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

Contents

1. Basic Concepts and Focus of the Talk
2. Widening & Deepening of Security Concept since 1989
4. Model on Global Environmental Change & Fatal Outcomes
5. Desertification as a Cause of Global Environmental Change
6. Extreme Weather Events: Linking Cause and Outcome
7. Desertification-induced Drought; Migration & Famine as Security Issues
8. Instruments and Actors for Dealing with Desertification as a Security Issues
10. Combating Desertif. & Avoiding Violence: A Long-term Task
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?
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

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

<table>
<thead>
<tr>
<th>Security dimension \ Level of interaction</th>
<th>Military</th>
<th>Political</th>
<th>Economic</th>
<th>Environmental \ Level of interaction</th>
<th>Societal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human individual</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>victim</td>
</tr>
<tr>
<td>Societal/Community</td>
<td></td>
<td></td>
<td></td>
<td>Desertific as a security issue</td>
<td></td>
</tr>
<tr>
<td>National</td>
<td></td>
<td>MENA region</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>International/Regional</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global/Planetary</td>
<td></td>
<td></td>
<td></td>
<td>GEC</td>
<td></td>
</tr>
</tbody>
</table>
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)

<table>
<thead>
<tr>
<th>Label</th>
<th>Reference object</th>
<th>Value at risk</th>
<th>Source(s) of threat</th>
</tr>
</thead>
<tbody>
<tr>
<td>National security</td>
<td>The State</td>
<td>Territ. integrity</td>
<td>State, substate act.</td>
</tr>
<tr>
<td>Societal security</td>
<td>Societal groups</td>
<td>Nat. identity</td>
<td>Nations, migrants</td>
</tr>
<tr>
<td>Environmental s.</td>
<td>Ecosystem</td>
<td>Sustainability</td>
<td>Mankind</td>
</tr>
</tbody>
</table>
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

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

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

Four Phases of Research since 1983 - 2003

1. Phase: Conceptual Phase: Concept Environmental Security
   - Inclusion of environmental factors in US national security agenda

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)

   - Resource scarcity or abundance as a cause of conflict

   - 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 chance & humankind*, nature- and human-induced (anthropogenic) processes contributing to *environmental 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

<table>
<thead>
<tr>
<th>Causes (Hexagon)</th>
<th>Effect (Interaction)</th>
<th>Environmental Stress</th>
<th>Probable Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate change</td>
<td>environmental degradation (soil, water)</td>
<td>global cond.</td>
<td>disaster, conflict, avoidance</td>
</tr>
<tr>
<td></td>
<td>scarcity (water, food, housing)</td>
<td>Environmental stress</td>
<td>Crisis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>nation. cond.</td>
<td>migration, conflict</td>
</tr>
</tbody>
</table>

**Diagram:**
- Climate change + degradation + scarcity → Environmental stress → Probable outcomes.
4.1. Model: Desertification and Drought

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

<table>
<thead>
<tr>
<th>Causes (Hexagon)</th>
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<th>Environmental Stress</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Desertification</td>
<td>environmental</td>
<td>global cond.</td>
<td>drought &amp; famine</td>
</tr>
<tr>
<td></td>
<td>degradation (soil, water)</td>
<td></td>
<td>conflict avoidance</td>
</tr>
<tr>
<td></td>
<td>scarcity (water, food, housing)</td>
<td></td>
<td>Crisis</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>migration</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>conflict</td>
</tr>
</tbody>
</table>
4.2 Potential Violent Outcomes of Environmental Stress

Increase in greenhouse gas emissions

Specific national socio-economic and political conditions

Urban violence
- Domestic instability and crisis
- Civil wars

Dispute on access to water and land
- Environmental degradation

Hunger riots

Nature induced (supply factors)
- Water
- Soil

Climate change

Specific regional ecological conditions

Environmental conditions

Human induced (demand factors)
- Food and agriculture
- Population growth
- Urbanisation, health, and population

Specific cultural conditions

Migration

Clashes on water and land
- Migrants vs nationals
- Violent conflicts on water and territory
- International North-South disputes on international obligations and violent North-South conflicts

Violent conflicts on resources (hydrocarbons, minerals, etc.)

Political disputes on mass migration

International

Specific international conditions and context
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 Environmental 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

**Human Security Perspective**
- **referent:** individual & mankind
- **value at risk:** human survival
- **threat:** nature, GEC & globalisation

**GEC > environmental vulnerability > drought > migration > scarcity**

**Globalisation > inequity > social or societal vulnerability > migration > ethnic conflict**

**Key questions for Mediterranean**
- 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

5.4. Water & Soil Erosion in the Mediterranean

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.

- 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-meteorological 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 & Environment-induced Migration


- 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

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

- Morocco: 443,393 affected
- Tunisia: 160,650 affected
- Sudan: 34,336,005 affected

LEGEND:
- Volcano
- Earthquake
- Drought/Famine
- Epidemic
- Avalanche/Landslide
- Flood
- Wind Storm
- Other

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)

<table>
<thead>
<tr>
<th>Country Ranking</th>
<th>Priority List of Humanitarian Needs</th>
<th>ODA Aver.</th>
<th>HDI</th>
<th>HPI</th>
<th>Natur disast</th>
<th>Conflicts</th>
<th>Refugees</th>
<th>IDP</th>
<th>Food need</th>
<th>Under 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Burundi (Nile Basin)</td>
<td>2,857</td>
<td>3</td>
<td>x</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>Somalia</td>
<td>2,833</td>
<td>x</td>
<td>x</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>Ethiopia (Nile Basin)</td>
<td>2,625</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Sudan (Nile Basin)</td>
<td>2,625</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
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<td>5</td>
<td>Angola</td>
<td>2,571</td>
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<td>x</td>
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<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
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<tr>
<td>6</td>
<td>Afghanistan</td>
<td>2,500</td>
<td>x</td>
<td>x</td>
<td>3</td>
<td>3</td>
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<td>2</td>
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<tr>
<td>7</td>
<td>Liberia</td>
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<td>x</td>
<td>x</td>
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<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>8</td>
<td>Rwanda (Nile Basin)</td>
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<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td>Bangladesh</td>
<td>2,375</td>
<td>3</td>
<td>3</td>
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<td>2</td>
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</tr>
</tbody>
</table>
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

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

- 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.

![Map of Famine areas and location of major wars in Africa. Source: Griffiths and Binns, 1988:49.](image)
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.

**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 to 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 arson. 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 Merinandes, 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!

© Sebastiao Salgado: Spain, Gibraltor

A Task for Remote Sensing: FEWS (9.1) & GIEWS (9.2)


- 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 enlargment on next phase)
- GMES EC thematic projects:
  - Land cover change in Europe (BIOPRESS): B. Wyatt (UK)
  - LADAMER: J. Hill (Germany)
- 2008: Goal to have an operational Capability


- 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

<table>
<thead>
<tr>
<th>Threat</th>
<th>of hazards and disasters</th>
<th>of crises and conflicts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Types</td>
<td>Earthquake, volcanic eruption, tsunami, hurricane, flood, drought, fire, disease, epidemic</td>
<td>Social &amp; economic, ethno-religious crisis, urban violence, disputes on access to water &amp; food, hunger riots, civil wars, disputes on mass migration &amp; scarce resources</td>
</tr>
<tr>
<td>Goal</td>
<td>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”</td>
<td>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.</td>
</tr>
<tr>
<td>Tool</td>
<td>Technical systems</td>
<td>Political procedures &amp; processes</td>
</tr>
</tbody>
</table>
## 9.4. Early Warning Efforts: Disasters & Conflicts

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

Need for three-fold mainstreaming of early warning efforts:
a) **Vertical**: global – regional – national – local, e.g. IDNDR, ISDR, with 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 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.**
10. Combating Desertification & Drought and 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

- Manifold methods: quantitative modelling and qualitative comp. case studies
10.3. Desertification & Drought Mitigation: Some Policy Conclusions

- **Combating Desertification & Drought:** A non-military human and 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.

- **Combatting 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

- 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)