Editorial

Frank Biermann · Ruben Zondervan

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In recent years, we have witnessed a profound transformation of the discourse on environmental protection, moving from an earlier conceptualization of the environment as the localized surroundings of humans to a much broader notion of changing and interlinked global biogeophysical systems. Paul Crutzen has coined here the neologism “anthropocene”, which he describes as a new era in planetary history defined by the dominant influence of one species (Crutzen and Stoermer 2000). Rockström et al. (2009) suggested in this context nine “planetary boundaries” that limit the overall development space of humanity. One alarming message of this group of authors is that several planetary boundaries are being violated by human action already.

This anthropogenic transformation of the earth system is in essence a crisis of societal governance. Current systems of governance, at all levels of decision-making, are ineffective and insufficient. Yet from a social science perspective, it is apparent that these systems are also poorly understood. Here lies a tremendous research challenge.

This is the rationale for the Earth System Governance Project, a ten-year research initiative launched in October 2008 by the International Human Dimensions Programme on Global Environmental Change (IHDP) under the overall auspices of the Earth System Science Partnership. Earth system governance is defined in this Project as the system of formal and informal rules, rule-making systems and actor-networks at all levels of human society (from local to global) that are set up to steer societies towards preventing, mitigating and adapting to environmental change and earth system transformation (Biermann 2007, Biermann et al. 2009).

Based on this general notion, the Earth System Governance Project advances a science programme that is organized around five analytical problems. These are the problems of the overall *architecture* of earth system governance, of *agency* of and beyond the state, of the *adaptiveness* of governance mechanisms and processes, of their *accountability* and

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F. Biermann (✉)

Department of Environmental Policy Analysis, IVM, VU University Amsterdam,
Amsterdam, The Netherlands
e-mail: frank.biermann@ivm.vu.nl

R. Zondervan

Earth System Governance Project, Lund, Sweden

legitimacy, and of modes of *allocation and access* in earth system governance. In addition, the programme emphasizes four crosscutting research themes that are crucial for the study of each analytical problem but also for the integrated understanding of earth system governance: the role of power, of knowledge, of norms and of scale. Finally, the Earth System Governance Project advances the integrated, focused analysis of case study domains in which researchers combine analysis of the analytical problems and crosscutting themes. Four case-study domains have been identified that will serve as flagship activities of the Project: the global water system, global food systems, the global climate system and the global economic system. The Earth System Governance Project is designed as the central nodal point within the global change research programmes to guide, organize and evaluate research on these questions.

The Project is now being implemented through a global alliance of Earth System Governance Research Centres, a network of associate faculty members and research fellows, a global conference series, and various research projects undertaken at multiple levels (comprehensive information on the Project is available at www.earthsystemgovernance.org). The international project office of the Earth System Governance Project is hosted by Lund University, Sweden.

The science agenda of this new ten-year research programme stands at the centre of this special issue of *International Environmental Agreements*, with the first article introducing the scientific agenda and others presenting new cutting-edge research that builds on this ambitious science plan. Most contributions have been spearheaded by members of the scientific steering committee of the Project, along with several colleagues who have joined the Project after its launch.

The first article by Biermann et al. (2010) presents in a succinct way the core elements of the science and implementation plan of the Earth System Governance Project. It offers a conceptualization of earth system governance and lays out the five analytical problems that are central to it. The article also introduces the four crosscutting themes of the science plan and elaborates on the flagship activities that are planned within the programme.

Kanie et al. (2010) is one of the first studies that explicitly build on the science plan of the Project. Their study combines a focus on two analytical problems, “access and allocation” and “architecture”, analysed in one of the flagship domains, that is, climate governance. Kanie et al. (2010) identify a number of key problems associated with allocation in climate governance and relate these back to questions of overall governance architecture. Their article also delves into methodological questions that are key to earth system governance research, which in most cases needs to rely on inter- and multidisciplinary approaches.

Schroeder (2010) focuses on the analytical problem of “agency”. After a brief conceptualization of the notion of agency—here drawing on the science plan of the Project—Schroeder employs this concept in studying the agency of indigenous peoples in designing a mechanism for reducing emissions from deforestation and forest degradation (REDD) under a possible post-2012 agreement to the United Nations Framework Convention on Climate Change. Schroeder analyses whether indigenous peoples have agency in international negotiations and if so, how they have obtained it. She places special emphasis on indigenous peoples because they may be highly vulnerable to the impacts of both climate change and some policy responses; thereby, Schroeder also touches on other key concerns of the Earth System Governance Project, such as the analytical problem of “access and allocation” and the crosscutting theme of power.

Lebel et al. (2010a) concentrate on another analytical problem, the question of the “adaptiveness” of governance systems. They relate this to water governance, again a

flagship domain of the Project. After a brief introduction to the notion of adaptiveness and the role of social learning in it, they apply their concepts to water management in the European Alps and the Mekong region in Southeast Asia.

Lebel et al. (2010b) provide a second study on the analytical problem of “adaptiveness”. They explore in detail the politics around the quest for adaptiveness in water management in the case of the major transboundary river basins draining the south and eastern Himalayas. They find that the pursuit of adaptiveness takes place in a context of large differences in exposure and vulnerabilities, disparate interests and unequal power, hence linking this issue to the problem of “access and allocation”.

Questions of access and allocation stand at the centre of the contribution of Gupta and Lebel (2010), who compare water and climate governance. Gupta and Lebel argue that problems of access and allocation have two faces: access to basic resources or eco-space, and the allocation of environmental resources, risks, burdens and responsibilities for causing problems. In their view, only an integrated conceptual approach can advance understanding of conflicts around access and allocation.

Dombrowski (2010), a research fellow with the Earth System Governance Project, studies the fifth analytical problem suggested by the science plan, “accountability and legitimacy”. Her study uses the case of the climate convention to show how its constituency of non-governmental organizations reacted to what they perceived as representation and participation deficits in global governance. She finds that non-governmental organizations tend to support broadly similar standards of participation and representation in the climate convention. At the same time, it appears vital that the organizations do not underestimate the potential costs of high standards of inclusiveness and representativeness.

Taken together, the studies presented in this special issue offer a range of perspectives on the core elements of the science plan of the Earth System Governance Project. They cover all five analytical problems identified in the plan and provide insightful illustrations of the relevance of crosscutting issues such as power, knowledge and scale. The studies are examples of the ongoing work in the Project, soon to be complemented by related journal special issues on accountability and legitimacy (Biermann and Gupta, forthcoming) and agency (Pattberg and Betsill, forthcoming). Many publications that are inspired by the agenda of the Earth System Governance Project are at present developed (e.g. Werners et al. 2009; on all publications see www.earthsystemgovernance.org for updates).

As the editors, we owe our gratitude to numerous people who have made this special issue possible: Joyeeta Gupta as the journal’s editor-in-chief, who initiated this publication; Harro van Asselt and Agni Kalfagianni, INEA’s managing editors, who gave detailed guidance and ensured quick processing; the many anonymous reviewers who have contributed to much improved submissions through their constructive critique and useful feedback; and last but not least Tineke Reus, who spent endless days turning a collection of disparate manuscripts into a consistent and well-edited publication.

The Earth System Governance Project is designed as a global, open and broad network of researchers interested in advancing knowledge on the governance of human-nature co-evolution at all levels, ranging from local decision-making to global regimes and organizations. We look forward to engaging with more and more researchers and communities as the Project evolves.

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