
1. Climate change and security – an emerging debate  
   First week end 20.-21.11.2009
2. Theory of Securitization: the Copenhagen School
3. Reconceptualizing of security (I): Widening of security concept
4. Reconceptualizing of security: Deepening: security beyond states
5. From Scientization to Politicization of climate change
6. Towards a Securitization of Climate Change: US vs. European debates
7. Securitizing Causes: temperature, sea-level rise, increase in hazards
8. Securitizing Impacts: climate-induce migration: scientific, policy debate
   Second week end 27.-28.11.2009
10. Securitizing Water: water security concepts
11. Securitizing Food: food security concepts
12. Securitizing Soil: desertification and the new soil security concept
13. Securitizing Health: health security concepts
14. Securitizing Energy: demand vs. supply security
15. Securitizing migration: Internal vs. human security
16. Policy relevance of the climate change and security linkage
Contents

1. Climate change and security: emerging debate
2. Reconceptualization of Security
3. Climate Change as an Issue of International Security
   - Climate Change: a Security Danger/Concern
   - Climate Change and National Security
   - Climate Change and Human Security
   - Climate Change and International Security
4. PEISOR model on nature human interactions and for the analysis of climate change and conflicts as new security danger
5. Sectorialization of Security Concepts:
   - Water: water security concepts
   - Securitizing Food: food security concept
   - Securitizing Soil: desertification and the new soil security concept
   - Securitizing Health: health security concepts
   - Securitizing Energy: demand vs. supply security
   - Securitizing migration:
1. Climate Change and Security – an emerging policy and scientific debate

- **Climate change**: natural variability vs. anthropogenic change
  - A topic of the natural sciences (earth systems science & climatology)
  - Global warming in atmosphere: precondition of life on earth
  - Sea-level rise and temperature increase
  - Natural variability: warm and cold periods: migration and conflicts
  - Anthropogenic climate change: burning of hydrocarbons
  - Climate observations (1860-2008) and projections (2050-2100)

- **Security**: discourse in the social sciences
  - A basic concept and a policy field:
  - Reconcptualizarition of security since 1990: contectual change
    - End of the cold war, globalization and global environmental change
  - Conceptual Innovation:
    - Risk society (Beck), social constructivism, theory of securitzation

- **Three stages**: climate change as socio-political issue
1.1. Impacts of Climate Variability: Holocene (12,000 years b.p. to 1750 AD)

During Holocene era both climate pessima (cold periods) and changes in precipitation patterns and long periods of drought were major triggers for several phases of massive people’s movements:

End of Roman Empire: massive people’s movements: 1st phase, 300-500 AD, Germanic, Turkish & other peoples.

During Holocene era both climate pessima (cold periods) and changes in precipitation patterns and long periods of drought were major triggers for several phases of massive people’s movements:
1.2. Anthropogenic Climate Change in the Anthropocene Era (1750 to present)

- GHG concentration in the atmosphere
  - 1/3: 1750-1958: 279 to 315 ppm
Temperature Increases & Sea Level Rise

Climate Change Impacts: Temperature & Sea level Rise

- Global average temperature rise in 20\textsuperscript{th} century: +0.6\textdegree C
- Projected temperature rise:
  - TAR (1990-2100): +1.4-5.8\textdegree C
  - AR4 (07): +1.1-6.4 (1.8-4)\textdegree C

Sea Level Rise:

- 20\textsuperscript{th} cent.: +0.1-0.2 metres
- TAR: 21st century: 9-88 cm
- AR4 (2000-2100): 18-59 cm

Source: School of environment sciences, climate research unit, university of east anglia, norwich, united kingdom. 1995.
1.4. Global and Regional Change in Temperature (IPCC 2007, WG 1, AR4, p. 11)
1.5. Anthropogenic Climate Change in the Anthropocene (1900-2100)

- **Three Regimes for Temperature Increase**
  - +2°C: **certain**: EU Stabilization goal *(decision in Copenhagen COP 15)*
  - +4°C: **probable**, without immediate Stabilization Measures
  - +6°C: **possible** (business as usual) *(catastrophe scenario)*

Source: World Resources Institute, CAIT
1.7. Projection: Stabilization at 550 ppm

Source: IPPC
1.8. Stabilization and Temperature Increase

Stabilisation and Commitment to Warming

Eventual temperature change (relative to pre-industrial)

- 5% at 400 ppm CO$_2$e
- 95% at 450 ppm CO$_2$e
- 550 ppm CO$_2$e
- 650 ppm CO$_2$e
- 750 ppm CO$_2$e
1.9. Projected Impacts of Temperature Rise due to Climate Change

<table>
<thead>
<tr>
<th>Projected Impacts of Climate Change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Global temperature change (relative to pre-industrial)</strong></td>
</tr>
<tr>
<td>0°C</td>
</tr>
<tr>
<td><strong>Food</strong></td>
</tr>
<tr>
<td>- Falling crop yields in many areas, particularly developing regions</td>
</tr>
<tr>
<td>- Possible rising yields in some high latitude regions</td>
</tr>
<tr>
<td>- Falling yields in many developed regions</td>
</tr>
<tr>
<td><strong>Water</strong></td>
</tr>
<tr>
<td>- Small mountain glaciers disappear – water supplies threatened in several areas</td>
</tr>
<tr>
<td>- Significant decreases in water availability in many areas, including Mediterranean and Southern Africa</td>
</tr>
<tr>
<td>- Sea level rise threatens major cities</td>
</tr>
<tr>
<td><strong>Ecosystems</strong></td>
</tr>
<tr>
<td>- Extensive Damage to Coral Reefs</td>
</tr>
<tr>
<td>- Rising number of species face extinction</td>
</tr>
<tr>
<td><strong>Extreme Weather Events</strong></td>
</tr>
<tr>
<td>- Rising intensity of storms, forest fires, droughts, flooding and heat waves</td>
</tr>
<tr>
<td><strong>Risk of Abrupt and Major Irreversible Changes</strong></td>
</tr>
<tr>
<td>- Increasing risk of dangerous feedbacks and abrupt, large-scale shifts in the climate system</td>
</tr>
</tbody>
</table>
### 1.10. Projected Increase of Sea Level Rise (IPCC chair, Pachauri, 2008)

<table>
<thead>
<tr>
<th>Stabilization level (ppm CO$_2$-eq)</th>
<th>Global mean temp. increase ($^\circ$C)</th>
<th>Year CO$_2$ needs to peak</th>
<th>Global sea level rise above pre-industrial from thermal expansion (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>445 – 490</td>
<td>2.0 – 2.4</td>
<td>2000 – 2015</td>
<td>0.4 – 1.4</td>
</tr>
<tr>
<td>490 – 535</td>
<td>2.4 – 2.8</td>
<td>2000 – 2020</td>
<td>0.5 – 1.7</td>
</tr>
<tr>
<td>535 – 590</td>
<td>2.8 – 3.2</td>
<td>2010 – 2030</td>
<td>0.6 – 1.9</td>
</tr>
<tr>
<td>590 – 710</td>
<td>3.2 – 4.0</td>
<td>2020 – 2060</td>
<td>0.6 – 2.4</td>
</tr>
</tbody>
</table>
1.11. Projections and model consistency of relative changes in runoff by end of 21st century
2. Reconceptualizing Security:

• **Basic Assumption & Guiding Question:**
  – Did global and regional political contextual changes trigger a reconceptualizing of security?

• **What did change? Contextual factors:**
  – End of the Cold War: 9 November 1989 or 11 Sept. 2001
  – Process of globalization (1945, globalized in 1990)
  – Shift from ‘Holocene‘ to ‘Anthropocene‘

• **Which were the conceptual innovations?**
  – Theoretical: social constructivism & Beck: risk society
  – Widening, deepening & sectorialization of security
2.1. Which Conceptual Innovations?

  - **Widening**: from 2 to 5 security dimensions
  - **Deepening**: from national to human security
  - **Sectorialization**: energy, food, health, water security

- **Globalization: Econ. crises & social vulnerability**
  - **New actors**: terrorists vs organized crime
  - **Crises, Globalization & Complex Emergencies**: poverty: high economic and social vulnerability

- **Does Global Environmental Change & natural hazards pose new security dangers?**
  - **Global Environmental Change**: pressure & cause
  - **Impact**: Water-related natural hazards: & societal outcome (victims): migration & conflicts depend on social vulnerability
2.2. Objective, Subjective, Intersubjective Security

- Wolfers (1962) pointed to two sides of the security concept: “Security, in an objective sense, measures the absence of threats to acquired values, in a subjective sense, the absence of fear that such values will be attacked”.

- **Objective security dangers:** absence of threats

- **Subjective security concerns:** perception of absence of fear

- From a constructivist approach in international relations ‘security’ is the outcome of a process of social & political interaction where social values & norms, collective identities & cultural traditions are essential. Security: **intersubjective** or “what actors make of it”.

- **Copenhagen school** security as a “speech act”, “where a securitizing actor designates a threat to a specified reference object and declares an existential threat implying a right to use extraordinary means to fend it off”.

- Such a process of “securitization” is successful when the construction of an “existential threat” by a policy maker is socially accepted and where “survival” against existential threats is crucial.
2.3. Copenhagen School: Securitization

- **Securitization**: discursive & political process through which an intersubjective understanding is constructed within a political community to treat something as an existential threat to a valued referent object, and to enable a call for urgent and exceptional measures to deal with the threat.
- ‘**Referent object**’ (that is threatened and holds a general claim on ‘having to survive’, e.g. state, environment or liberal values),
- ‘**Securitizing actor**’ (who makes the claim – speech act – of pointing to an existential threat to referent object thereby legitimizing extraordinary measures, but not necessarily to be carried out by the actor),
- ‘**Audience**’ (have to be convinced in order for the speech act to be successful in the sense of opening the door to extraordinary measures).
- It is not up to analysts to settle the ‘what is security?’ question – widening or narrowing– but more usefully one can study this as an open, empirical, political and historical question.
- Who manages to securitize what under what conditions & how?
- **What are the effects of this?** How does the politics of a given issue change when it shifts from being a normal political issue to becoming ascribed the urgency, priority and drama of ‘a matter of security’.
2.4. Security Perception: Worldviews and Mind-sets

- Perceptions of security dangers (concerns) depend on worldviews of analyst & mind-set of policy-maker.

- Mind-set (Ken Booth): have often distorted perception of new challenges: include ethnocentrism, realism, ideological fundamentalism, strategic reductionism
  - Booth: Mind-sets freeze international relations into crude images, portray its processes as mechanistic responses of power and characterize other nations as stereotypes.
  - Old Cold War mind-sets have survived global turn of 1989/1990

- 3 worldviews are distinguished by the English school:
  - *Hobbesian* pessimism (realism): power
  - *Kantian* optimism (idealism) *international law & human rights*
  - *Grotian* pragmatism: multilateralism, *cooperation* is vital.

- 3 ideal type perspectives in other cultures & traditions:
  - Power matters: Sunzi, Thukydides, Machiavelli, Hobbes,
  - Ideas matter: Kant, W. Wilson
  - Cooperation matters: Confucius, Grotius
2.5. From International & National to four Pillars of Human Security

- **International Peace & Security:** League of Nations (1919): “high contracting parties”; UN Charter (1945): “We the peoples of the United Nations”


- **Alliance Security:** NATO (1949-), WP (1955-2001)

- **Common Security** (Palme Report 1982)

- **Environmental Security** (Brundtland 1987)

- **Cooperative Security:** Brookings Institution (1990’s)

- **Human Security:** UNDP (1994): 4 pillars of HS
## 2.6. Widening of Security Concepts: Towards Environmental Security

### 4 trends in reconceptualisation of security since 1990:
- **Widening** (dimensions, sectors), **Deepening** (levels, actors)
- **Sectorialisation** (energy, food, health),
- **Shrinking** (WMD, terrorists)

### Dimensions & Levels of a Wide Security Concept

<table>
<thead>
<tr>
<th>Security dimension</th>
<th>Military</th>
<th>Political</th>
<th>Economic</th>
<th>Environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human individual</td>
<td></td>
<td></td>
<td>Food sec. Health sec.</td>
<td>Cause &amp; Victim</td>
</tr>
<tr>
<td>Societal/Community</td>
<td>shrinking</td>
<td></td>
<td>Energy se.</td>
<td></td>
</tr>
<tr>
<td>National</td>
<td></td>
<td></td>
<td>Water security</td>
<td></td>
</tr>
<tr>
<td>International</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regional</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global/Planetary</td>
<td></td>
<td></td>
<td></td>
<td>GEC</td>
</tr>
</tbody>
</table>
# 2.7. Environmental & Human Security

## Expanded Security Concepts (Møller, ‘03; Oswald ‘01)

<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 actors</td>
</tr>
<tr>
<td>Societal security</td>
<td>Societal groups</td>
<td>Nation. identity</td>
<td>Nations, migrants</td>
</tr>
<tr>
<td>Environmental sec.</td>
<td>Ecosystem</td>
<td>Sustainability</td>
<td>Humankind</td>
</tr>
<tr>
<td>Gender security (Oswald Spring)</td>
<td>Gender relations, indigenous people, minorities</td>
<td>Equality, identity, solidarity</td>
<td>Patriarchy, totalitarian institutions (governments, churches, elites) intoler.</td>
</tr>
</tbody>
</table>

### Human security: Referent: individuals and humankind. [Human Security Network]
- **Values at risk:** survival of human beings and their quality of life.
- **Major source of threat:** nature (global environmental change), globalisation, nation state with its ability to cope with this dual challenge.

### Environmental Security: Referent: Ecosystem; Value at risk is sustainability.
- **Major challenges:** global environmental change & humankind,
3. Climate Change as a Security Issue

- What is the linkage between both?
  - A key problem of global environmental change
  - A key area of international relations

- Securitizing climate change:
  - GECHS (1999),
  - Brauch for BMU (2002),
  - U.S. DoD (2004), CAN (15 April 2007)
  - UNSC (17 April 2007),
  - CC as international, national and human security

- UNFCCC & IPCC: epistemic community as a securitizing actor major concern in Europe
GEC poses a threat, challenge, vulnerabilities and risks for human security and survival.
3.2. Global Environmental Change

• Since 1970/80s: ‘global environmental change’ (GEC) new topic in natural & social sciences: scientization

• Since 1988 policization with policy efforts on:

• Since 2000: GEC as security issues: securitization
  – Since 2002: climate change as security threat/risk
  – Since 2003: NATO: Desertification as a security issue
  – Since 2009: UNCCD: Soil security
3.3. Four GEC Scientific Programmes

• **International Geosphere-Biosphere Programme (IGBP).** research programme that studies Global Change

• **Goals:**
  - Analyze interactive physical, chemical and biological processes that define Earth System dynamics
  - Changes occurring in these dynamics
  - Role of human activities on changes

• **International Human Dimensions Programme (IHDP):** international, interdisciplinary science organization: promoting, & coordinating research, capacity building & networking. Social science perspective on global change and works at the interface between science and practice

• **DIVERSITAS:** integrates biodiversity science for human well-being:
  - By linking biology, ecology & social sciences, it produces socially relevant new knowledge to support sustainable use of biodiversity

• **World Climate Research Programme** draws on climate-related systems, facilities & intellectual capabilities of 185 countries to advance understanding of processes that determine our climate.

• Two key objectives of **WCRP** are:
  - To determine predictability of climate;
  - To determine effect of human activities on climate.
3.4. Earth System Science Partnership (ESSP)

• 2001: Amsterdam Declaration on Global Change: IGBP, IHDP, DIVERSITAS, WCRP formed Earth System Science Partnership.

• ESSP: partnership for integrated study of the Earth System, changes, & implications for global/regional sustainability.
  – Global environmental changes are both accelerating & moving the earth system into a state with no analogue in previous history.
  – The Earth System is the unified set of physical, chemical, biological & social components, processes and interactions that together determine the state and dynamics of Planet Earth, including its biodata & human occupants.
  – Earth System Science: study of Earth System, with an emphasis on observing, understanding and predicting global environmental changes involving interactions between land, atmosphere, water, ice, biosphere, societies, technologies and economies.
3.5. Climate Change as an Issue of International Politics and Security

Objective: climate change has influenced history for millennia

Subjective: perception of climate change as a political issue
– 1896: Arrhenius hypothesis: energy & climate change
– Climate Change became an issue of IR since 1988

Intersubjective: what policy actors make of it
– 1988: Reagan Admin. put CC on agenda of G-7
– 1990: IPCC set up by UN General Assembly
– 1992: Rio Earth Summit: UNFCC signed
– 1997: Kyoto protocol approved (-5.1% by '08)
– 2007: Bali Road Map to COP 15: Copenhagen

Intersubjective: Securitization of climate change
3.6. Securitization of Global Environmental & Climate Change

- 3-fold debate & discourse on Climate Change
  - Theory: Securitization by O. Waever (Copenhagen.)
  - International Security
    - British, German and European debate (2001-2002)
    - goal: Strategy of conflict prevention through pro-aktive action: Environment-, development- & economic policy
  - National Security: (since 2003/2004) especially in USA
    - 2007: new military missions for Pentagon
  - Human Security:
    - GECHS Project of IHDP: social vulnerability of poor and marginalized people, workshop in 2005: (1999-2009)
3.7. Discourse 1: Climate Change & Internat. Security

• BMU-Report 2002: Climate change and conflicts
  – Goal: Agenda setting for IPCC
    • Coalition: Germany, Great Britain, Finland, Mexico
    • Focus: Small Island states, Bangladesh, Mexico, Egypt, MMR
  – OECD-Case studies: Bangladesh, Egypt, Tanzania, Nepal, Fiji

• WBGU-Report 2008: Security Risk Climate Change
  – State-centred security concept
  – 4 Conflict scenarios:
    • Climate-induced degradation of drinking water
    • Climate-induced reduction of food production
    • Climate-induced increase of storm and floods, drought and famine
    • Climate-induced migration
3.8. Climate Change as a Problem of International Security

• UNSC debate (17.4.2007)
  – UK Foreign minister: 52 States participated (instead 15 UNSC)
    • For the Debate: UN-SG, Ban Ki-moon, UK, all EU-states, Alliance of small Island States
    • Sceptical: Russia, USA, Opposed: China, Group of 77 (Pakistan)

• June 2009: UN-GA resolution: SIDS: report by SC
  – Response of some 30 states: PSIDS
  – 11 September 2009: Report by SC: pointed to five channels: climate change and security:
    • (a) Vulnerability: Climate change threatens food security and human health, and increases human exposure to extreme events.
    • (b) Development: If climate change results in slowing down or reversing the development process, this will exacerbate vulnerability and could undermine the capacity of states to maintain stability.
    • (c) Coping and security: Migration, competition over natural resources and other coping responses of households and communities faced with climate-related threats could increase the risk of domestic conflict as well as have international repercussions.
    • (d) Statelessness: There are implications for rights, security, and sovereignty of the loss of statehood because of the disappearance of territory.
    • (e) International conflict: There may be implications for international cooperation from CC impact on shared or undemarcated international resources

- Climate change ... as a threat multiplier of existing trends, tensions and Instability, that overburdens fragil and conflict prone states and regions
- Seven intern. Security threats from climate change:
  - 1) Resource conflicts (Water, soil, food);
  - 2) Economic damage and Risks for coastal cities;
  - 3) Loss of Territory and border conflicts;
  - 4) Environmentally-induced migration;
  - 5) Situations of Fragility and radicalization
  - 6) Tensions on energy supply
  - 7) Pressure on international politics
- Regions, where these threats become manifest
  - Africa, Middle East, South Asia; Central Asia, Latin America, Arctic.
- Central challenge: Environmental Migration
3.10. Discourse 2: Climate Change & National Security: USA

Climate changes as a threat for US national security ➔ Reactive search for military answers and for new military missions of the Pentagon

- **Pentagon study** of Schwartz/Randall: (October 2003, February 2004)
- **Gilman, Randall, Schwartz**: Effects of climate change: System vulnerability of possible effects up to 2050 medium scenario of temperature increase
- **March 2007: Strategic Studies Institute**: Colloquium on “global climate change: National Implications for Security”
- **March 2007**: Senators Durbin (D-IL)/Hagel (R-NE): Law on intelligence assessments on climate change impacts on national security
- **November 2007**, Center for Strategic and Intern. Studies (CSIS); Centre for a New American Security (CNAS): *The Age of Consequences: The Foreign Policy and National Security Implications of Global Climate Change*
3.11. Discourse 3: Climate Change & Human Security

- **IHDP-GECHS** (Global env. change & human security)
  - Synthesis conference: Research (1999-2009) in Oslo
- **Greek Presidency of the HSN (2007/2008)**
  - Conference in May 2008 in Athens: Final declaration
  - Impact of climate change on vulnerable groups: women, children, environmental migrants in developing countries
  - Policy paper: Climate change, human security and development
  - 3rd pillar of human security: “freedom from hazard impact”
- **Policy Memorandum 15 April 2007: for UN SC debate**
  - Wisner, Brauch, Oswald Spring u.a.
- **Friends of Human Security: Japan & Mexico: June 2009**
- **Debate in UN General Assembly**
  - May 2007: human security: climate change as a threat
  - June 2009: Resolution on climate migration: international peace & security
Climate Change & Security: Challenges for a New Peace and Security Policy in the Anthropocene

• New security challenges require new security & peace policy for the Anthropocene

• We are the threat! Impossible to fight war against oneself
  – threat: our fossil energy consumption and way of life
  – solution: GHG reduction by 2050: -50% (global), -80% ICs
    • Electricity, heating, transportation, industry
    • Increase in energy efficiency and renewable energy
  – Global responsibility and global action
  – Proactive vs. reactive Policy and Crisis Management
    • Reactive: Welt financial crisis: no price is too high
    • Proactive: climate change: we cannot afford drastic measures
    • Short term horizon: political & economic action
4. Towards the PEISOR Model

- **PEISOR**: Result of pressure and response models and of debates on environmental security and on natural hazards.

The PEISOR model combines five stages:

- **P** (*pressure*) refers to 6-8 drivers of global environmental change.
- **E** to the *effects* of the linear, non-linear or chaotic interactions within the ‘hexagon’ on environmental scarcity, degradation, and stress;
- **I** to extreme or fatal *impacts* of human-induced and climate-related natural hazards (storms, flash floods, flooding, landslides, drought);
- **SO** to *societal outcomes*: internal displacement, migration, urbanization, crises, conflicts, state failure, and
- **R** to *response by society*, business community, state where both traditional & modern technological knowledge can make a difference.

Hazards cannot be prevented, their *impact* in terms of deaths, affected people, economic & insured damages can be reduced by policies & measures that link protection with empowerment of the people to become more resilient.
4.1. Global Environmental Change & Impacts: PEISOR Model
Schematic framework of anthropogenic climate change drivers, impacts and responses (IPCC)

**Earth System factors**
- Climate change
- Soil
- Water
- Biodiversity

**Human System factors**
- Population change
- Rural systems
- Urban systems
- Socio-economic cultural processes
Pressure: Interactions of GEC

Desertification
Land Degradation & Drought

Reduced carbon sequestration above & below grand carbon reserves

CLIMATE CHANGE
- global temperature increase
- climate variability
- reduced carbon reserves & increased CO2
- extreme weather events

Reduced primary production & nutrient cycling
droughts
land degradation
soil erosion
compaction of soils
water erosion
salinization sodification
aquifer depletion

poor irrigation
watershed degradation
accumulation of toxic substance in water & soil
pollution
rainfall variability
sea level rise

Increased social vulnerability, poverty

Migration and land use change
Urbanization in drylands

decreased land & soil organism species diversity
mining activities
land use change
reduced soil conservation
fauna loss
plant diseases & resistance

Biodiversity loss
- change in community structure & ethnic diversity
- forest fires
- land slides
- hydro meteorological disasters
- gender vulnerability & survival strategies

WATER STRESS
**E: Effect & I: Impact**

- **Effect:** Environmental security debate of 1990s
  - Toronto school
  - Swiss school (ENCOP):
  - Soil scarcity > degradation > environmental stress

- **Impact:** climate change ->
  - extreme weather events
    - Hydrometeorological hazards
      - Drought (wind erosion)
      - Heatwaves
      - Forest fires
      - Storms (hurricanes)
      - Flash floods & landslides (wind & water erosion)
Impact: Human-Induced Natural Hazards
Drought, Famine and Societal Outcomes

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

© 2006 NatCatSERVICE, GeoRisikoForschung, Münchener Rück

- Earthquake/Tsunami, Volcano
- Storm
- Floods
- Temperature extremes (e.g. heat wave, cold spill, forest fire)

- 267 Events
  - Geological events
    - Earthquake/Tsunami, Volcano: 6%
    - Weather-related events
      - Storm: 40%
      - Floods: 25%
      - Extreme temperatures: 29%

- 1,75 Million Dead
  - 7%
  - 55%
  - 36%

- Economic damage: 1.400 billion US$
  - 6%
  - 31%
  - 38%

- Insured damage: 340 billion US$
  - 5%
  - 11%
  - 79%

*in Werten von 2005
© 2006 GeoRisikoForschung, Münchener Rück
Reported Death of Natural Hazards globally (1974-2003): 2,066,273 persons

Affected persons of Natural Hazards globally (1974-2003): 5 076 494 541 persons
# Most severe droughts (1900-2008)

By the number of people killed on the country base

<table>
<thead>
<tr>
<th>Country</th>
<th>Date</th>
<th>Killed</th>
</tr>
</thead>
<tbody>
<tr>
<td>China P. R.</td>
<td>1928</td>
<td>3,000,000</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>1943</td>
<td>1,900,000</td>
</tr>
<tr>
<td>India</td>
<td>1942</td>
<td>1,500,000</td>
</tr>
<tr>
<td>India</td>
<td>1965</td>
<td>1,500,000</td>
</tr>
<tr>
<td>India</td>
<td>1900</td>
<td>1,250,000</td>
</tr>
<tr>
<td>Sov. Union</td>
<td>1921</td>
<td>1,200,000</td>
</tr>
<tr>
<td>China P. R.</td>
<td>1920</td>
<td>500,000</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>May 83</td>
<td>300,000</td>
</tr>
<tr>
<td>Sudan</td>
<td>April 83</td>
<td>150,000</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>Dec 73</td>
<td>100,000</td>
</tr>
</tbody>
</table>

By the number of people affected on the country base

<table>
<thead>
<tr>
<th>Country</th>
<th>Date</th>
<th>Affected (million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>1982</td>
<td>300</td>
</tr>
<tr>
<td>India</td>
<td>2002</td>
<td>300</td>
</tr>
<tr>
<td>India</td>
<td>1972</td>
<td>200</td>
</tr>
<tr>
<td>India</td>
<td>1965</td>
<td>100</td>
</tr>
<tr>
<td>India</td>
<td>Jun 82</td>
<td>100</td>
</tr>
<tr>
<td>China P. R.</td>
<td>Jun 94</td>
<td>82</td>
</tr>
<tr>
<td>China P. R.</td>
<td>April 2002</td>
<td>60</td>
</tr>
<tr>
<td>India</td>
<td>April 2000</td>
<td>50</td>
</tr>
<tr>
<td>China P. R.</td>
<td>June 1988</td>
<td>49</td>
</tr>
<tr>
<td>China P. R.</td>
<td>Jan. 2003</td>
<td>48</td>
</tr>
</tbody>
</table>

**Source:** EM-DAT: The OFDA/CRED International Disaster Database, at: <www.em-dat.net> (created on 5 January 2009)
**Societal Outcomes**

- **Individual level (choice)**
  - Human security perspect.
  - Survival dilemma of humans

- **State/society level**
  - Hunger, famine
  - Migration to urban slums
  - Rural-rural migration
  - Transborder migration
    - Seasonal (labour, nomads)
    - Permanent
  - Crises: domestic
  - Conflicts:
    - Peaceful protests
    - Violent clashes
  - Complex emergencies
Global Hunger Index 1990 & 2008

 meilleur2008 Global Hunger Index.
Country progress in reducing the Global Hunger Index between 1990 and 2008

Source: IFPRI, 2008
UNREST OVER FOOD

This map records some of the worst recent violence - where people died or large numbers protested - wholly or partly in response to rising food prices. Other, lesser outbreaks occurred in West Africa. Even Wal-Mart in the United States rationed rice and Italian consumers protested over the price of pasta.

HAITI

MOROCCO
300 injured in bread protests.

MEXICO
Jan 2007: 75,000 protest against a 400% rise in tortilla prices.

HONDURAS
Apr 2008: Thousands of activists, students and farmers block highways and rally against high food prices and free trade.

Mauritania

Egypt
Apr 2008: 2 die in major bread riots; army is ordered to start baking bread.

Guinea
Jan 2007: 130 killed in 18-day national strike.

Senegal
Apr 2008: 1,000 march; many with empty rice sacks.

Cameroon
Feb 2008: Riots leave 24 dead.

Ireland
Sep 2007: 20,000 textile workers riot over wages and food prices.

Somalia
May 2008: 10% of 1,000s protest at doubling of food prices; 2 killed.

Yemen
Sep 2007: Tanks called in, 4 killed, in 5-day riots over wheat prices.

Peru

Argentina
Mar - Apr 2008: 3-week farmers' strike over new export tax on soya and other products.

South Africa
Aug 2008: National day of protest and strikes. 25,000 march through Johannesburg.

Indonesia
Jan 2008: 3,000 rally in Jakarta to demand action on soybean price, which doubled in a year.

Mozambique
Feb 2007: 6 killed in food and fuel protests.

Migration currents

Distance no object

Source: <http://www.economist.com/images/20080105/CSR900.gif>
WBGU-study: Climate ‘Hotspots’: Four Conflict Scenarios

- Mediterranean
  - Water
  - Food product.
  - Migration

- South, Central and East Asia
  - Water
  - Food product.
  - Migration
  - cyclone

- Latin America & Caribbean
  - Wasser
  - Water
  - Food product.
  - Migration
  - hurricanes

Figure 4.7: Regional hotspots and security risks associated with climate change. Source: WBGU (2008: 4). Reprinted with permission.
Environmental conflicts (1980-2006)

Source: WBGU (2008: 32)
R: Policy Response to DLDD Dangers

• How? Responsive vs. proactive action
  – Response: cost of non-action (Stern R.)
  – Proactive: anticipatory knowledge, learning, action

• What? Addressing causes (pressure)
  – Earth system: environmental quartet
  – Human: productive/consummptive behaviour

• Responding to Effects & Impacts
  – Environmental stress
  – Climate-related natural hazards

• Dealing with Societal Outcomes
5. Sectorialization of Security Concepts

Coined by International institutions

- to legitimate their activities in terms of security
- to securitize climate change impacts

Securitizing Water: water security concepts
Securitizing Food: food security concept
Securitizing Soil: desertification and the new soil security concept
Securitizing Health: health security concepts
Securitizing Energy: demand vs. supply security
Securitizing Migration:
5.1. Securitizing Water: water security concepts

- Oswald Spring/Brauch: chapter 11
- Part VII Water Security for the 21st Century
  - Chapters 41-58:
    - Focus on India and Turkey
    - Focus on Middle East
    - Focus on the Nile River: upstream and downstream
    - Africa
    - Focus on Central Asia
5.2. Securitizing Food: food security concept

Part V Food Security for the 21st Century

33 Úrsula Oswald Spring Food as a New Human and Livelihood Security Challenge

34 M. A. Mohamed Salih. Governance of Food Security in the 21st Century 501

5.3. Securitizing Soil: New soil security concept

Spanish: <http://www.unccd.int/knowledge/docs/dldd_sp.pdf>

English: <http://www.unccd.int/knowledge/docs/dldd_eng.pdf>

- Hans Günter Brauch - Úrsula Oswald Spring
- Securitizing the Ground-
- UNCCD, May 2009
- Úrsula Oswald Spring - Hans Günter Brauch
- Seguritizar la Tierra
- Aterrizar la Seguridad
5.4. Securitizing Health: health security concepts

Part VI Livelihood and Health Security for the 21st Century

37 Guénaël Rodier and Mary Kay Kindhauser: Global Health Security: The WHO Response to Outbreaks Past and Future

38 Jennifer Leaning: Health and Human Security in the 21st Century


40 Isabel Fischer and Mohammad Musfequs Salehin: Health and Poverty as Challenges for Human Security: Two Case Studies on Northern Vietnam and Bangladesh
5.5. Securitizing Migration:

Debate on Environmentally-Induced (climate-induced migration)
- Conceptual debate on drivers
- Difficulty of statistical assessment
- October 2008: UNU-EHS Conference in Bonn
- No refugee status: no legal entitlement
- Schellnhuber: cause & effect: % of contribution, % of migrants (highly implementable)
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>Scenarios of Energy Demand and Supply until 2100: Implications for Energy Security</td>
<td>Leo Schrattenholzer</td>
</tr>
<tr>
<td>26</td>
<td>Technical and Economic Potentials of Biomass until 2050: Regional Relevance for Energy Security</td>
<td>André P.C. Faaij</td>
</tr>
<tr>
<td>28</td>
<td>Solar Energy as a Key for Power and Water in the Middle East and North Africa</td>
<td>Franz Trieb, Wolfram Krewitt, and Nadine May</td>
</tr>
<tr>
<td>29</td>
<td>Energy Security in the Arab World</td>
<td>Mohammad Selim and Abdullah Sahar</td>
</tr>
<tr>
<td>30</td>
<td>Turkey: Energy Security and Central Asia: The Politics and Economics of the So- called Great Game</td>
<td>Gareth M. Winrow</td>
</tr>
</tbody>
</table>
Free Publications of UNU-EHS

at: http://www.ehs.unu.edu/category:16?menu=35
at: http://www.ehs.unu.edu/category:17?menu=36
I. Globalization and Environmental Challenges: 92 authors, 36 countries, 16 disciplines, former vice presidents, ministers, generals, diplomats (2008)

II. Facing Global Environmental Change: 132 authors, 49 countries on global debate and problems of environmental, human, energy, food, health, water security (2009)


⇒ Spanish & Turkish⇒ Editions of Vol.1
Hexagon Series on Human, Environmental Security and Peace (HESP)
Suggested Reading until 20 November


– On reconceptualization of security one or two of my papers:
  • H.G. Brauch, Ú. Oswald Spring: Securitizing the Ground-Grounding Security (Bonn: UNCCD, May 2009); for download: <http://www.unccd.int/knowledge/docs/dlddd_eng.pdf>;

Key Bibliography for the Seminar:

- WBGU: *Sicherheitsrisiko Klimawandel* (2007);
- please consult webpages of: <unfccc.int>; <ipcc.org>; <wbgu.de>; Copenhagen Scientific Climate Conference, 2009: <http://climatecongress.ku.dk/>. 

Thank you for your attention!

This text is for download at:


and at:


Send your comments to:

Brauch@onlinehome.de