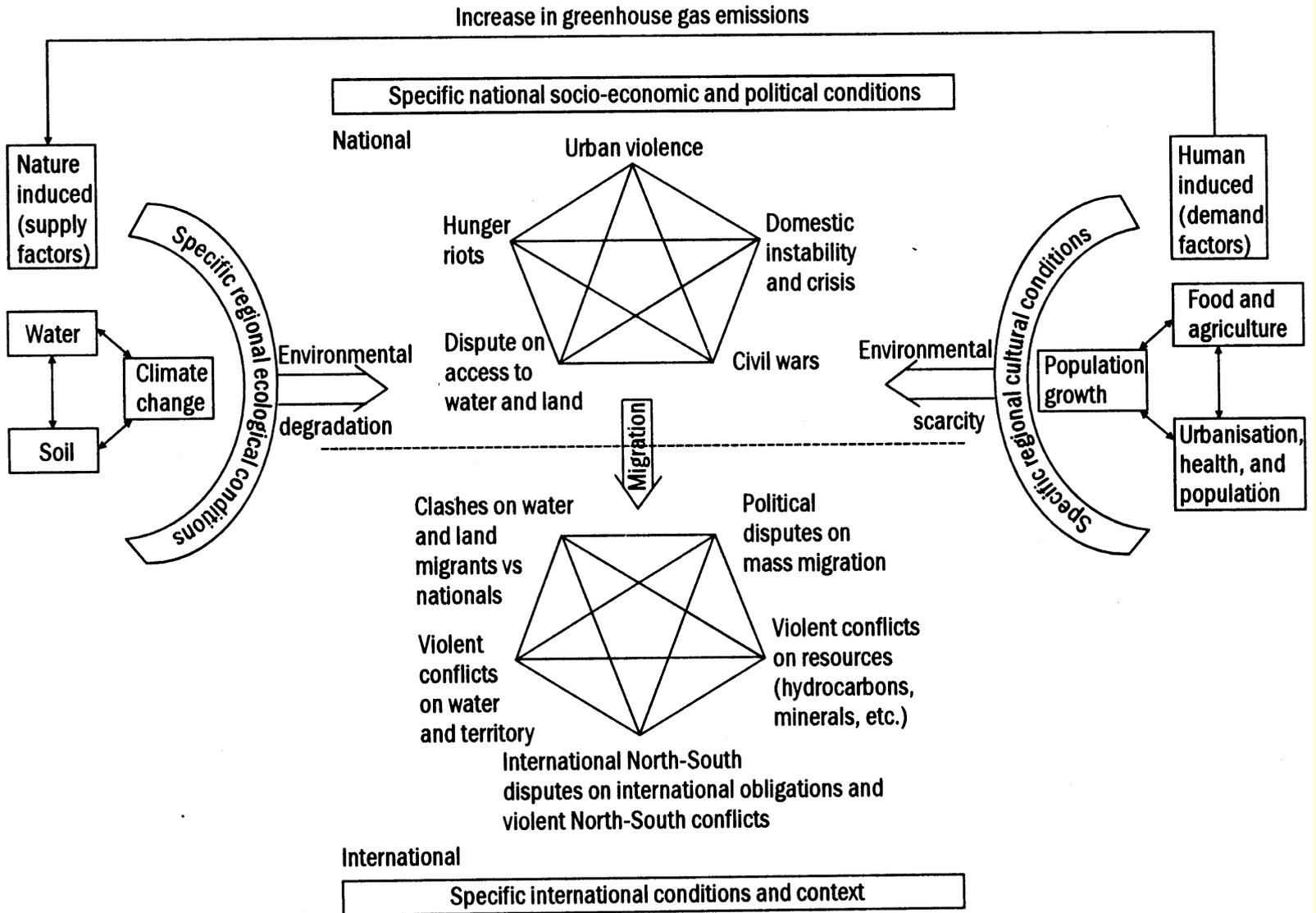


4.1. Model: Desertification and Drought

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

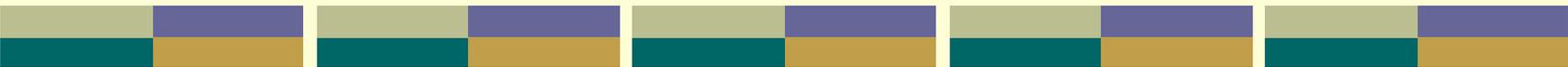


4.2 Potential Violent Outcomes of Environm. Stress



5. Desertification as a Cause and Drought as an Impact of Global Environmental Change

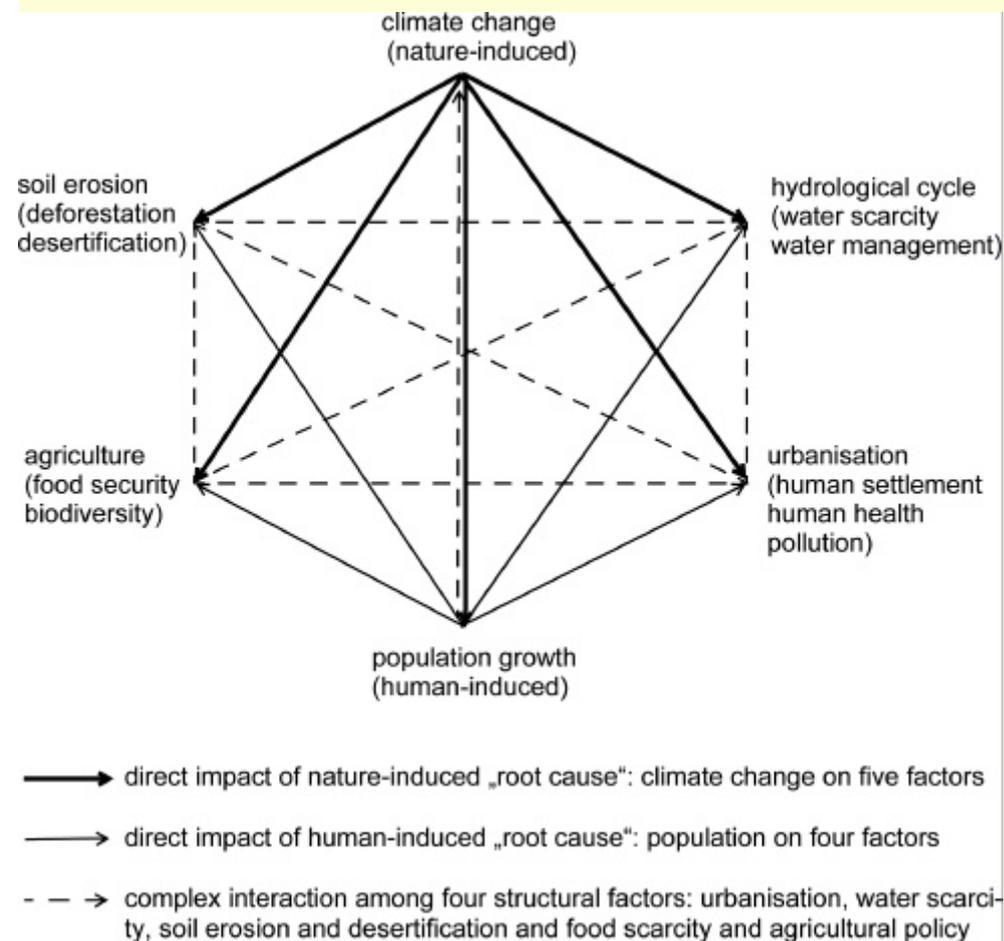




5. Desertification as a Cause and Drought as an Impact of Global Environmental Change

- Desertification: **nature** (natural variability) & **human-induced** (anthropogenic) concept
 - Six Factors of Global Environmental Change: **Complex Causal Interaction within the Hexagon**
 - Linkages between desertification and other factors: e.g. **climate change & population growth**, urbanisation and agriculture & food needs
 - **Desertification**: is a contributor to environmental degradation, scarcity and stress
 - **Drought**: is a cause of **famine, migration, hunger revolts, domestic crises and violent conflicts**
- 

5.1. Wider Security Focus: Non-military Challenges

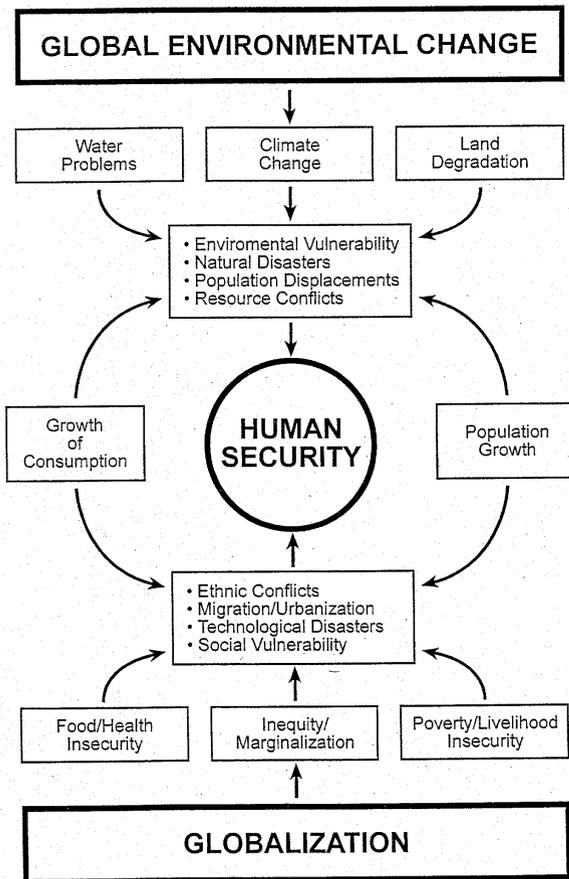


Environmental security in the Mediterranean is affected by **Global Environm. Change**

- Human-induced factors
 - ❖ Population growth
 - ❖ Urbanisation
 - ❖ Food & Agriculture
- Nature & human-induced
 - ❖ Air: Global climate change
 - **Soil:** deforestation, degradation, **desertification**
 - ❖ Water: hydrological cycle, pollution, scarcity
 - Economic production & consumption patterns have impacts on economic globalisation & on Global Environmental Change (GEC).

5.2. Dual Global Challenge: GEC & Globalisation

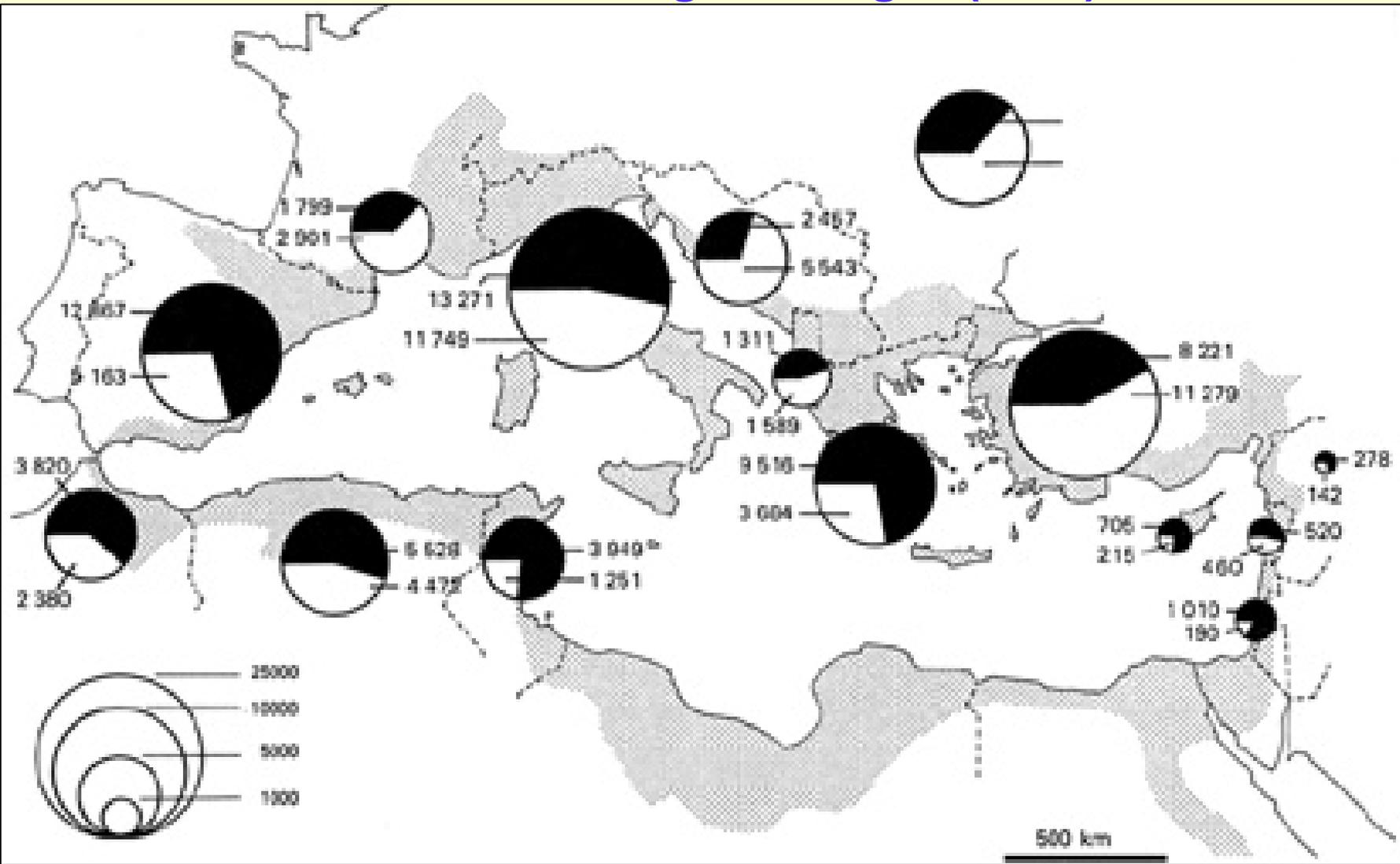
Global Change and Human Security



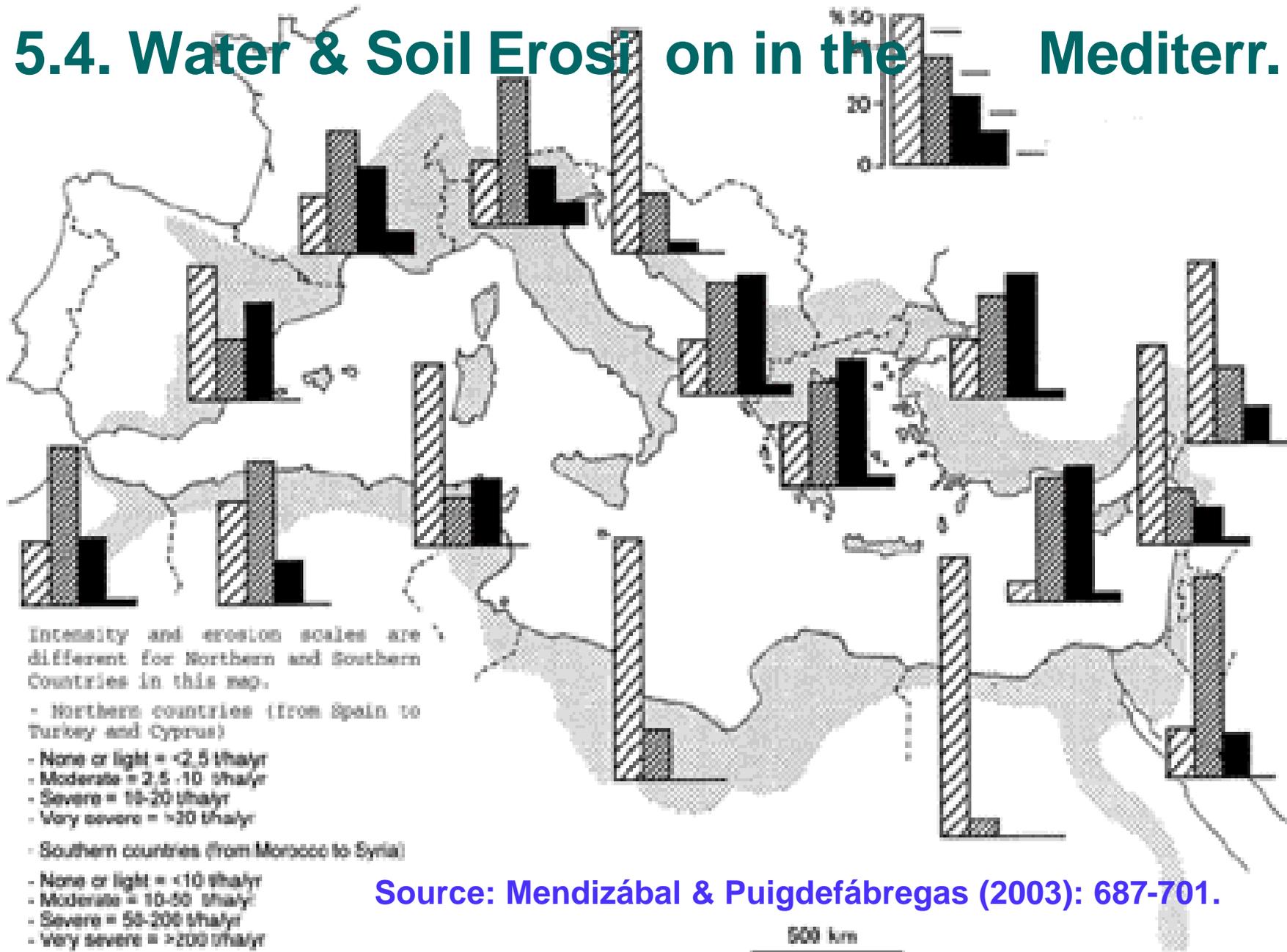
- **Human Security Perspective**
 - ❖ referent: individual & mankind
 - ❖ value at risk: human survival
 - ❖ threat: nature, **GEC** & globalisation
- **GEC > environm. vulnerability > drought > migration > scarcity**
- **Globalisation > inequity > social or societal vulnerability > migration > ethnic conflict**
- **Key questions for Medierranean**
 - **How will GEC & globalisation affect the individual, society, countries?**
 - **Is human survival at risk, for whom?**
 - **Can environmental security challenges (**GEC**) be solved by hard security concepts and means?**

5.3.Erodable Land in the Mediterranean

Source: Mendizábal & Puigdefábregas (2003): 687-701.



5.4. Water & Soil Erosion in the Mediterr.





5.5. Causes of Desertification in Mediterranean

Teresa Mendizábal & Juan Puigdefábregas (2003): 687-701, concluded:

- **20th century:** climate factors were rarely responsible for desertification.
 - **Socio-economic factors & climatic fluctuations, are main des. drivers.**
 - Desertification in the Mediterranean basin is driven by **markets & agricultural policies** and **climate factors & demographic changes**.
 - Water scarcity, food security and urbanisation also affect desertification.
 - **South European countries:** **markets & regional agricultural policies** as key drivers. **Major land use changes** associated with desertification risk are (i) new irrigation developments, (ii) expansion of traditional tree crops over marginal lands, (iii) sheep overstocking.
 - **Maghreb countries:** **demographic growth & national agricultural policies**, on sedentarisation and food security, are major desertification drivers. **Land use changes:** (i) encroachment of marginal agriculture on range-lands, (ii) sheep overstocking of rangelands.
 - **Available projections suggest that the North-South climatic and socio-economic gradients will increase in the Mediterranean region.**
- 



5.6. Linkages: Climate Change & Desertification

Interactions between desertification and climate change were analysed by **Williams and Ballings (1996) for WMO/UNEP** & assessed by **IPCC**.

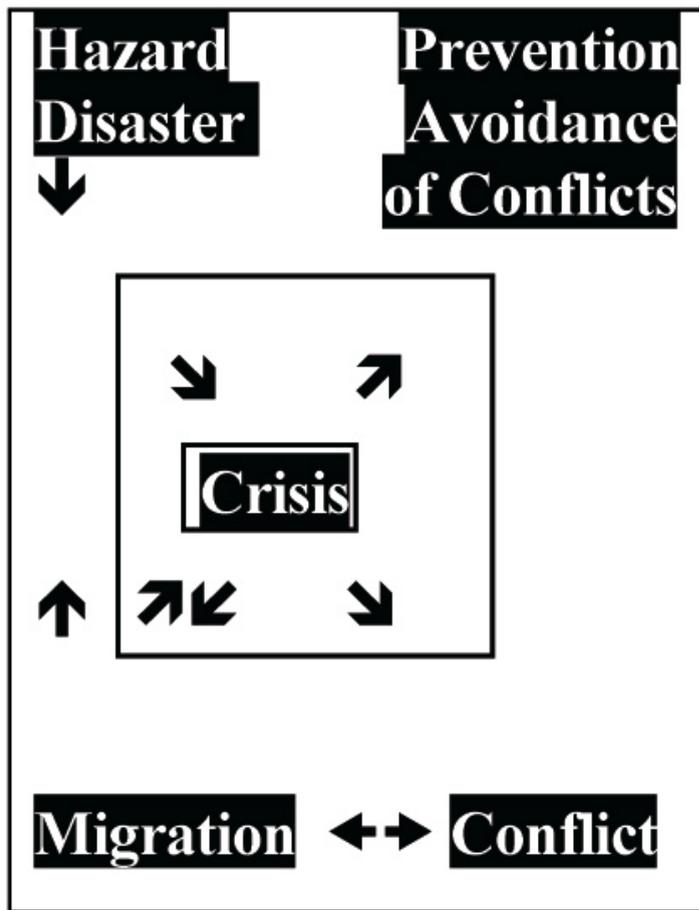
- **IPCC, SAR (1995) & TAR (2001): Climate Change and Desertification**
 - ❖ **WG II (IPCC 1996): Most deserts are likely to become even more extreme.**
 - ❖ **Most desert regions: become hotter & most will probably not become wetter.**
 - ❖ **Changes in frequency or intensity of rainfall events are likely to cause changes in the flora and fauna. ... Any reduction in the intensity of rainfall could also be detrimental to this set of organisms due to false starts in their life cycles.**
 - ❖ **Opportunities to mitigate greenhouse gas emissions in desert regions are few.**
 - ❖ **Human-induced desertification may counteract any ameliorating effect of CC on most deserts unless appropriate management actions are taken.**
 - **Impact of CC on Desertification in the Mediterranean and MENA Region**
 - ❖ **These projected effects are relevant for all MENA countries, especially for Egypt & will be affected most by effects for coastal zones due to sea-level rise.**
 - **Human-induced factors: (population growth, urbanisation & agriculture/food) contribute to processes of soil erosion and desertification.**
- 

6. Interactions among Fatal Outcomes: Drought and Societal Consequences



6. Interactions among Fatal Outcome:

Linking Drought & Famine with Societal Consequences



Much knowledge on these factors:

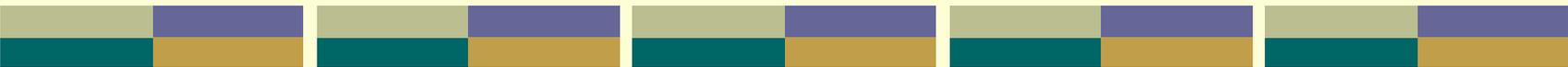
✓ **Drought, migration, crises, conflicts**

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



6.1. Basic Questions on Linkages

Are there causal linkages among:

- ❖ drought and violent societal consequences?
- ❖ drought & disaster-induced migration?
- ❖ drought, food insecurity (famine), migration & conflicts?

Illustrative cases on linkages:

- **Lack of precipitation** > drought > bad harvests > famine > disaster-induced migration > clashes migrants/farmers > or hunger riots > police & armed forces restore order
- **Conflicts** > war refugees > famine > enhanced societal & environmental vulnerability of war refugees to hazards and disasters (to drought, floods & epidemics)

If there are linkages, then mainstreaming of early warning of hazards and conflicts makes sense!





6.2. Knowledge on Linkages among Fatal Outcomes

Thesis 1: There is a linkage between **Global Environmental Change & hazards** leading to **disasters** (IPCC 01; ISDR 02).

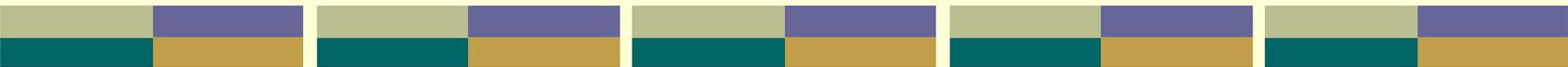
Thesis 2: IPCC observed & projected a linkage between **climate change & increase in extreme weather events** resulting in increase in number & intensity of **hydro-meteorological** events.

Thesis 3: Munich Re observed an increase in **economic damage** from **hydro-meteorol. disasters** for 1950-95 (IPCC 2001).

Thesis 4: There exists a **complex interaction** between **drought** and **environmentally-induced, disaster-triggered migration**.

Thesis 5: In some cases **hazards/disasters** and **environmentally-induced migration** may cause, trigger or contribute to domestic and international **crises** that may under certain conditions **escalate to violent conflicts** that should be **avoided, prevented or resolved internally and (inter)nationally**.





6.3. Structural Data: What Do we Know on Outcomes?

Natural Disasters: Statistical Sources for Drought Data:

- Centre for Research on the Epidemiology of Disasters (CRED), Univ. de Louvain, Belgium: EM-DAT: OFDA/CRED International Disaster Database of reported events at: www.cred.be/emdat: 1900-present, natural & technologic. disasters; countries: major statistical source;
- EM-DAT is source for IFRC-RCS World Disaster Report
- Reported drought data for Med. are not representative!

Environmental Refugees & Environm.-induced Migration

- Claims: N. Myers (2002): 1995: 25 mio. ER; 23 mio. tradit.
 - Definitional Problems: no 'refugee' status, not reported as a special category of (inter)national migration statistics
 - Statistical Problems: "environmentally-induced" migration
- 

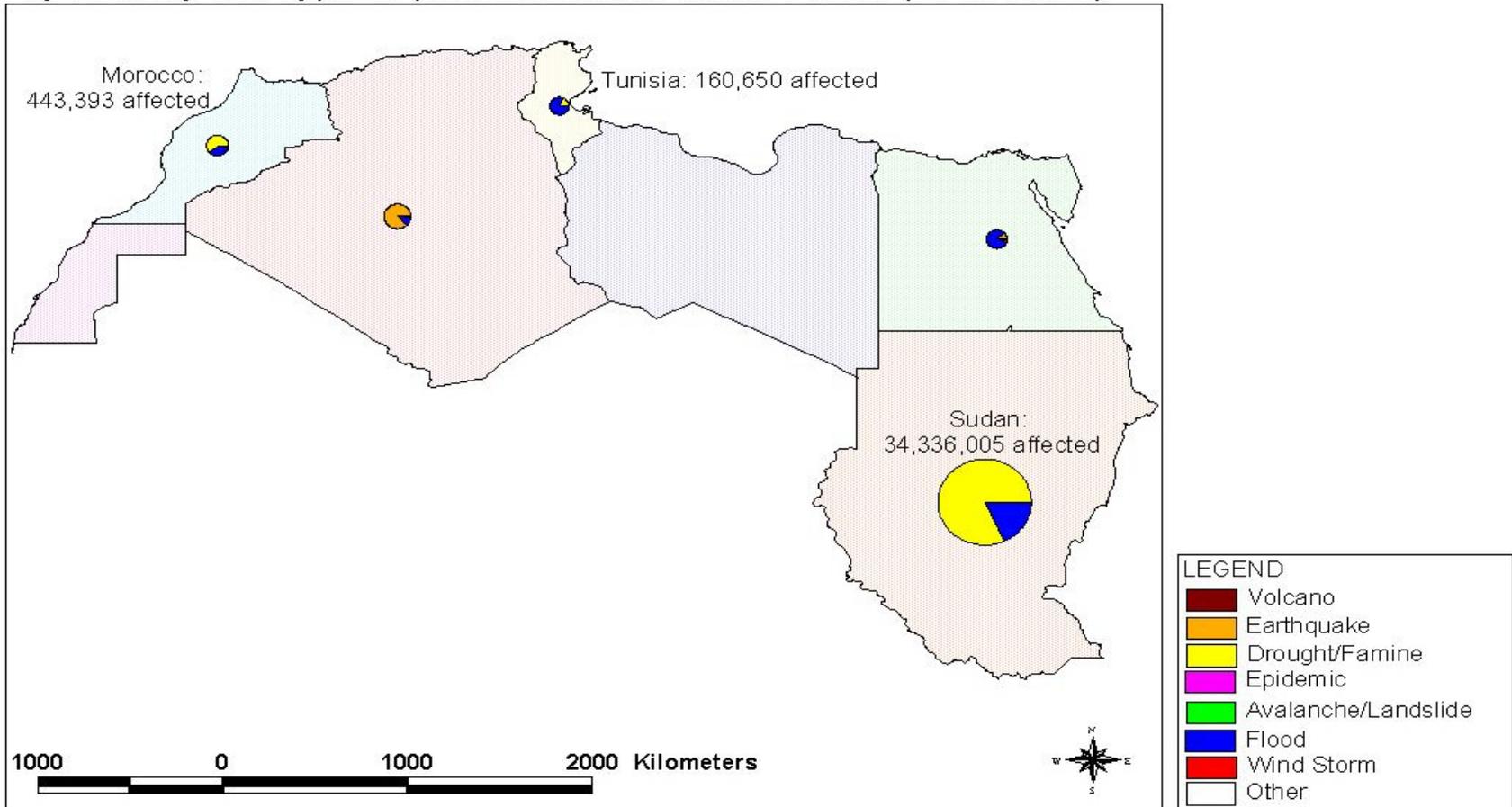
6.4 People Affected by Drought & Famine in the Mediterranean (1975-2001), Source: EM-DAT

H.G. Brauch, Ch. 49, in: *Security and Env. in Med*, 2003: 876

	Total			Drought/Famine		
	Event	Killed	Affected	Event	Killed	Affected
South Europe (EU)	249	8,888	12,622,055	8	0	6,000,000 (4 events, Spain)
EU Candid.	9	59	4,451	2	0	0
Balkans	50	562	3,779,928	3	0	3,210,500
Eastern Mediterranean	95	27,613	3,700,060	5	0	988,000
North Africa	82	6,606	2,038,320	10	0	306,400 (5 ev. Morocco)
Total	485	43,728	22,144,814	28	0	10,504,900

6.5 People Affected by Drought & Famine in North Africa (1975-2001), Source: EM-DAT

Distribution of people affected by natural disasters, by country and type of phenomena, in North Africa (1975-2001)



EM-DAT: The OFDA/CRED International Disaster Database
(<http://www.cred.be> ; email: cred@epid.ucl.ac.be)

6.6. Diagnosis: Interactions 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	Conflicts	Refugees	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

6.7 Case of 4 vulnerable Nile basin countries



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, FAST

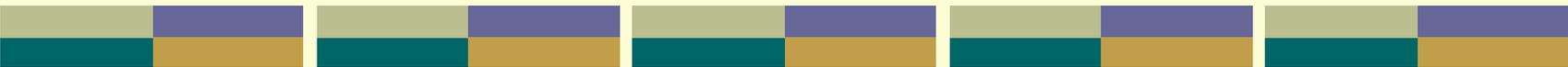
Long-term indicator population growth

	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

7. Desertification-induced Drought, Migration & Famine and Conflicts



© Sebastiao Salgado: Rwanda



7. Desertification-induced Drought, Migration & Famine and Conflicts

- **Desertification is a slow-onset environmental challenge to security and survival, especially for the poor.**
 - **Affects the individual, family, village, region and their security**
 - **Affects survival of rural population: contributes to rapid urbanisation**
 - **Vicious circle: Poverty contributes to desertification and desertification often intensifies poverty.**(dual cause and effect relationship)
 - **Drought, migration and famine are situational challenges to security and survival, especially for the poor.**
 - **Drought as a hydro-meteorological hazard** (partly caused by Climate change and its interaction with desertification) has forced people to leave their home and livelihood
 - **Drought has often resulted in famine and/or food price increases that often led to strikes, hunger revolts, domestic crises and conflicts.**
- 

7.1 Impacts of Desertification: Migration, Urbanisation and Internal Displacement

1994 Almería Symposium on Desertification and Migration

The Almería Statement, 1994:

Socio-political dimensions

- of 50 conflicts: 20 env. dimension
- Major factor of geopolitical instability
- Urbanisation: accelerates impoverishment of land, resources & people

Policy priorities

- IDP in arid, semi-arid lands > impose severe pressure on scarce natural land
- Prevention of involuntary desertif.-induced migration: sustainable agriculture
- Regional planning: harmonise agricultural production with development of medium-scale towns in rural areas



© Sebastiao Salgado:
Refugee child

7.2 Impacts of Desertification: Drought, Famine, Crises & Conflicts



Figure 8.6. Famine areas and location of major wars in Africa.
Source: Griffiths and Binns, 1988:49.

- Coincidence between famine areas & major wars in Africa in 1980s?
- **M. Garenne:** „Mortality in Sub-Saharan Africa:Trends & Prospects“
- **I.L. Griffith:** „Famine and war in Africa“, in: *Geography*, 73,1:59-61:
 - ❖ „Famines, political unrest, and civil wars occur simultaneously in the same countries and regions.
 - ❖ Rapid urbanisation rates
 - ❖ Migration: rapid spread of diseases, especially also AIDS
- **Empirical research is needed on the relations among the outcomes: drought, famine, migration, crises & conflicts.**

7.3 Hunger Riots in North African countries

Drought > increase in basic food prices, IMF proposal to cut food subsidies > general strikes > violent hunger riots > intervention of police and armed forces > casualties & imprisonment of rioters, cases in court.

E, MONDAY, DECEMBER 17, 1990

*

Morocco on Edge After 2 Days of Riots

Compiled by Our Staff From Dispatches

RABAT, Morocco — Security forces patrolled major Moroccan cities Sunday following two days of rioting, and government opponents insisted the death toll was higher than the official figure of five.

Varying and unconfirmed assertions by doctors, union officials and others gave figures on the number of deaths in the north-central city of Fez that ranged from a minimum of 25 to more than 100.

Medical sources in Fez said that at least 33 people were killed in the violence Friday and Saturday.

A doctor who did not want be identified told Reuters, "The death toll is heavy. On the basis of hospital and morgue registers, there must have been 100 dead and 200 wounded, including both civilians and military."

Registers at a hospital and the city morgue showed that 13 died on Friday and 20 on Saturday. Most of the dead brought in on Saturday were soldiers, medical sources said.

The government said rioting Friday in Fez, a city of 450,000, killed five people, including a policeman, and injured 127 people, mostly policemen. Scores of people were reported injured Friday in other cities during a nationwide, one-day general strike for higher wages.

The violence continued in Fez on Saturday with arson attacks on vehicles and a police station.

The major cities were reported calm but uneasy Sunday, with security forces deployed at intersections and guarding public buildings. A few spontaneous demonstrations were reported in

Rabat, the capital, late Saturday and early Sunday.

The union federations that organized the general strike vowed to combat "government terrorism." They said the violence occurred because security forces "resorted to intimidation, provocation and repression."

But the government said the police in Fez suffered heavy casualties because they exercised restraint, using warning shots, tear gas and clubs to disperse rioters.

Authorities said a policeman was fatally stabbed when his unit was surrounded by rioters, and a civilian was crushed to death by stampeding protesters during a police charge.

Fez, the religious and intellectual center of Morocco, suffered extensive damage from looting and ar-

son. The official press agency, WMA, said looters armed with chains and iron bars ransacked jewelry stores, banks and public buildings.

The rioters set about 50 buses and cars on fire and burned a luxury hotel, the Merindes, the agency said. About 210 people were arrested, including a group carrying away a safe containing more than \$70,000 in cash, WMA reported.

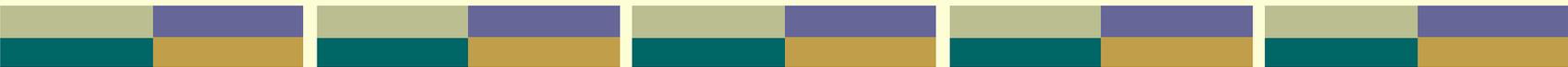
The unions said 80 percent of workers observed the strike call. The government said only a handful of businesses and factories were affected.

But authorities confirmed that the strike was widely observed on university campuses, where at least 40 percent of classes were canceled.

(AP, Reuters)

8. Instruments and Actors for Dealing with Desertification as a Security Issue





8. Instruments and Actors for Dealing with Desertification as a Security Issue

Reactive Security Policy: Dealing with the Consequences

- Rapid disaster response: humanitarian community dealing with drought & famine & migration & conflicts
- Coping with domestic & trans-border violence: police & armed forces

Proactive Security Policy: Addressing the Causes

- Global environmental policy and combined efforts of
 - Desertification: UNCCD regime (Secretariat in Bonn)
 - Climate Change: UNFCCC regime (Secretariat in Bonn), Kyoto Protocol
 - Reproductive Health: UNPF (slowing down demand)
 - Improved Water Conservation, Harvesting and Management
 - Sustainable Agriculture: FAO, WFP
 - Dealing with urbanisation: Habitat

Task: Reduce costs & impact of drought and societal consequences by early warning of famine, migration & conflict!



9. Early Recognition, Long-term Monitoring of Desertification & Drought & Early Warning of Conflicts: A Security Task



© Sebastiao Salgado: Spain, Gibraltar



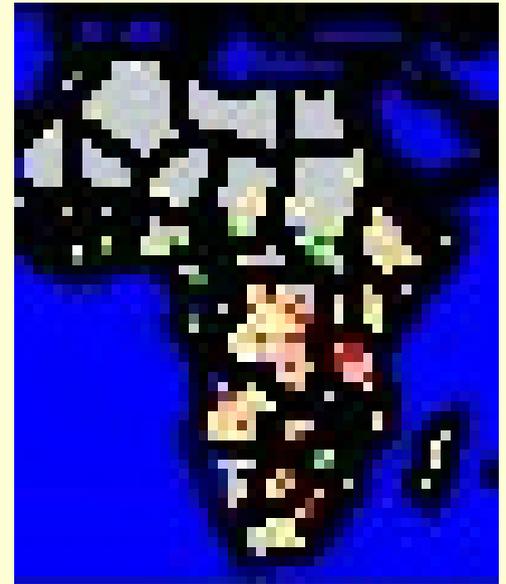


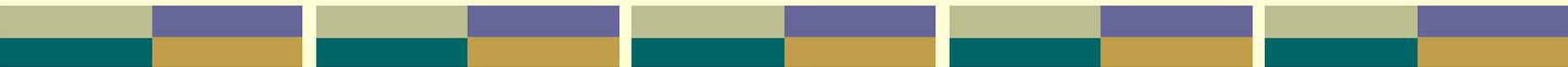
9. Early Recognition & Long-term Monitoring of Desertification & Drought & Early Warning of Conflicts: A Security Task

- **A Task for Remote Sensing: FEWS (9.1) & GIEWS (9.2)**
 - **GMES-Initiative of the European Commission and ESA (Global Monitoring for Environment & Security): 1998-2008**
 - ❖ 1998: Manifest of Baveno: Formulating the Goals
 - ❖ 2001-2003: Initial Period: 2002-03: Four GMES-Fora: Brussels, Nordwijk, Athens & Baveno (decision is pending prior to EU enlargement on next phase)
 - ❖ GMES EC thematic projects:
 - **Land cover change in Europe (BIOPRESS): B. Wyatt (UK)**
 - **LADAMER: J. Hill (Germany)**
 - ❖ 2004-2008: GMES Capacity Implementation: Services, Space Obs. Syst, In-situ
 - ❖ 2008: Goal to have an operational Capability
 - **G-8 Evian approved (2003): Earth Observation Summit Proj.**
 - First EOS: 31 July 2003 in Washington, D.C., State Department
 - Second EOS: Spring 2004 in Japan
 - Third EOS: Autumn 2004 in European Union
- 

9.1. Drought Early Warning System

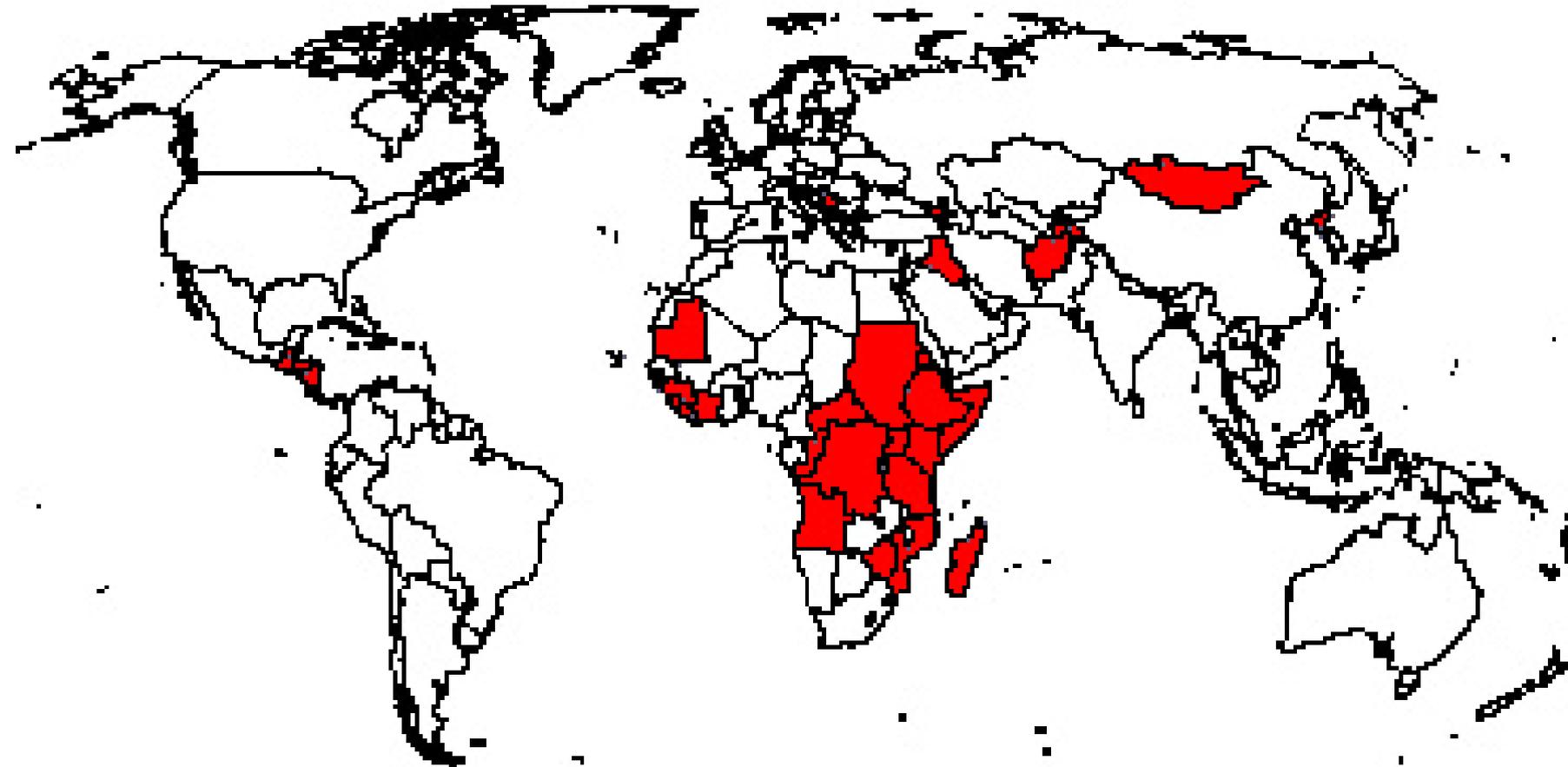
- **Famine Early Warning Systems Net (FEWS)**
 - ✓ Normalized Difference Vegetation Index (NDVI), (11/11-20, 2003 Dekad 32) from the **US Geological Survey (USGS)**
 - ✓ Current Rainfall Estimate (11/11-20, 03) Dekad 32 from the **National Oceanic and Atmospheric Administration (NOAA)**.
 - ✓ Current NDVI Long-Term Avg (1982-1999)
- **Early Warning Systems**
 - Of hazards/disasters:**
 - GIEWS (FAO),
 - HEWS, IRIN.
 - Of conflicts:**
 - FEWER, FAST (Swisspeace)





9.2. FAO: Global Information and Early Warning System on Food and Agriculture (GIEWS)

Countries Experiencing Food Emergencies in October 2003

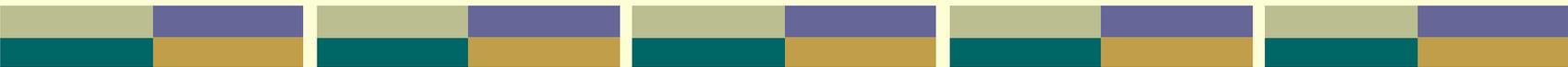


9.3. Types and Goals of Early Warning Efforts

Threat	of hazards and disasters	of crises and conflicts
Types	Earthquake, volcanic eruption, tsunami, hurricane, flood, drought , fire, disease, epidemic	Social & economic, ethno-religious crisis, urban violence, disputes on access to water & food, hunger riots, civil wars, disputes on mass migration & scarce resources
Goal	J.C. Scott (1999): “to empower individuals and communities , threatened by natural or similar hazards, to act in sufficient time and in an appropriate manner so as to reduce the possibility of personal injury, loss of life and damage to property, or to fragile environments ”	Swisspeace (FAST): “to recognize crucial political developments in the countries monitored in a timely manner , thus enabling decision makers to take measures to prevent violent escalation of conflicts or at least to attenuate their consequences. ... to provide a database [on] the political situation, conflict and cooperation ... to forecast ... developments.
Tool	Technical systems	Political procedures & processes

9.4. Early Warning Efforts: Disasters & Conflicts

Level	of hazards and disasters	of crises and conflicts
Global	UN-ISDR, IATF 2 UNDP & UNEP, EO Summit	UN-SC, ORCI (1987-92), DPA, (HEWS), DPKO, OCHA ; ECPS
Activity	EWC (1998), EWC2 (2003) Earth observation , hazard analysis, commun. technol.	SG: K. Annan Report 2002 UNHCR, IOM, UNICEF, FAO, WHO. World Bank
Regional (EU-15)	DG Envir.; DG Dev. (ECHO) Cardiff Process : integration of environment into other sectoral policies, GMES	DG Relex, DG Research, GMES Göteborg Process : integration of conflict prevention into regional EU policies
EU-Mainstreaming Tools	Thessaloniki European Council, June 2003 : Green Diplomacy Major Tool: Remote sensing in the framework of the EU-ESA initiative: Global Monitoring for Environment and Security	



9.5. Early Warning of Disasters and Conflicts: Cardiff & Göteborg Processes in the EU

Cardiff Process: Disaster Prevention (DG Environment)

- **Disaster Response and Prevention: *Mitigation & adaptation efforts:***
Reduce “environmental” and “societal vulnerability” (key actors: DG Research, DG Environment, Civil Protection)

Göteborg Process: Conflict Prevention (DG Relex)

- **European Councils in Helsinki (1999), Feira (2000), Nice (2000), Göteborg (2001), Barcelona (2002), Thessaloniki (June 2003).**

European Diplomacy on Environment & Sustainable Dev.

- **Network of Foreign Ministry experts on environment & security**
 - **Policy level:** „address the link between env. & security by ensuring that **environmental factors are fully addressed in conflict prevention activities as well as in post-conflict reconstruction ... to identify priorities for more concerted action.**“
- 



9.6. GMES: A New Tool of the EU and ESA - Global Monitoring for Environment and Security

GMES: EU-ESA initiative: 1998-2003: discussion, 2004-2007: implementation, and after 2008: operational phase

GMES WG on Security (2002-03) reviewed EU policies of **conflict prevention & crisis management** & concluded that GMES could support

- **Natural and technological risks in Europe**
- **Humanitarian aid and international cooperation**
- **Conflict prevention incl. monitoring of compliance with treaties**

Organisations as potential users:

- ❖ **Civil protection in Europe** to manage natural and technological risks
- ❖ **European institutions, internat. organis. NGOs** in humanitarian and development aid, civilian crisis management outside Europe
- ❖ **Council entities:** civil and military crisis management operations.

Early Warning tasks: forecasting tools for natural disasters (river floods).

- ✓ **Methodologies**, alert tools for **rapid onset disasters** (storms, floods)
 - ✓ Contribution to **conflict prevention efforts**
- 



9.7. Mainstreaming Both Early Warning Communities in Science & Policy

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:

- Vertical:** global – regional – national – local, e.g. IDNDR, ISDR, with EU
- 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
- Actors:** Political and 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.

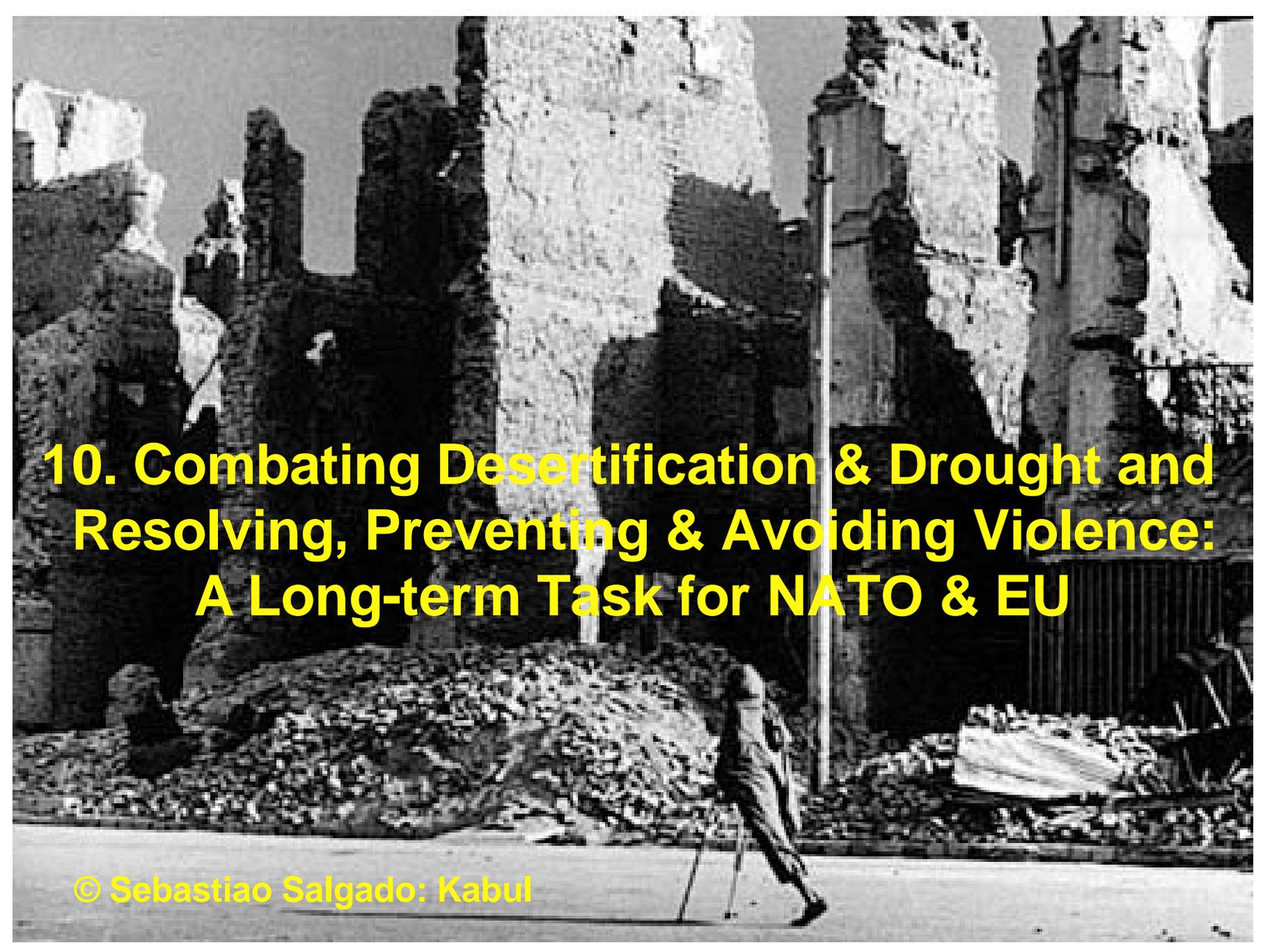




9.8. Humanitarian Challenges and Existing Early Warning Activities

[Details, Brauch, at: http://www.afes-press.de/pdf/Natural_disaster2.pdf]

- **Peter Billing: EU: ECHO's early warning tools [EWC2 Talk]**
[on EC Humanitarian Office: http://europa.eu.int/comm/echo/index_en.htm]
 - **ECHO**: Annual budget +/- 500 mio € + reserve for NGOs, UN and Red Cross) in more than 50 countries (80% for conflicts; 20% for nat. disasters)
 - **Forward Planning Tools: GINA** (see 4 above) and “Classical” early warning: regular reporting from EC Delegations and ECHO's 60 field experts
 - **ECHO “crisis room”**: 7/7 permanence system, soph. communication techn.
 - **Internet applications** (ICONS, DMA, early detection of man-made crises)
 - **ISDR TASK FORCE WG 2: EARLY WARNING, Chair: UNEP**
[http://www.unisdr.org/task-force/eng/about_isdr/tf-working-groups2-eng.htm]
 - **WG focuses on the analysis of trends of hazards and early warnings to establish progress made and present gaps in this field. WG 2 anticipated the need for co-ordination with WG1 and noted that a wide range of information on Early Warning is available with the ISDR Secretariat.**
- 

A black and white photograph showing a person with a cane walking through a city of rubble. The person is in the foreground, walking from left to right. The background is filled with the remains of destroyed buildings, including tall, jagged concrete pillars and piles of debris. The scene is desolate and depicts the aftermath of conflict.

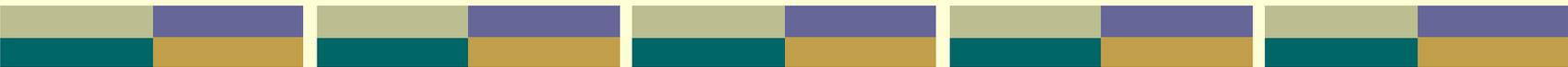
**10. Combating Desertification & Drought and
Resolving, Preventing & Avoiding Violence:
A Long-term Task for NATO & EU**

© Sebastiao Salgado: Kabul



10. Combating Desertification & Drought - Resolving, Preventing & Avoiding Violence: A Long-term Task for NATO & EU

- **Desertification, drought, famine & hunger riots** must be analysed as part of a causal chain: **Global Environmental Change & fatal outcomes**
 - **Desertification & drought are no hard security threats!**
 - They **do not pose military threats**; nor create/legitimate new military missions.
 - They can neither be solved from a **Hobbesian security perspective**, nor from a **Cornucopian environmental** standpoint!
 - They require a **long-term cooperation among scientists & practitioners** using both traditional, local and advanced technological knowledge.
 - They require a **broad, long-term, pro-active local capacity-building**.
 - **Desertification & drought are emerging soft security challenges**, they cause **environmental and social vulnerabilities** and they may trigger under specific global, national, regional & local conditions **violent societal consequences**: e.g. general strikes and hunger revolts that may challenge **regime stability** and the **survival of governments!**
- 



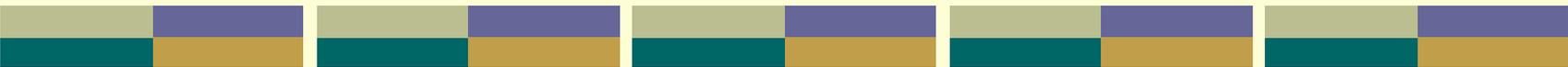
10.1 Desertification & Drought: A Security Issue?

- Desertification & drought pose **environmental security challenges, vulnerabilities and risks.**
 - Desertification & drought are **human security challenges.**
 - **Referent:** individual, family, village, province
 - **Value at risk:** human survival & livelihood of the poor with low resilience
 - **Cause of the challenge:** nature (GEC), nation states & globalisation processes
 - Desertification & drought is a **food security challenge.**
 - Drought & famine poses a **health security challenge.**
 - Drought, famine and drought & famine-induced migration: poses **livelihood security challenges, vulnerabilities & risks**
 - Drought, famine & migration: may trigger violent social consequences and thus become: **social, national & international security challenges, risks** and only in very extreme cases **military threats.**
- 



10.2. Desertification > Drought > Famine > Migration > Violent Events: Research Needs

- **Much knowledge** on individual factors of GEC and individual fatal outcomes but **little on interactions and linkages** between global environmental change & fatal outcomes (**Disciplinary constraints**)
 - **Lack of multi-, trans- and interdisciplinary research integration.**
 - **Within global change community:** between desertification & climate change specialists: among specialists of six factors of my survival hexagon.
 - **Within the fatal outcome communities:** on nature & human-induced hazards/ disasters, environmentally-induced or triggered migration, crises and conflicts
 - Between the **climate change** (desertification) and **disaster community**
 - ✓ June 2002: Foreign Ministries of Germany & Netherlands & IFRC-RCS
 - ✓ UNISDR project: adaptation & mitigation to climate change & disaster
 - Between **early warning communities** on **disasters and conflicts.**
 - **Need for a broad *Earth Systems Analysis*: Natural & Social Scientists**
 - Schellnhuber/Wenzel: (1998) Potsdam (PIK): to Hadley Centre in UK: **ESA**
 - Manifold methods: quantitative modelling and qualitative comp. case studies
- 



10.3. Desertification & Drought Mitigation: Some Policy Conclusions

- **Combating Desertification & Drought:** A non-military human & environmental, food, health and livelihood security task for agricultural and environment policy
 - **Coping with Drought & Famine:** OCHA, ECHO, WFP et al.
 - **Coping with environment.-induced migration:** UNHCR, IOM
 - **Avoiding violent conflicts:** A joint task of international institutions: **NATO & EU** cooperating in the Mediterranean
 - **Combating desertification** is a major environmental, development and a security task for the EU in Mediterranean
 - **Need pro-active policies** by states & int. org. in the Mediterranean on causes of desertif.: **population growth** (South), **market forces** (North) and **climate change impacts** (N & S).
- 



10.4. Policy Conclusions & Recommendations

To mainstream both early warning activities we need:

- **systematic knowledge on interactions** among fatal outcomes and societal consequences.
- **analyses on the commonalities** of technical forecasts of hazards and political assessments of conflicts on policy processes of warning, analysis and policy responses by IGOs and governments.
- assessments on the **potential of remote sensing techniques and satellite systems** for dual early warning tasks: hazards & conflicts.
- comparable case studies on the (lack of) **integration of different technical early warning systems** (e.g. on crops, drought, migration, crises and conflicts in the Nile Basin, Sahel, Southern Africa).
- comparable case studies on (lack of) **cooperation of government agencies & IGO offices** on early warning for disaster reduction & response as well as conflict prevention & crisis management activities.
- comparable case studies on **success („best cases“)** & **failure** of early warning of natural disasters and of crises and conflicts.

This requires intensive discussions & systematic cooperation among both communities in science and politics.





Thank you

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

Thank you

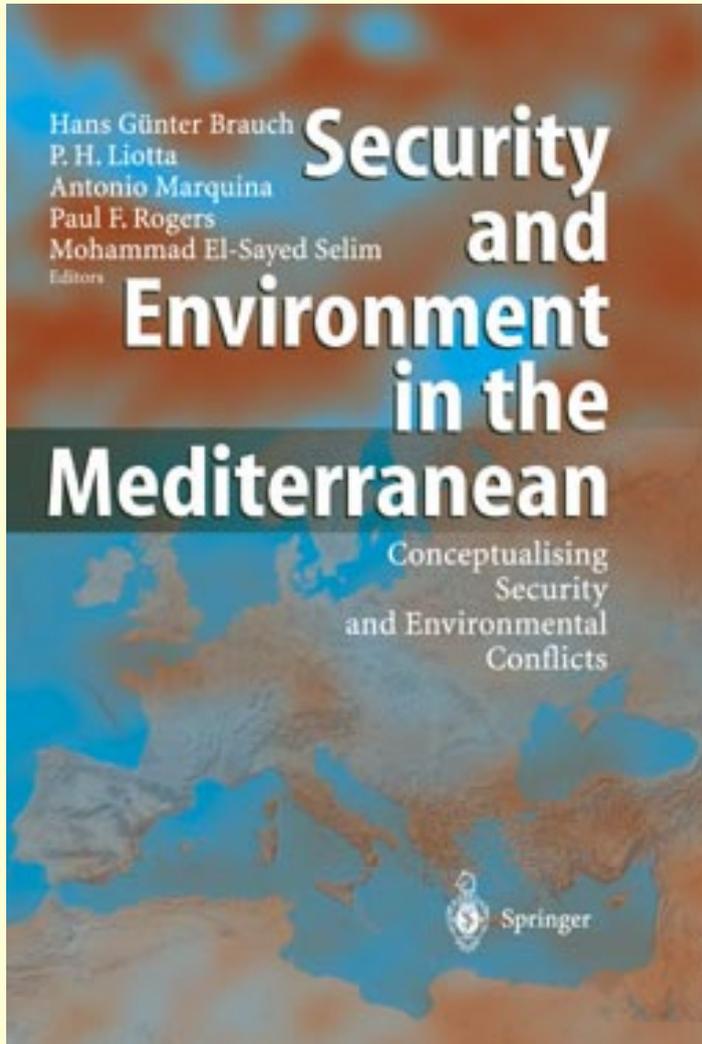
for your attention and patience.

Send your comments to:

Brauch@onlinehome.de



Sources



- **BMU: *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)**
- **On EU/ESA project GMES: (<http://www.gmes.info>)**
- **Free download of my other talks: (http://www.afes-press.de/html/download_hgb.html)**
- **This talk may be downloaded soon at: (http://www.afes-press.de/html/download_hgb.html)**