FOUR PHASES OF RESEARCH ON ENVIRONMENT AND SECURITY

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Summary

Research on linkages between the environment and security and on environmental security has gradually evolved since the end of the Cold War. Since the 1970s global environmental change has become a new research field in both the natural and social sciences. As a result of the global contextual change of 1989-1991 the concept of security itself has widened and deepened (see**:** *Reconceptualizing Security*). Three research phases are distinguished: a *first* conceptual phase in the 1970s and 1980s on the environmental impact of wars, and on policy proposals to include an environmental dimension into U.S. national security; a *second* empirical phase with two research projects in Canada and in Switzerland; and a *third* phase with manifold theoretical and empirical research but little integration. Several authors (Dalby, Brauch *et al*) have proposed a fourth phase "of synthesis and reconceptualization".

This chapter offers an overview of major research contributions during these three phases with a special focus on the theory-guided empirical case studies of Homer-Dixon and Bächler and their major critiques, on several projects of the third phase by GECHS, two new Swiss projects (ECOMAN and ECONILE), on syndromes of global change, on causes and intensity of violent conflicts, on transboundary freshwater, and of the US State Failure Task Force, as well as on classifications of the causes of war. This is followed by critiques of the environmental security and environmental conflict literature by Diehl and Gleditsch (2001), Pelusuo and Watts (2001), Conca and Dabelko (2002), as well as by Bannon and Collier (2003) and by a survey of international environmental security activities in the UN and EU. The piece concludes with conceptual proposals for a fourth phase of research on human and environmental security and peace (HESP) and a review of ongoing research.

1. Introduction

Research on linkages between the environment and security and on environmental security has gradually evolved since the end of the Cold War. Since the 1970s global environmental change has become a new research field in both the natural and social sciences. This research has been integrated in a model on global environmental change, extreme outcomes and on the political process in dealing with them (see *The Model: Global Environmental Change, Political Process and Extreme Outcomes*). As a result

of the global contextual change of 1989-1991 the concept of security has widened and deepened (see *Reconceptualising Security from National to Environmental and Human Security*). Since 1990, the four key scientific concepts of security threats, challenges, vulnerabilities and risks have proliferated and have been used by different scientific communities with different meanings (see *Security Threats, Challenges, Vulnerability and Risks*)

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". Three basic views on security have been distinguished by the English school (Wight 1991) that of: a) a *Hobbesian* pessimist (realism) where *power* is the key category; b) a *Kantian* optimist (idealism) where *international law* and *human rights* are crucial; and c) a *Grotian* pragmatist where *cooperation* is vital. Influenced by these world-views, security is a key concept of competing schools of a) *war, military, strategic* or *security studies* from a Hobbesian perspective, and b) *peace and conflict research* that has focused on conflict prevention from a Grotian or Kantian view.

Since 1990, many authors (Buzan/Wæver/de Wilde, 1998) have observed a widening and a deepening of the security concept in post-modern OECD countries, while in USA since 2001 a military security concept has prevailed. Within the UN and NATO, different security concepts coexist, a Hobbesian state-centered political and military security concept and an extended Grotian concept that includes economic, societal and environmental security dimensions (Table 1). While many scholars in the Hobbesian tradition and security studies prefer a narrow concept of "national security", specialists on environmental change and in peace research, as well as many international organizations, have continued to use concepts of "environmental security". The concept has also been sectorialized as energy, food, health and livelihood security and used by international organizations.

Security dimension ⇒ Level of interaction ⇓	Military	Political	Economic	Environmental ↓	Social
Human ➔			energy, food , health, livelihood threats, challenges and risks may pose a *survival dilemma* in areas with high vulnerability		
Societal/Community				↓↑	
National	U.S. focus: *security dilemma of competing states*		European focus (of NATO, EU countries) For many developing countries energy, food , health security		
International/Regional				↓↑	
Global/Planetary ➔					

Table 1. Vertical levels and horizontal dimensions of security

Table 1 combines five dimensions of the widened security concept (military, political, economic, environmental and social), and five levels of interaction or referents of

security policy (human, societal/community, national, regional and international as well as global. Not all governments have accepted this widening of the security concept. Since the 1990s, most OECD countries, the European Union and many UN organizations have accepted this widening and used concepts of extended or human security in their policy statements, but since 20 January 2001, in USA, a shrinking of the security concept has been observed, and in all parties to the conflict in the Middle East, as well as by many developing countries, a narrow security concept has prevailed. These different security agendas have complicated the transatlantic security cooperation and the Euro-Mediterranean security dialogue (Brauch/Marquina/Biad, 2000).

The "security dilemma" focuses to a threat-driven military security concept where one nation's armament is perceived by its opponent as a threat and thus contributes to an arms race. The survival dilemma has been introduced by Brauch (2004) as a new concept where environmental security challenges expose the societal vulnerability for those with a high degree of societal vulnerability that may be the most seriously affected during the realization of natural (or man-made) environmental hazards. The survival dilemma implies for the most vulnerable (the poor, women with children, old persons, indigenous populations) either to stay and die, or to migrate as internally displaced persons and thus often to become victims of clashes with resident populations.

During the Cold War, environmental concerns were rarely perceived as security problems. 'Environment' and 'ecology' as key *concepts* in the natural and social sciences have been used in different traditions and schools, in conceptual frameworks and approaches. The *Encyclopaedia Britannica* defined environment as: "the complex of physical, chemical, and biotic factors that act upon an organism or an ecological community and ultimately determine its form and survival". Ecology refers to: "study of the relationship between organisms and their environment".

The environmental debate has gradually evolved since the 1950s, and since the 1970s global environmental change has focused on "human-induced perturbations in the environment" that encompass "a full range of globally significant issues relating to both natural and human-induced changes in the Earth's environment, as well as their socio-economic drivers". According to Munn (2002) "changes greater than humankind has experienced in its history are in progress and are likely to accelerate". Dealing with future environmental trajectories requires more than a prediction of a single future path. It requires "mapping a broad range of future environmental trajectories" that may confirm "that the changes of the twenty-first century could be far greater than experienced in the last several millennia". Since the 1990s, besides the International Geosphere-Biosphere Program (IGBP), the International Human Dimensions Program (IHDP), the World Climate Research Program (WCRP), and DIVERSITAS were instrumental in rallying a global environmental change research community around coordinated scientific projects, and sensitizing policy-makers and the public.

The human dimension of global environmental change covers both the contribution and the adaptation of societies to these changes. These processes pose many questions for social, cultural, economic, ethical, and even spiritual issues. Wilson (1998) noted a growing *consilience* (the interlocking of causal explanations across disciplines) in which the "interfaces between disciplines become as important as the disciplines themselves"

that would "touch the borders of the social sciences and humanities". *Global (environmental) change* deals with changes in nature and society that have affected humankind as a whole and will increasingly affect human beings who are both a cause of this change and often also a victim. However, those who have caused it and those who are most vulnerable to and affected by it are often not identical. Global change affects and combines the ecosphere and the anthroposphere. The *ecosphere* comprises the *atmosphere* (climate system), the *hydrosphere* (water), the *lithosphere* (earth crust, fossil fuels), the *pedosphere* (soil) and the *biosphere* (life), while the *anthroposphere* deals with populations, social organizations, knowledge, culture, economy and transport systems (WBGU 1993).

More recently, Steffen *et al* (2004) have argued that a global perspective on the interactions between environmental change and human societies has evolved. This led to an awareness of two aspects of Earth System functioning: "that the Earth is a single system within which the biosphere is an active, essential component; that human activities are now so pervasive and profound in their consequences that they affect the Earth at a global scale in complex, interactive and apparently accelerating ways". They have argued "that humans now have the capacity to alter the Earth System in ways that threaten the very processes and components…upon which the human species depends". In the social sciences, the analysis of global environmental change and human-nature relationship is polarized between epistemological idealism and realism (Glaeser 2002: 11-24), or between *social constructivism* and *neo-realism*. The *neo-idealist orientation* has highlighted two aspects: a) the uncertainty of scientific knowledge and claims; and b) the attempt to explain the scientific and public recognition of environmental change influenced by political and historical forces. Two opposite standpoints exist on environmental issues:

- A *pessimist* or *Neo-Malthusian view* stimulated by Malthus' Essay on Population (1798) that stressed the limited carrying-capacity of the Earth to feed the growing population;
- An *optimist* or *Cornucopian view* that believed an increase in knowledge, human progress and breakthroughs in science and technology could cope with these challenges (Table 2).

Worldviews/Traditions on security (→)	Hobbes, Morgenthau, Waltz (neo)realist pessimist *Power matters*	Grotius liberal pragmatist *Cooperation matters*	Kant Neo-liberal institutionalist (optimist) *International law matters and prevails*
Standpoints on environmental issues (↓)			
Neo-Malthusian pessimist *Resource scarcity*	I	II	III
Equity-oriented pragmatist *Cooperation will solve*	IV	V International organizations and regimes	VI

Cornucopian neo-liberal optimist *Technological ingenuity will solve issues*	VII	VIII	IX

Table: 2. Worldviews and standpoints on security and environmental issues

These two positions have dominated the environmental debate since the Club of Rome's *Limits of Growth* (Meadows 1972), and Lomborg's (2001) *Skeptical Environmentalist*. Homer-Dixon (1999) distinguished among neo-Malthusians (biologists, ecologists); economic optimists (economic historians, neoclassic economists, agricultural economists) and distributionists (poverty, inequality, misdistribution of resources). Brauch (2002, 2003) opted for a third perspective of an equity-oriented pragmatist. Table 2 combines the three worldviews on security with three standpoints on the environment. This leads to nine combined ideal type positions on security and environmental issues. That of the United Nations system (position V) may be described as that of Grotian pragmatism in security terms and as an equity oriented pragmatic environmental perspective where "cooperation matters" and is needed to solve problems.

The claims on causal linkages between global environmental change, environmental stress and extreme outcomes have stimulated much research. According to Dalby (2002) and Brauch (2003) the research on environmental security evolved in three stages:

- *Phase I*: The research in the 1970s and 1980s resulting from the cooperation first between UNEP and SIPRI and later between UNEP and PRIO on the environmental impact of wars is closely linked to the pioneering work of Arthur H. Westing and with the conceptual contributions of Osborn, Brown, Galtung, the policy oriented proposals of Ullman, Mathews and Myers, often with a normative orientation (Brock; Gleick; Renner).
- *Phase II*: During the 1990s, two comprehensive empirical environmental conflict research projects were conducted by the *Toronto Group* (Homer-Dixon 1999, 2000; Homer-Dixon/Blitt 1999) and by the *Bern-Zürich Group* (Bächler/Spillmann 1996; Bächler 2003).
- *Phase III:* Since the mid 1990s, partly in reaction to and modification of the work of both research teams, comparative studies and conceptual deepening by different research teams, partly relying on modeling, on management efforts and focusing on the conflict potential of resource use, on state failures, and on syndromes of global change were launched.

According to Dalby (2002a: 96) "environmental security discussions can now move to a fourth stage of synthesis and reconceptualization". Brauch (2003) suggested a fourth phase of research on Human and Environmental Security and Peace (HESP) that should combine structural factors from the natural (climate change, water, soil) and human dimensions (population growth, urbanization, pollution, agriculture/food) based on the expertise from the natural and social sciences with outcomes and conflict constellations. Former Soviet President Gorbachev "proposed ecological security as a top priority that *de facto* would serve as a forum for international confidence building". The Brandt-

Report (1980) noted that "few threats to peace and survival of the human community are greater than those posed by the prospects of cumulative and irreversible degradation of the biosphere on which human life depends". The Brundtland Commission (1987) argued that the security concept "must be expanded to include the growing impacts of environmental stress – locally, nationally, regionally, and globally". The Commission on Global Governance (1995) called for a broader concept of global security for states, people and the planet. It claimed a linkage between environmental deterioration, poverty and underdevelopment as causes of conflict. These reports put the linkage between environmental stress and conflicts and conflict resolution on the political agenda of international organizations.

Since the 1990s, the widening of the security concept has progressed and concepts of "environmental security" (UNEP, OSCE, OECD, UNU, EU), "food security" (WHO, World Bank), "energy security" (World Bank, IEA), and "livelihood security" (OECD) have been used. The Millennium Report of the UN Secretary General (Annan 2000) mentioned several international organizations that have addressed the linkages between environmental stress and conflicts. The World Summit on Sustainable Development in Johannesburg (2002) in its political declaration and plan of implementation referred to "food security" but "environmental" or "human security" were not included. Kofi Annan (2003) pointed to the potential threats posed by environmental problems and he suggested that the UN system should "build additional capacity to analyze and address potential threats of conflicts emanating from international natural resource disparities".

In this regard, UNEP has been active in three areas: a) Disaster Management Branch (DEPI), b) UNEP's Ozone Action Program (DTIE), and c) UNEP's Post Conflict Assessment Unit. In January 2004 UNEP identified a "need for scientific assessments of the link between environment and conflict to promote conflict prevention and peace building". UNEP's Division of Early Warning and Assessment (DEWA) launched an "Environment and Conflict Prevention" initiative to stimulate "international efforts to promote conflict prevention, peace, and cooperation through activities, policies, and actions related to environmental protection, restoration, and resources.

The Organization for Security and Cooperation in Europe (OSCE) has dealt with security risks from environmental stress. Among the non-traditional security risks confronting OSCE countries in Central, Eastern and South-Eastern Europe, in the Caucasus, in Central Asia and other parts of the former Soviet Union are trans-boundary pollution, shortage of drinking water, disposal of radioactive waste, reduction of human losses in man-made disasters and natural catastrophes, among them several hotspots in the Baltic Sea region, the Balkans, Central Asia, in the Black and Caspian Sea as well as in the Caucasus. The OSCE Economic Forum organized several meetings on environmental security issues.

In late 2002, OSCE, UNEP and UNDP launched a joint initiative to promote the use of environmental management as a strategy for reducing insecurity in South-Eastern Europe and in the Caucasus. The results were presented to the 5th ministerial conference in Kiev in May 2003 that adopted an environmental strategy for the countries of Eastern Europe, the Caucasus and Central Asia. After Kiev, the ENVSEC Initiative has focused on:

1. Vulnerability assessment and on monitoring environment and security linkages,
2. Policy development and implementation,
3. Institutional development, capacity building and advocacy.

In October 2004 a report on cooperation over environmental risks in the South Caucasus was released that focused on a) environmental degradation and access to natural resources in areas of conflict; b) cross-border water resources, natural hazards and industrial and military legacies and c) population growth and rapid development in major cities.

The Organization for Economic Co-operation and Development (OECD) has also addressed the linkages between development, environment and conflicts in several policy statements, such as "Development Assistance, Peace and Development Co-operation of the 21st Century" (OECD/DAC 1997) and in a scoping paper on the economic dimension of environmental security that are reflected in the "Guidelines on Conflict, Peace and Development Co-operation" (OECD/DAC 2001).

The European Union has pursued two strategies for "environmental security": a) integrating environmental goals into all sectoral policies (*Cardiff process*), including in development, foreign and security policies; and b) stressing conflict prevention and management in its activities in international organizations (UN, OSCE) and for specific regions. At the Barcelona European Council in March 2002, a sustainable development strategy was adopted that emphasized the integration of environmental concerns into sectoral policies. The European Council in Seville (June 2002) approved a conflict prevention program that aimed both at short-term prevention and at the root causes of conflict, in its development cooperation with poverty reduction, and in its strategy against terrorism. The European Council meeting in Thessaloniki in June 2003 approved a green EU strategy.

Below, the research will be reviewed for a) the *first phase*, focusing on impacts of wars and of the military on the environment (2); b) the *second phase* on the relationship between environmental stress and conflict (3); and c) the *third phase* with a pluralism of research goals, techniques and approaches (4).

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Biographical Sketch

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