

## **International Human Dimensions Programme on Global Environmental Change (IHDP)**

### **Introduction**

The continued advance of the social sciences toward greater inclusion within the global change arena has meant that IHDP's research remains at the forefront of social science integration. In particular, the IPCC and other intergovernmental processes have made significant use of research stemming from IHDP's projects. A brief update of these research activities is provided here for UNFCCC-SBSTA 34.

### **Science Highlights**

#### ***Human security, sustainable adaptation, equity***

The GECHS synthesis process has revealed that climate change requires both a technical response and "sustainable adaptation" (see Special Issue 3 (2011) 3-6 in *Climate and Development* journal), which includes a greater understanding of the role of individual and collective beliefs, values, worldviews, priorities and loyalties. A significant milestone for GECHS in the latter part of 2010 was the integration of their concepts and perspectives on human security into the assessment reports of the IPCC. Policymakers made use of GECHS research regarding Norway's support to the IPCC Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX) process. In addition, other activities (e.g. workshops, conferences, research articles, etc.) were used by the GECHS community to further bring human security concerns directly into IPCC's focus.

*O'Brien, K., St. Clair, A.L. & Kristoffersen, B (eds.) 2010. Climate Change, Ethics and Human Security. Cambridge: Cambridge University Press.*

*Eriksen, S. & Brown, K (eds.) 2011. Special Issue: sustainable adaptation to climate change. Climate and Development, 3: 1-85.*

#### ***Earth system governance, architecture, agency, adaptiveness, accountability***

The Earth System Governance Project has made key progress concerning the areas of *architectures* of earth system governance; *agency* in earth system governance, and *accountability* and *legitimacy* of earth system governance. A particular highlight in this regard is the project's strong contribution to ICSU Grand Challenge 4 concerning an effective governance structure for global change, which could have further implications concerning the Copenhagen Green Climate Fund. In addition, co-hosting and endorsement of large conferences like the 2010 Berlin Conference; the ISEE 2010 Conference; and the Democratizing Climate Governance Conference, resulted in an improved integration of the concept of earth system governance with other scientific communities. Similarly, the research agenda is strengthened by the advancement of curricula studies, particularly stemming from the Global Alliance of Earth System Governance Research Centres. Numerous working papers and publications further reflect these and other contributions from the project.

*Biermann, F., Pattberg, P. & Zelli, F. (eds.) 2010. Global Climate Governance Beyond 2012. Architecture, Agency and Adaptation. Cambridge: Cambridge University Press.*

*Bulkeley, H. & Newell, P. 2010. Governing Climate Change. London / New York: Routledge.*

#### ***Urban sustainability, adaptation strategies***

The strong linkage between the adaptation strategies of urban areas concerning climate change has been a key focus of UGEC activities in 2010. This was reflected by the project's 1st International Conference on

Urbanization and Global Environmental Change, which highlighted the need for greater transdisciplinarity and/or convergence within the field of urban sustainability, i.e. tying differing scales and knowledge together in such a way as to create plausible climate change adaptation strategies. Other highlights include co-sponsorship of the Training Institute on Urban Responses to Climate Change and the 1st World Congress on Cities and Adaptation to Climate Change. All in all, UGEC's research activities continue to provide critical data concerning the cities in climate change adaptation.

*Lwasa, S. 2010. Adapting urban areas in Africa to climate change: the case of Kampala. Current Opinion in Environmental Sustainability, 2(3): 166-171.*

*Romieu, E., Welle, T. & Schneiderbauer, S. (et al) 2010. Vulnerability assessment within climate change and natural hazard contexts: revealing gaps and synergies through coastal applications. Sustainability Science, 5(2): 159-170.*

### **Industrial transformation, sustainability transition, system innovation**

Research of the IHDP-Industrial Transformation Project has identified innovation hotspots in emerging economy settings which reveals that developing countries do not have to follow conventional development trajectories. The application of transition concepts and models generated useful new insights about the generation, adoption and diffusion of new ways of doing things. Sustainability experiments and socio-technical regimes functioned as bridging concepts for academic researchers, policymakers and practitioners, further revealing innovative activities in diverse settings. This further emphasized the role of rules and social practices in socio-technical change.

*Berkhout, F., Verbong, G. & Wieczorek, A. (eds.) 2010. Socio-technical experiments in Asia – a driver for sustainability transition? Special Issue of Environmental Science and Policy, 13(4): 261-338.*

### **Adaptation and vulnerability, deltas and estuaries, islands at risk**

The research of the Land-Ocean Interactions in the Coastal Zone (LOICZ) project supports sustainability and adaptation to global change in the coastal zone. Key highlights from 2010 include the mapping of LOICZ research onto the ICSU Visioning Grand Challenges, as well as the development of a conceptual framework for social-ecological system analysis identifying seven components describing the social dimensions of coastal management. Additionally, new research hotspots include islands at risk; coastal urbanization and megacities; and the vulnerability and adaptation responses of coastal systems.

*Liu, K.-K., Atkinson, L., Quiñones, R. & Talaue-McManus, L. (eds.) 2010. Carbon and Nutrient Fluxes in Continental Margins. Springer: Berlin.*

*Longstaff, B.J., Carruthers, T.J.B., Dennison, W.C., Lookingbill, T.R., Hawkey, J.M., Thomas, J.E., Wicks, E.C. & Woerner, J.L. (eds.) 2010. Integrating and Applying Science: A Practical Handbook for Effective Coastal Ecosystem Assessment. IAN Press: Cambridge.*

### **Large-scale risks, disasters, entry- and exit transitions, risk modeling**

The recently established Integrated Risk Governance (IRG) project aims to identify the mechanisms, trends, impacts and predictability of risks in the context of global environmental change, as well as to develop risk assessment models and methods for integrated risk simulation. The project's governance perspective directs attention to a number of concerns, including policies designed to reduce the vulnerability of individuals and communities to the impacts of extreme events, decision-making processes relating to the establishment and deployment of response capabilities, and institutional arrangements (e.g. insurance schemes) capable of protecting individuals from the worst impacts of extreme events.

*The 2010 Summer Institute for Advanced Study of Disaster and Risk (SI2010)*

### **Land use change, sustainability science**

With the strong linkage between land use change and global environmental change (including climate change) and with the Global Land Project (GLP) on the path to synthesis, key research criteria for 2011/12 includes, among others: climate change, agriculture and food security; pathways to sustainable land management; ecosystem services provided by land systems, prioritization and trade-offs; land change in China and land use intensity. Additionally, a major finding of the GLP is that the magnitude of land deals in Africa is significant and

that land deals are extensively negotiated throughout Africa. Other research highlights can be found throughout GLP's contributions to all three WG's of the AR5.

*Singh, J. et al. 2010. Conceptualizing Long-Term Socio-ecological Research (LTSER): Integrating the Social Dimension. In: Müller, F. et al. (eds.): Long-Term Ecological Research, Between Theory and Application. Dordrecht, Heidelberg, London, New York: Springer.*  
*Friis, C. & Reenberg, A. 2010. Land grab in Africa: Emerging land system drivers in a teleconnected world. GLP Report No. 1. GLP-IPO, Copenhagen.*

### ***Ecosystems, coupled human environmental system***

The Integrated History and future of People on Earth (IHOPE) is a new project of the IHDP. As such, key research highlights are limited. However, IHOPE is a thematic project that cuts across disciplines in examining the history of the idea of environmental prediction and the reception of both optimistic and pessimistic predictions by societies, ultimately aiming to learn from our environmental past to inform future possibilities and ways forward, particularly where climate change is concerned. The specific objective for IHOPE is to identify slow and rapidly moving features of complex social-ecological systems, on local to continental spatial scales, which induce resilience, stress, or collapse. The basic framework for accomplishing this involves integrating theory, comparative studies and integrated socio-ecological modeling across a range of spatial and temporal scales.

*Barthel, S. et al. 2010, Social-ecological Memory in Urban Gardens. Retaining the capacity for management of ecosystem services. Global Environmental Change, 20(2): 255-256.*

*Beddoe, R. et al. 2009. Overcoming systemic roadblocks to sustainability: the evolutionary redesign of worldviews, institutions and technologies. Proceedings of the National Academy of Sciences, 106: 2483-2489.*

## **Capacity Development**

The IHDP and its projects are continuously developing human dimensions research networks and building capacity, particularly with a focus on scholars from developing countries. As a global Programme, it pays much attention to the composition of its research groups to ensure a balance in gender, regional and disciplinary backgrounds. It was proven more often than not that the composition of such endeavours has an impact on how science is being conducted and which questions are being asked. For example, to bridge the “North-South Divide” remains a challenge in order to complement the “Western” approach towards science with perspectives from the “Global South”, which often pay more attention to issues of equity and human well-being, or reach out to the development agenda more forcefully.

### ***Inclusive Wealth Report***

The Inclusive Wealth Report (IWR) is a joint initiative of UNEP, UNU-IHDP and the World Bank. The project aims at developing the first report on wealth and changes in wealth of nations, with a particular focus on developing countries. The main objectives of IWR are:

1. To carry out a comprehensive analysis of the different components of wealth by country and their link to economic development, particularly highlighting the importance of natural capital.
2. To formulate policies based on the notion of asset portfolio management. The ways in which nations manage their diverse assets and create productive economic bases for the future, have critical implications for long-term sustainable development.

Work on the development of the report was initiated in March 2010 by IHDP through a grant from UNEP. The World Bank has recently launched the International Partnership on Environmental Accounting and will begin work on developing accounting case studies in a number of selected countries. The first IWR is planned to be launched in April of 2012, at the Rio+20 conference.

### ***Assessment of Response to Change***

The global environmental change (GEC) research agenda has largely been framed from within the natural sciences. Biophysical dimensions of the problem—from carbon emissions to rising sea levels to biodiversity

loss—are well-accepted, and the human activities that generate environmental change have been quantified. What is lacking in GEC research, however, is a clear and comprehensive framework for the social dimensions of the problem. The Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report has identified human behavior evolution, scenarios of how societies will develop in the future and other social sciences topics as among their list of questions requiring further research, while two of the five “Grand Challenges” emanating from the International Council for Science (ICSU) visioning process on GEC research target societal response and innovation.

IHDP plans to address these needs by coordinating a comprehensive assessment of existing social sciences findings on the relationships between beliefs and values, socioeconomic structures and incentives, behaviors, and mechanisms of societal change, followed by a synthesis showing how these apply in the context of global environmental change. A recent global survey of social scientists and others in IHDP’s extended network and the broader social sciences community documented strong support for undertaking such an assessment. We anticipate that this assessment will help reframe the social questions and mobilize a stronger social sciences component within the GEC research community—just as the Millennium Ecosystem Assessment resulted in new paradigms and lasting research collaborations on ecological dimensions of global environmental change.

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