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**PEISOR Model: Climate Change from a
Human, Gender and Environmental (HUGE) Security Perspective**

SD 54: Sunday, 1 April 2012, 4:00 PM - 5:45 PM

Panel: Climate Change, Environmental Stress, and Conflict



Abstract & Keywords

- The PEISOR model facilitates the analysis of climate change, societal outcomes and security. It addresses the linkages between the earth and human systems and their effects, impacts, societal outcomes and policy response. Stimulated by several stimulus-response models, the PEISOR model integrates results of the debate on environmental security and on the impacts of global environmental change in five stages: P (pressure) refers to drivers of global environmental change; E to the effects of the linear, non-linear or chaotic interactions on environmental scarcity, degradation, and stress; I to extreme 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 the society, the business community, the state where knowledge makes a difference. The security implications of past and potential future impacts have been assessed in the framework of different security concepts of national, international as well as human, environmental and gender security with different reference objects and policy agendas.
- **Keywords:** Climate change, securitization, national, international, human, environmental, gender security (HUGE security), PEISOR model, pressure, effects, environmental stress, extreme impacts, natural hazards, societal outcomes, displacement, migration, crises, conflicts, state failure, response, state, society, business, knowledge



Facing Global Environmental Change

Environmental, Human, Energy, Food,
Health and Water Security Concepts

 Springer

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Coping with Global Environmental Change, Disasters and Security

Threats, Challenges,
Vulnerabilities and Risks

 Springer

Acknowledgement

This talk is based on these publications:

- Brauch, Hans Günter, 2009: “Securitizing Global Environmental Change”, in: Brauch, Hans Günter; Oswald Spring, Úrsula; Grin, John; Mesjasz, Czesław; Kameri-Mbote, Patricia; Behera, Navnita Chadha; Chourou, Béchir; Krummenacher, Heinz (Eds.): *Facing Global Environmental Change: Environmental, Human, Energy, Food, Health and Water Security Concepts*. Hexagon Series on Human and Environmental Security and Peace, vol. 4 (Berlin – Heidelberg – New York: Springer-Verlag): 65-102.
- Brauch, Hans Günter; Oswald Spring, Úrsula, 2009: *Securitizing the Ground. Grounding Security* (Bonn: UNCCD).
- Oswald Spring, Úrsula, 2008: *Gender and Disasters. Human, Gender and Environmental Security: A HUGE Challenge*. Source 8/2008 (Bonn: UNU-EHS).
- Oswald Spring, Úrsula, 2009: “A HUGE Gender Security Approach: Towards Human, Gender and Environmental Security”, in: Brauch, Hans Günter; Oswald Spring, Úrsula; Grin, John; Mesjasz, Czesław; Kameri-Mbote, Patricia; Behera, Navnita Chadha; Chourou, Béchir; Krummenacher, Heinz (Eds.): *Facing Global Environmental Change: Environmental, Human, Energy, Food, Health and Water Security Concepts* (Berlin – Heidelberg: Springer): 1165-1190.

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1. Introduction

This paper refers to our work during the past decade & brings together for the analysis of the climate change and security nexus these two components:

- The **PEISOR process model** of nature-human interactions that gradually emerged from the simple stimulus-response and the OECD, UN-CSD and EU's EEA models taking the results of the second stage of the empirically-oriented environmental security debate of the 1990s (see the work of the research teams inspired by Homer-Dixon and Bächler) and of the Millennium Ecosystem Assessment (MA 2005; Leemans 2009) into account.
- A **human, gender and environmental (HUGE) security concept, perspective, approach and program.**

This paper addresses the following research questions:

- Which insights may the PEISOR model contribute for the analysis of the complex interaction between the earth system and the human system for climate change impacts on security from the stages of the pressure, effects, impact, societal outcome to policy response?
- Which contribution may a people-centered human, gender and environmental (HUGE) security perspective contribute in contrast to the state-centered national security perspective on the climate-security nexus that dominates the scientific discourse and policy debate?

2. Evolution of Models Addressing Nature-Human Interactions

Several models on nature-human interactions inspired the evolution of PEISOR model: the pressure-state-response models and the models of the Toronto & Swiss schools on envir. scarcity, degradation & stress.

Pressure-State-Response Models of OECD, UNCSD, and EEA

- **Pressure-State-Response (PSR)** model of **OECD** assumes that human activities put pressure on nature that leads to environmental changes (climate change, water and soil degradation, biodiversity loss) to which the state and society respond with socio-ecological measures and programs.
- The **OECD's PSR model** distinguished between 'pressure' (P), 'state of the environment' (S), and 'response' (R) indicators.
 - **Pressure:** population growth, consumption, poverty,
 - 'state' refers to the environmental conditions that emerge from this pressure such as air pollution, deforestation, degradation that influence human health and well-being, and
 - 'response' points to activities of society to avoid, prevent, and reduce negative impacts on ecosystem services and to protect natural resources.
- The **UN Commission for Sustainable Development (UN-CSD)** used a slightly modified framework called **DSR (Driving Force-State-Response) model**. The **European Environment Agency (EEA 1998)** has developed a **Driving Force – Pressure – State – Impact – Response (DPSIR)** model with the potential of development of environmental indicators.

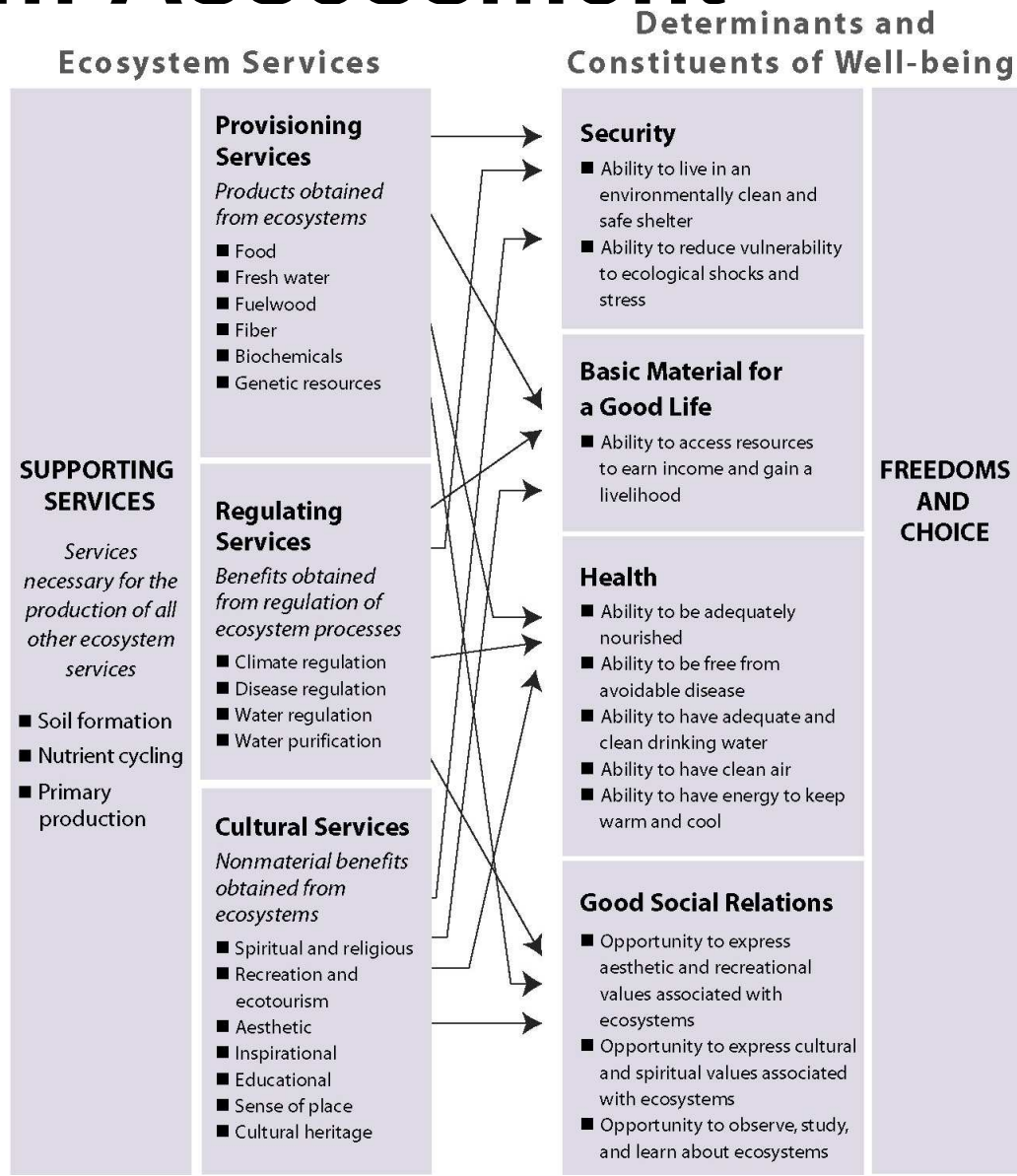
2.1 Models on Environmental Scarcity, Degradation, and Stress

2nd phase of environmental security debate:

- Toronto Group (Homer Dixon): 3 projects analyzing the linkages between environmental scarcity, stress and violent conflict
- Swiss Group (ENCOP, Bächler & Spillmann): wider focus: environmental scarcity & degradation resulting in cooperation or conflict
- Both did not yet address global environmental and climate change issues.

2.2. Model of the Millennium Ecosystem Assessment

A different model was used by the **Millennium Ecosystem Assessment** (MA, 2003, 2005) where direct and indirect drivers of change produce direct effects on human well-being and ecosystem services. In this framework besides the material minimum for a good life, health, and good social relations, security is considered as one of the key elements of human well-being that influence the freedom of choice. Security was defined as: a) the ability to live in an environmentally clean and safe shelter, and b) the ability to reduce vulnerability to ecological shocks and stress

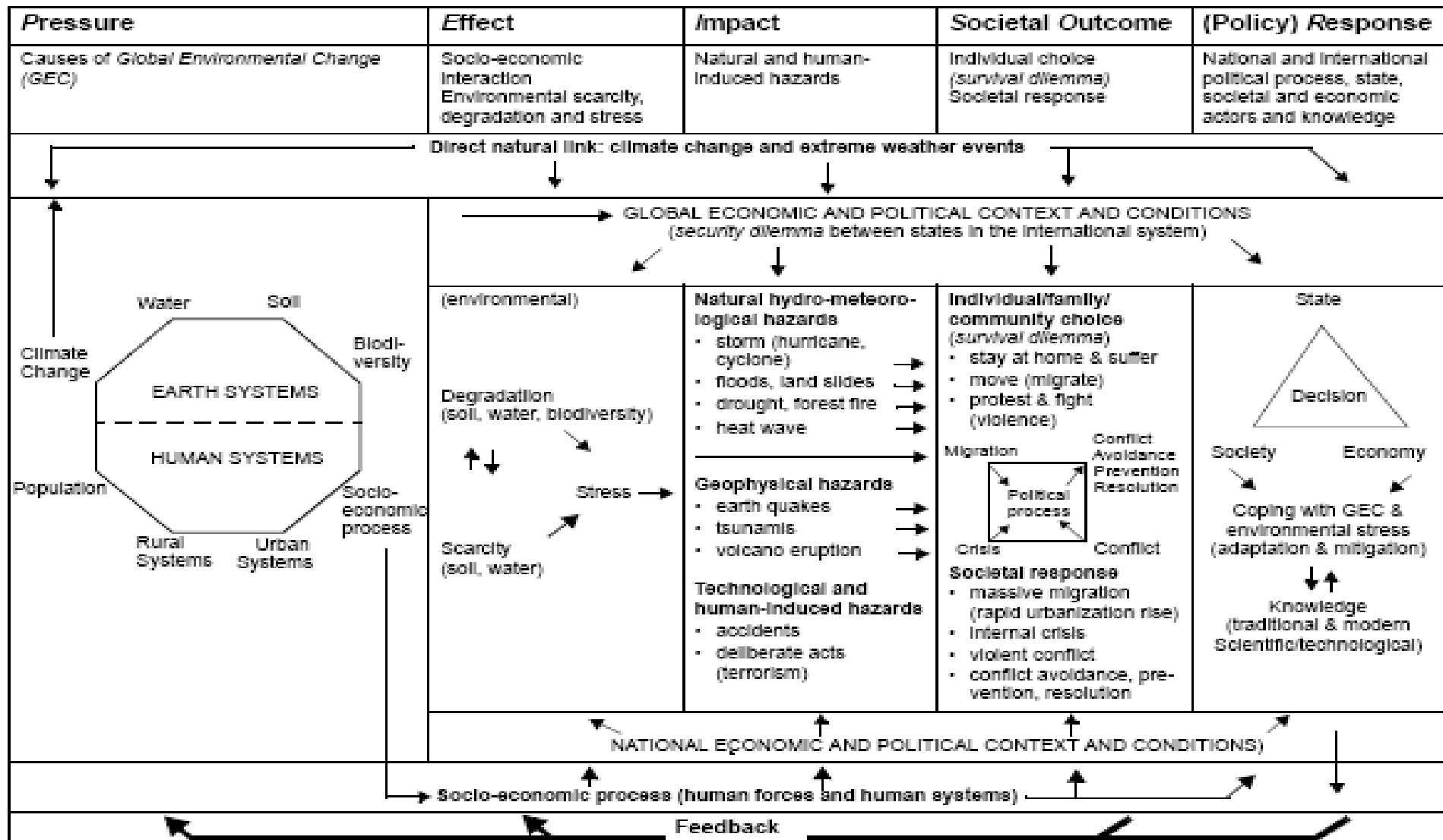


3. The PEISOR Model

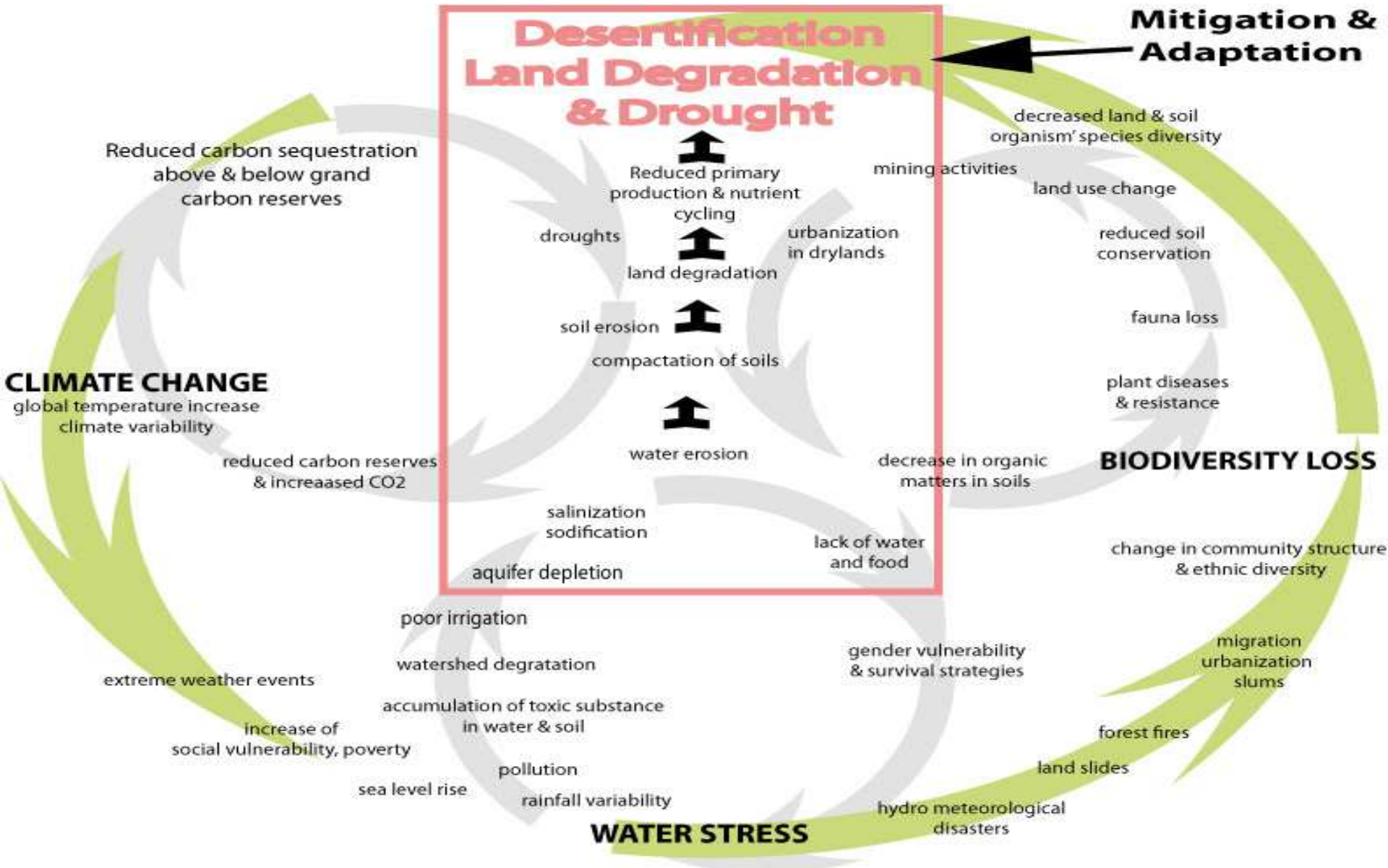
The PEISOR model was initially developed by Brauch and later revised by Brauch and Oswald Spring combines five stages:

- *P (pressure)* refers to six or eight 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 the society, the business community, the state where both traditional and modern technological knowledge can make a difference.

3.1 Global Environmental Change & Impacts: PEISOR Model

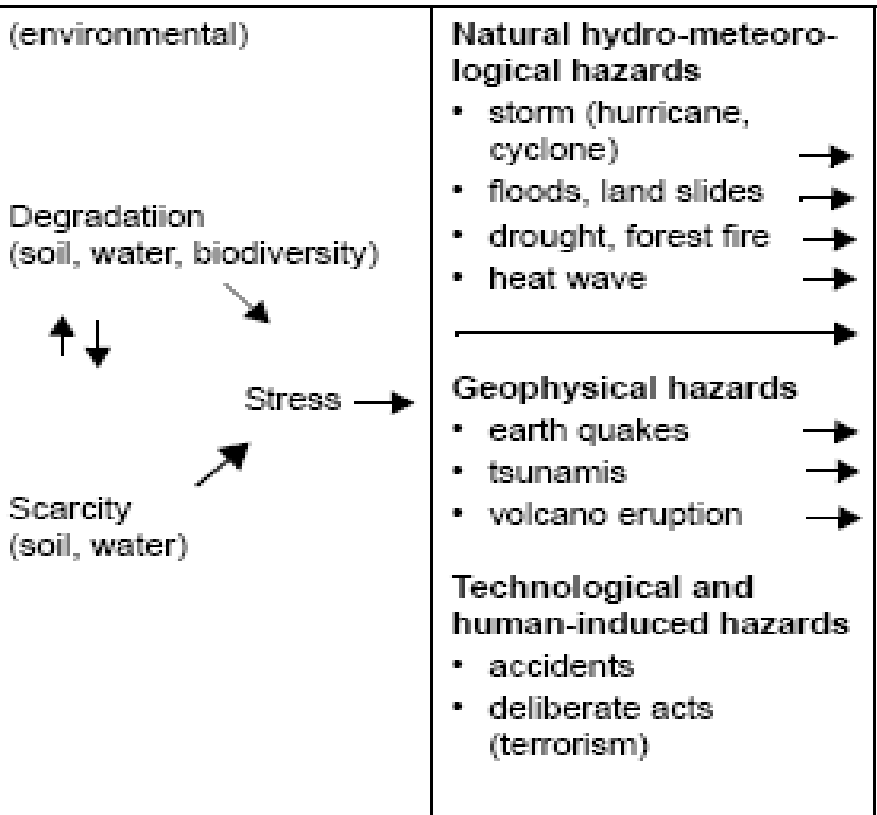


3.2 P: Pressure: Interactions of GEC



Effect	Impact
Socio-economic interaction Environmental scarcity, degradation and stress	Natural and human- induced hazards

Direct natural link: climate change and extreme weather

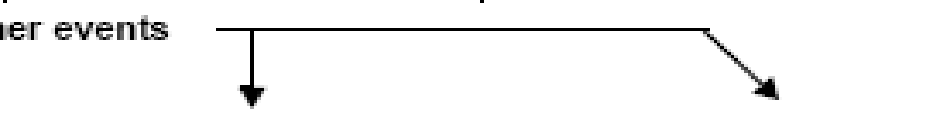


NATIONAL ECONOMIC AND POLITICAL

3.3. E: Effect & I: Impact

- **E: Environmental security debate of 1990s**
 - Toronto school
 - Swiss school (ENCOP):
 - **Soil scarcity > degradation > environmental stress**
- **I: climate change -> extreme weather events**
 - Hydrometeorological hazards
 - **Drought (wind erosion)**
 - Heatwaves
 - Forest fires
 - Storms (hurricanes)
 - **Flash floods & landslides (wind & water erosion)**

Societal Outcome	(Policy) Response
Individual choice (<i>survival dilemma</i>) Societal response	National and international political process, state, societal and economic actors and knowledge



POLITICAL CONTEXT AND CONDITIONS
(events in the international system)

**Individual/family/
community choice**
(*survival dilemma*)

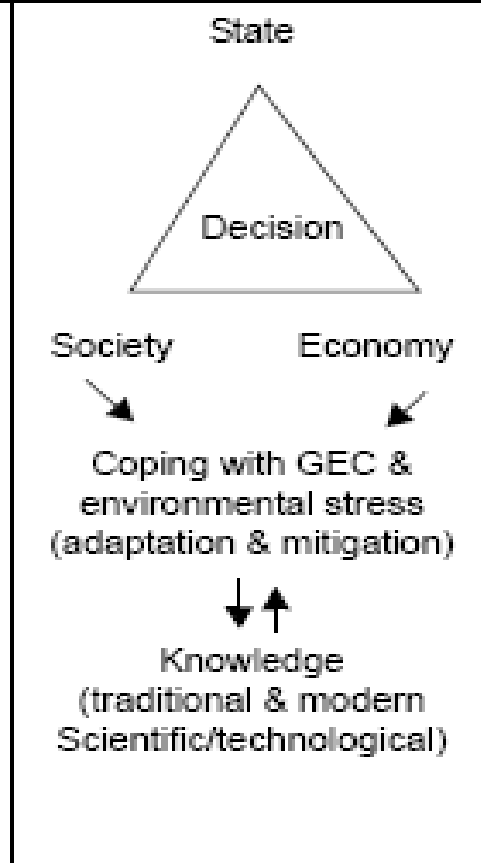
- stay at home & suffer
- move (migrate)
- protest & fight (violence)

Migration

Crisis Conflict

Societal response

- massive migration (rapid urbanization rise)
- internal crisis
- violent conflict
- conflict avoidance, prevention, resolution



3.4. SO: Societal Outcomes

- Individual level (choice)
 - Human security perspective
 - 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

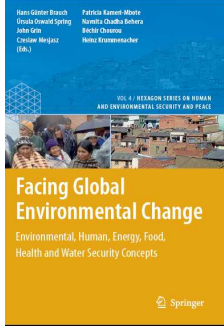
3.5 R Policy Response to Security Danger posed by Global Environmental Change

- **How? Responsive vs. proactive action**
 - **Response:** cost of non-action (Stern Report)
 - **Proactive:** anticipatory knowledge, learning, action
- **What? Addressing causes (**Pressure**)**
 - **Earth system:** environmental quartett
 - **Human:** productive/consumptive behaviour
- **Responding to **Effects & Impacts****
 - **Environmental stress**
 - **Climate-related natural hazards**
- **Addressing **Societal Outcomes:** Migration/Conflicts**

3.6 Securitization of Societal Outcomes and Policy Response

- PEISOR model focuses on a sequence of *pressures* resulting from the interaction of natural and social system components, their *effects* on the socio-economic-political context, as well as on their *impacts*, *societal outcomes* and *policy responses*. In the interaction between the state, society, and the business community, multidisciplinary knowledge creation and application for sustainability and for coping with climate change impacts plays a key role for supporting the coping activities these crucial decision-makers.
- The *securitization* of GEC has already triggered a political demand for systematic transdisciplinary research, and monitoring of these claimed causal linkages to build up knowledge to support policies to recognize (early warning of climate related security risks) and to cope with these security dangers in a proactive way before they lead to violent conflicts. The claimed linkage between climate change and conflicts has already become an additional legitimating component or a 'securitizing move'.

4. Emergent Debates on the Climate Change-Security Nexus



Four Schools

- Dramatizers: Climate wars (Welzer)
- Skeptics: lack of research (PRIO)
- **Empiricists: PEISOR Model: focus on multiple complex linkages**
- Deniers

Five Approaches

- **Policy Analyses**
- **Scenario analyses**
- **Discourse analysis: climate change (chapter 4 of this volume)**
- **Conceptual & model analyses**
- **Theoretical & empirical analyses**
 - Causal analyses
 - Qualitative approaches (case studies)
 - Quantitative approaches (macro sociological approaches)

Objects of Security Analysis (Securitization)

- Physical Effects: e.g. temp, rise
- Impacts: Sectors & Regions
- Societal Effects (migration, crises, conflicts)

Whether they pose:

- **Objective Security Dangers**
- **Subjective Security Concerns**

5. Human, Gender and Environmental Security (HUGE)

Level of expansion	Determination Which security?	Mode of expansion, Reference object Security of whom?	Values at risk Security of what?	Source(s) of threat Security from whom or what?
Without	National security (political, military)	The State	Sovereignty, territorial integrity	Other States, terrorism, sub-state act., guerrilla
Increased	Societal security	Nations, social groups	National Unity, national identity	(States), Nations, Migrants, Alien cultures
Radical	Human security	Individuals (Humankind)	Survival, livelihood, quality of life, cultural integrity, equality, solidarity	The State, nature, globalization, poverty, fundamentalism
Ultra-radical	Environmental Security	Ecosystem, urban and agricultural system	Sustainability, biodiversity, Anthropocene	Humankind, Nature, GEC
Trans-radical	Gender security	Gender relations, indigenous, youth, elders, minorities	Equity, identity, social relations and social representations, cultural diversity	Patriarchy, totalitarian institutions (élites, governments, culture, religions), intolerance

Source: Bjørn Møller, 2003:279 and Úrsula Oswald, 2001, 2004, 2008

5.1 Why a HUGE Security?

Confronted with global environmental change, globalization, urbanization and a homogenizing culture, the traditional narrow military security concepts is insufficient to deal with the new dangers. Poverty and marginalization is increasing, resources are getting scarce and polluted, and profit interests of small elites are creating a risk society. Additionally, gender violence is still the most common aggression worldwide. To deal with these new challenges an integral concept of security is proposed: Human, Gender and Environmental Security: a HUGE security.

5.2 Four Pillars of Human Security

- **“Freedom from want” human development agenda: poverty** (stimulated by Asian economic crisis of 1990s) by reducing social vulnerability through poverty eradication programmes (UNDP 1994; CHS: Ogata/Sen: Human Security Now, 2003, Human Security Trust Fund, HSU of OCHA), **Japanese approach.**
- **“Freedom from fear”:** humanitarian agenda: **violence, con-flicts, weapons** (Canada, Norway, Human Security Network) (UNESCO, HSN), **Canadian approach:** Human Security Rep.(2005).
- **“Freedom from hazard impact”:** **environmental (GEC) & natural hazard agenda:** Bogardi/Brauch vision, goal: securitize: “environment” (GEC as pressure) and “natural hazards” as impact by reducing environmental & social vulnerability & enhancing coping capabilities of societies confronted with natural & human-induced hazards (Bogardi/Brauch 2005; Brauch 2005a/b).
- **“Freedom to live in dignity”:** agenda: **rule of law, human rights, democratic governance** (Kofi Annan: *In Larger Freedom* (2005))

5.3. Gender Security: Scientific Currents

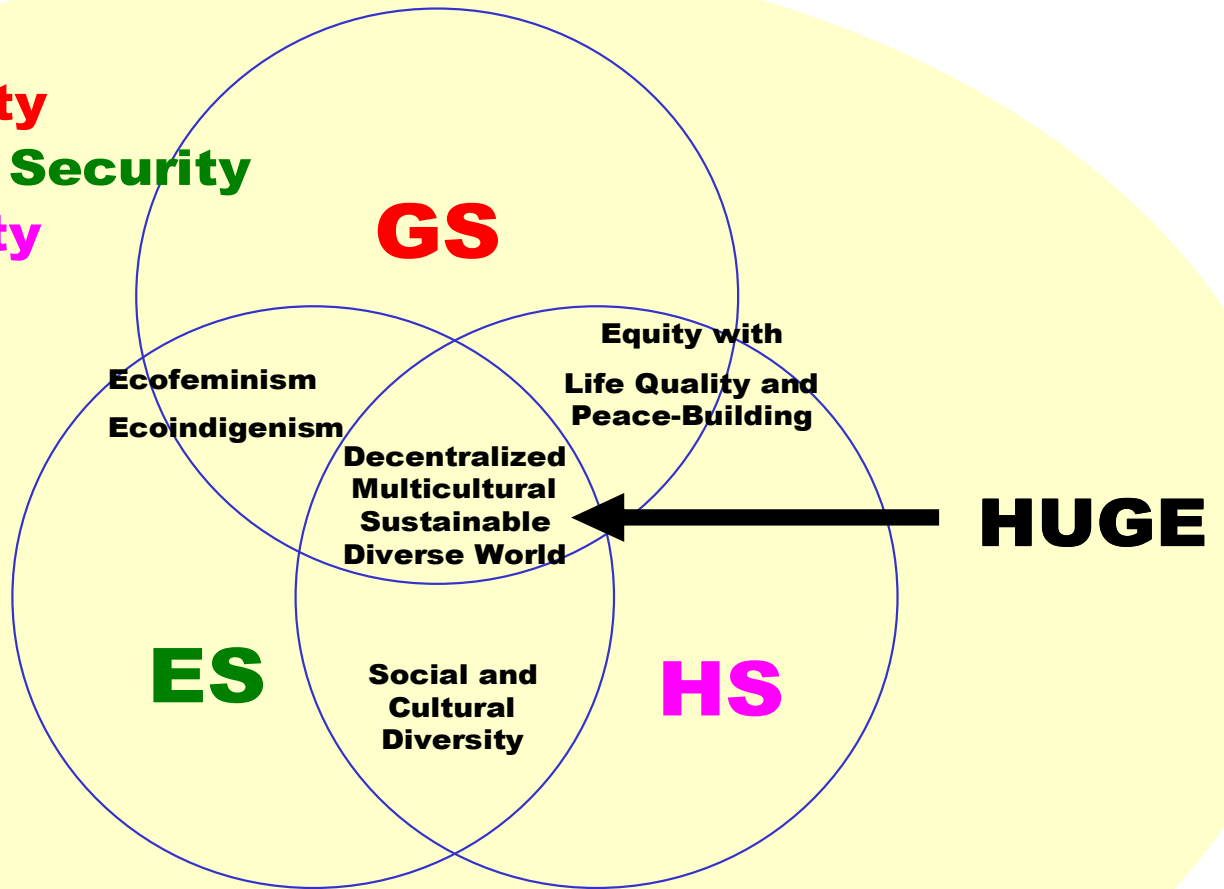
- ***Feminist epistemologies:*** Feminist epistemologies have analysed the ways in which metaphors of masculinity operate in the construction of ideals of rationality and objectivity (Bordo 1990; Lloyd/Duveen 1992; Longino 1990, 1993, 2001; Sandra Harding (1986, 1988, 1991; Harding/Hintikka 1991).
- ***Feminist empiricism:*** criticizes the 'androgenic' mainstreaming in science, where the stereotypical masculine mental approach excludes emotions. Objectivity in scientific knowledge also in physics and biology (Harding 1986, 1988, 1991) has gender biases
- ***Postmodern perspectives:*** avoid in GS studies a bias of androcentrism, super-generalization or super-specialization, insensibility to gender analyses and issues, the normal elimination of sex and sexuality, double evaluation standards and payment for men and women in scientific achievements, sexist dichotomies, and a formalism limiting the unity of analysis
- ***Standpoint feminism:*** Women and other oppressed groups are better trained and sensitive to deconstruct the mechanisms of exclusion, domination, violence, and submission. With these epistemic privileges they can deepen their analysis and better understand discrimination.

5.3 Four Phases of Gender Security

- **Social representations:** are systems of ideas, values, and practices fulfilling a dual function: a) establishing a framework of order where the subjects are oriented in their material and social world where they live; and b) permitting the communication with a common code among the members of a collective, where all objects are named and the processes precisely classified. Social identity is: -*processual* resulting from and leading to permanent change (Taijfel, 1985); -*relational* due to its transformation linked to social interaction (Moscovici, 1976, 2000); -*multidimensional* operating inside & between individuals, groups, ideologies (Doise, 1986); -*systemic*: an open, dissipative and self-organizing system (Prigogine, 1992; Oswald, 2005); -*contextual* forging relationships in specific contexts; -*essential* due to the diversity and complexity of social interactions that are sustained and transformed by identity processes (Serrano, 2004, 2005).
- **Gift Economy:** Genevieve Vaughan (1997) deconstructed postmodern feminism, including women's free labour for child rearing and unpaid homework. The intentionality of giving, the caretaking is more important than the objectivity of an account, satis-fying the constant social communicative needs, where reality is represented and reinterpreted without competitiveness, transforming *homo sa-piens* into a *homo donans*.
- **Ecofeminism:** the oppression of women and the exploitation of nature as interconnected. The dominant pa-triarchal system in late capitalism is affecting human, environmental, and gender securities with the same root causes. Control and commoditization of life and goods in favour of a small bourgeoisie are destroying the livelihood of billions of people, pushing them into extreme poverty
- **New social movements:** The social imaginary, once explored how to transform their legitimate demands – human rights, gender rights (Peters/Wolper 1995) welfare, food sovereignty, peace, environmental care and poverty relief. They questioned the hegemonic development agencies with their technological moder-nizing paradigms, using political power and economic pressure (IMF, WTO) to privatize public services at any costs of social conditions in developing countries and poor social sectors.

5.4. A HUGE Scientific Concept & Approach for Action in the Anthropocene

GS – Gender Security
ES – Environmental Security
HS – Human Security



Multiculturalism
Biodiversity
Sustainability
Social Equality
Technological Diversity
Joy of Creative Efforts
Agathos & Kalos
Local Self-Sufficiency

Civilizatorian Processes
Multiplicity in Relations
Social Networks
Ethics of Care
Gift-giving economy
Solidarity Plurality, Diversity
Politically Transversal

Democratic Practices from Below
Participative Governments
Bio-Socio Cultural Collaboration
Protection of Vulnerable
Permanent Evaluation
Prevention and Adaptation
Regional Peace-building
Gender Equity

6. Conclusions

- **The PEISOR model** introduced a general tool for the construction of specific causal models that address the interaction between factors within and between the earth and human system and their positive and negative feedbacks. In many analyses on the climate change and security nexus potential security threats and linkages are addressed from an international security perspective.
- Many policy statements and scientific studies have focused only on a state-centered military security concept. But in the policy debates in the UN and in the three emerging parallel discourses on environmental, human and gender security the **new threats and risks posed by GEC** have only partly been addressed.
- The suggested **HUGE security concept** matters both as an **analytic tool for analysis and as policy guidance for proactive action**. By linking the PEISOR model with the HUGE perspective, the authors suggest to broaden the scope both of conceptual, theoretical and empirical research on the climate change-security nexus.
- Our individual and joint work on the PEISOR model and on the HUGE perspective **is in progress**. Both authors welcome critiques and suggestions in order to develop both further and to apply them in their future empirical work on societal outcomes of environmentally- and climate-induced societal processes. The **Earth and humankind** are in a **critical** situation.
- A continuation of the **policies of business-as-usual** may result in a dangerous climate change and in human catastrophes during this century. We suggest to develop an **alternative sustainability paradigm**, a strategy for a **long-term transformation** towards a sustainability transition, for a **new social contract** for sustainability or for a fourth 'sustainability revolution' that calls for moving towards a decarbonized and a dematerialized world with social equity and solidarity that may **overcome the past five decades of global destruction and thousands of years of patriarchy**.