



- Making a Difference -

Scientific Capacity Building & Enhancement for Sustainable Development in Developing Countries

Institutional Dimensions of Global Environmental Change (IDGEC)

Synthesis Conference



Institutions for Sustainable Development in the Face of Global Environmental Change:

Questioning-Explaining- Demystifying (QED)

Final Report for APN CAPaBLE Project:

CBA2006-10NSY-Sari

Project Leader: Agus Sari

Project Contact: idgec@bren.ucsb.edu

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Final Report submitted to APN

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Overview of project work and outcomes

Non-technical summary (200 words)

The IDGEC Synthesis conference constituted the focal point of the final stage in the lifecycle of a core project operating under the auspices of the International Human Dimensions Programme on Global Environmental Change (IHDP). The conference distilled and harvested the major scientific findings generated by the project over almost a decade. Invited presenters and participants from all over the world explored the policy relevance of these findings, engaging in a dialogue about future research directions to investigate the roles that institutions play in both causing and addressing large scale environmental problems. Presentations and debates reviewed the substance and significance of research in order to identify knowledge produced in the areas of: a) the IDGEC Research Foci, i.e. causality (the role of institutions in determining the trajectory of human-environment interactions), performance (the extent to which the consequences of institutions meet well-defined performance standards), and design (prospects for designing institutional arrangements that perform well); and b) the project's Analytic Themes, i.e. problems of fit (the match between institutional attributes and the properties of biophysical systems), interplay (interactions between or among distinct institutions) and scale (the generalizability of findings across levels of social organization). The results of synthesis have been written up for publication.

Objectives

The present project aimed to:

- harvest the results of 10 years of research on the role of institutions in the human/environment interface;
- explore the policy relevance of these findings; and
- identify gaps and emerging questions for new research in this field.

Amount received and number years supported

The Grant awarded to this project was:

- US\$ 20,000 for Year1

Work undertaken

A highly successful conference to synthesize the results of the IDGEC project; participation by 135 scientists and knowledge brokers from 35 countries, roughly one third coming from the AP Region (beyond the US and Australia); Conference results written up in manuscripts ready now for submission as several volumes to MIT Press.

Results

The results include several edited volumes (see below) that summarize IDGEC research findings. IDGEC results constitute an important contribution to the New Institutionalism of the social sciences. In continued development of investigation, leading researchers have initiated a process to form a new core project under the IHDP on Earth System Governance (ESG). The IHDP Scientific Committee has formally approved a Scientific Planning Committee. In this group, four of eleven members are based in Asia, as a significant and appropriate geographic representation. The first draft of the new Science Plan should be ready for review by December 2007, and the new project is planned to be formally launched at the October 2008 Open Meeting of the Human Dimensions of Global Environmental Change in Delhi, India.

The Conference helped to identify deficits in institutional capacity for addressing environmental problems in developing countries of origin of both junior and senior scientists attending. This will help the ESG project (ESG) target areas of enquiry

and to maintain ties with scientists interested in producing case studies and with decision-makers seeking policy guidance.

The expanded focus on institutions as instruments within larger, complex systems of governance increases the potential of IDGEC and ESG research to bridge the science-policy gap, helping to produce effective decisions that successfully address global environmental change.

Relevance to the APN CAPaBLE Programme and its Objectives

The APN sponsored participants at the IDGEC Synthesis Conference included a mix of junior and senior scientists from the AP region ensuring that the project met the APN objective of enhancing scientific capacity in developing countries to improve decision-making regarding sustainable development. The involvement of senior scientists helped enhance capacity, while the attendance of junior scientists assisted in building capacity. Participants were tasked with exploring the policy relevance of IDGEC findings and with identifying new research questions and themes based on their own geographic and disciplinary backgrounds. By helping to synthesize IDGEC research and identify gaps for a new research agenda, participants from the AP Region had the opportunity to gain insights from IDGEC research results and to become involved in further research in this field. In addition, both junior and senior scientists were able to forge new collaborative ties with other scientists from the region and around the world.

Self evaluation

The Conference exhibited a very high level of scholarship. The structure of the conference worked well to distill the major research findings and explore their policy relevance. A highly diverse group of participants ensured lively debate and momentum for the next phase of research on institutions and environmental change. Synthesis in preparation for and stemming from the Conference produced high level results that have served very well as the basis for several volumes for publication.

Potential for further work

A new 10-year research agenda is evolving that will build on the IDGEC findings, but also embark on new avenues of research coordination. It will seek to generate new original research on the role of institutions and governance systems and, at the same time, institutionalize collaboration with other projects under the IHDP and the Earth System Science Partnership to apply this research to themes of relevance, such as carbon management, food systems, and water governance.

Earth System Governance is understood normatively as the aspiration to achieve sustainable development in ecological, economic, and social terms. It is about environmental protection, social welfare, effectiveness, and global and local equity. (Biermann forthcoming)

The new research agenda is set to broaden the research focus from institutions to larger systems of governance, i.e. earth system governance. It will build on the work of IDGEC, particularly in looking at institutional architecture, but also add new problems and perspectives, notably the role of agency, of adaptive governance, of accountability and legitimacy, and of allocation and access. It will also seek to generate methodological innovation and embark on developing an earth system governance theory.

At the same time, the new research project seeks to build linkages to other projects by inviting representatives of interested projects to participate in the drafting of the new science plan and to map research agendas on the governance of issue areas such as food systems, water or carbon.

Publications

Alcock, Frank (ed.), *The Politics of Property Rights in Fisheries* (under review).

Biermann, Frank and Bernd Siebenhuener (eds.), *Managers of Global Change: The Influence of International Bureaucracies in Environmental Governance* (being submitted to MIT Press).

Chambers, W. Bradnee, Joy A. Kim, and Oran R. Young (eds.), *Institutional Interplay: The Case of Biosafety*. In print, UNU Press.

Gupta, Joyeeta and Dave Huitema (eds.), *Scale in Environmental Governance: A theoretical and empirical exploration of the concept of scale and its relevance for environmental governance* (submitted to MIT Press)

Oberthuer, Sebastian and Olav Schram Stokke (eds.), *Institutional Interplay and Global Environmental Change. State of the Art and Perspectives* (in preparation).

Young, Oran R., Leslie A. King, and Heike Schroeder (eds.), *Institutions and Environmental Change: Principal Findings, Applications, and Research Frontiers* (being submitted to MIT Press).

IHDP Update (1/2007)

"Institutions and Environmental Change: A Summary for Policymakers" (in preparation, wide distribution intended)

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Technical Report

Abstract

The IDGEC Synthesis Conference was designed to distill and harvest the results of almost a decade of research on the institutional dimensions of global environmental change. The conference brought together academic researchers, policy makers, and leaders in the global environmental field to participate in a wide range of fora including paper and poster presentations on the major areas of research findings, workshops, and discussion groups, and events to ensure maximum interaction and learning. Bali was selected as the Conference venue to facilitate access by participants in the Southeast Asian region and to highlight the importance of institutional capacity building in the developing world. The Conference enjoyed the active participation of leaders in the Indonesian government and from other governments and civil society in the region. Convened in workshops and plenary sessions, researchers and decision-makers asked questions both about the applicability of IDGEC's scientific findings to current and emerging issues of policy and about opportunities for ongoing research on the roles that institutions play in governing human-environment relations on a large scale. Lead researchers came away from the Conference with extensive write ups of research findings that have now become manuscripts for publication as books to serve as the key summaries of research findings in the IDGEC.

Table of Contents

1.0 Introduction

The project on the Institutional Dimensions of Global Environmental Change (IDGEC) was formed as one of the four original core projects of the International Human Dimensions Programme on Global Environmental Change (IHDP). IDGEC was charged with conducting cutting-edge research on the roles that institutions play both in causing and addressing large scale environmental problems. The project's original Scientific Steering Committee (SSC) crafted a Science Plan that set out the framework for IDGEC research. Investigation explored three analytic themes – the problems of fit, interplay, and scale – as high-profile concerns among those interested in human-environment interactions. The IDGEC themes were grounded in the perspectives of three research foci - the questions of causality, performance, and design – as generic concerns of interest to scholars of institutions. To strengthen the links between the research foci and the analytic themes, the project launched a series of flagship activities: one dealing with atmospheric issues and emphasizing the issue of climate change; a second dealing with marine systems and especially recent changes in the law of the sea, and a third dealing with terrestrial issues and particularly matters pertaining to the use and conservation of forests. The IDGEC project established an international project office (IPO) sustained through the life of the project thanks to funding by the US National Science Foundation. Steered from the IPO, the SSC judged that by June 2004, IDGEC research was ripe for synthesis, following in the footsteps of Project on Land-Ocean Interaction in the Coastal Zone, a core IHDP project formed before the IDGEC project. A plan for the full synthesis process met with approval and funding from the US National Science Fund, which set in motion the appointment of synthesis captains and an executive committee to convene a series of meetings designed to culminate in the IDGEC Synthesis Conference in December 2006 and resultant publications.

The first and second announcement and call for proposals went out at the beginning of October 2005, and January 2006 respectively, stating the conference goals to

distill IDGEC's scientific legacy, communicate key findings to policymakers, and map future research directions. Over 160 papers were submitted for review, resulting in a program of approximately 50 paper and 22 poster presentations. The conference used a series of presentations and workshops to distill key findings on the IDGEC analytic themes and foci, and with specific investigation in the following areas: scale and design questions in carbon management at urban and regional levels; institutional and governance aspects regarding energy, climate change, air pollution, and industrial development; institutional change; and new directions. Plenary sessions consolidated the work of the conference in a manner that enabled the Conference captains to finalize preparation of manuscripts on principal IDGEC findings.

2.0 Conference Outputs

Distillation of IDGEC project research findings

The contributions of the IDGEC Synthesis Conference Executive Committee and the Conference participants have resulted in clear summaries of advances made in the key IDGEC research themes of institutional *fit*, *interplay*, and *scale*, and its research on the key foci of *causality*, *performance*, and *design*.

Knowledge distilled by synthesis of IDGEC research can be broadly summarized as follows: understanding of the role of institutions both as drivers of environmental change and as response to such change has matured substantially over the past ten years. Where institutions used to be treated as stand-alone entities they are now considered as institutional complexes featuring interactions among institutions. In fact, institutions are now viewed as part of governance systems in a highly dynamic social-ecological environment where change may be abrupt, nasty, and irreversible.

Where ecological scales span levels of species, ecosystems, and social-ecological systems, institutions now extend from single entities to complexes and systems within broader political, economic, social, and cultural contexts. A match in corresponding ecological and institutional levels tends to produce the best fit: for managing the sustainability of a single species an approach such as the maximum sustainable yield (MSY) might be sufficient; but if the survival of a whole ecosystem is at stake, ecosystem-based management (ESB) approaches may be more effective.

Acknowledging that governance and institutional management goes beyond the environment and natural resources, recognizing that the biophysical includes human beings in social-ecological systems, the institutional response should entail considerations of vulnerability, resilience, and adaptation (VRA). Institutions or governance systems can be "sticky," i.e. resistant to change in the face of change, or they can be dynamic, i.e. adaptable to change. Windows of opportunity for (re)forming institutions, open but tend to close again (for example, in times of institutional bargaining, or with the emergence of a champion capable of taking and keeping institutional change at the top of crowded agendas). It is therefore imperative that the players, practices, and politics of an issue area as well as the environmental problem to be addressed are well analyzed at the onset of such constitutive moments and that institutional remedies are worked out in the timeframe appropriate to the problem.

Publications pending

Already, a summary of the Conference, "Institutions and Environmental Change: A Summary for Policymakers" was published in the January 2007 *IHDP Update*. Meanwhile, three important titles have been prepared as major contributions to the field. The first is a key volume summarizing IDGEC research to date: *Institutions and Environmental Change: Principal Findings, Applications, and Research Frontiers* (Young, O.R., King, L., Schroeder, H. (eds.)), now ready for submission to MIT

Press

In addition, three separate manuscripts have been prepared for the same publisher on key aspects of IDGEC research:

- *Scale in Environmental Governance: A theoretical and empirical exploration of the concept of scale and its relevance for environmental governance?* (Gupta, J., D Huitema (eds.));
- *Institutional Interplay and Global Environmental Change. State of the Art and Perspectives The State of Play on Institutional Interplay* (Oberthür, S. and O. S. Stokke (eds.));
- *Managers of Global Change: The Influence of International Bureaucracies in Environmental Governance* (Biermann, F. and S. Siebenhüner).

Summaries of Findings

The following extracts from the volume *Institutions and Environmental Change* provide a sample of findings in summary form of IDGEC research in general, on the focus of causality and performance, and on the analytic themes of scale, interplay, and fit as gleaned during the IDGEC Conference.

Institutions and Environmental Change: The Scientific Legacy of a Decade of IDGEC Research (Oran R. Young, in Young, O.R., Leslie A. King, Heike Schroeder eds. *Institutions and Environmental Change: Principal Findings, Applications, and Research Frontiers* (submitted 2007))

How does current thinking about the institutional dimensions of environmental change differ from the way researchers and practitioners thought about this subject a decade ago (Young et al. 1999b)? Can research produce scientifically valid claims about conditions determining the success of environmental and resource regimes? What insights can be derived from this effort that will prove helpful to policymakers responsible for creating such institutional arrangements dealing with the most pressing environmental problems of current times (e.g. the impacts of climate change, the accelerating loss of biological diversity, the depletion of marine living resources)? Can the research offer practical advice to those responsible for administering environmental governance systems?

This volume addresses these questions through an assessment of the scientific contributions of the long-term, international research project on the Institutional Dimensions of Global Environmental Change (IDGEC). In the process, it seeks to distil and appraise the project's legacy in a manner accessible to a variety of audiences. Individual chapters evaluate the contributions of the project both to generic issues relating to governance systems and to issues that are more specific to environmental governance. Separate chapters explore the policy relevance of research carried out under the auspices of the project and consider cutting-edge questions that will be of interest to researchers working in this field in the coming years. Uncertainty remains a prominent feature of knowledge regarding the institutional dimensions of largescale environmental change; there is no shortage of priority topics for future research in this field. But we will endeavor to demonstrate in this volume that the work of members of the IDGEC community together with that of many others engaged in related research is advancing knowledge in this domain substantially.

Like other global change research projects, IDGEC has passed through a well-defined lifecycle lasting approximately 10 years. Now we have engaged in a synthesis process designed to capture the scientific legacy of the project and to evaluate future directions in the research. Apart from the project on Land Use and Land Cover Change (LUCC), which was already underway when IHDP came into existence and which was sponsored from the outset jointly with the International Geosphere-Biosphere Programme (IGBP), IDGEC is the first IHDP core project to pass through a focused and comprehensive synthesis process. The results will therefore be of interest to all members of the IHDP community and to members of

the broader global change research community as well as those whose primary interests concern the institutional dimensions of environmental change.

IDGEC research operates within the milieu of the “new institutionalism” in the social sciences, treating institutions as sets of rights, rules, and decision-making procedures that give rise to social practices, assign roles to the participants in these practices, and guide interactions among the occupants of these roles (North 1990; Young 1999b). Looked at in this way, institutions are not only important in efforts to solve problems; they also can play a role in the onset and impact of environmental problems. The “tragedy of the commons,” for instance, is basically a story about missing or inappropriate rights and rules governing the actions of users of renewable but depletable resources (G. Hardin 1968). Most proposals for avoiding or overcoming this problem focus on introducing changes in prevailing rights and rules, whether they prescribe a transition to private property, a shift to public property, or the development of some form of restricted common property (Baden and Noonan 1998; Ostrom et al. 2002). These are precisely the sorts of issues that lie at the heart of the project’s research agenda. When and how do prevailing institutional arrangements influence the incentives of subjects in such a way as to give them reasons to behave in a manner that is unsustainable, whether this takes the form of depleting renewable resources (e.g. stocks of fish or mammals) or emitting pollutants (e.g. sulfur dioxide or greenhouse gases) into the Earth’s atmosphere. Under what circumstances can institutional reform solve or alleviate these problems – or even prevent them from occurring in the first place – and what are the prospects for initiating such reforms and implementing them successfully (Young 1999b)?

Starting Points

We have sought from the beginning to set our work on the institutional dimensions of environmental change into a broader research program of interest to social scientists. This effort has led to conceptual, methodological, and substantive choices that define the overarching character this research program.

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The New Institutionalism: Although IDGEC deals with the roles that institutions play regarding *environmental change*, the project has sought from the outset to take advantage of the intellectual capital of the *new institutionalism* in formulating its research agenda, and to bring its findings to the attention of those who are interested in institutional issues more generally. To take a single prominent example, the project shares with the new institutionalism a strong interest in what are known as collective-action problems or situations in which seemingly rational choices on the part of individual members of a group lead to societal results that are undesirable from the perspective of all the members of the group (Schelling 1978; R. Hardin 1982). We have known for some time, for instance, that the tragedy of the commons exhibits the defining features of what is known to those who analyze

collective-action problems as the “prisoner’s dilemma” (Ostrom 1990). It is apparent as well that efforts to address many environmental problems involve the supply of collective goods and, as a result, often give rise to what is known as the free-rider problem (Olson 1965). Under the circumstances, it makes sense to think about the creation of institutional arrangements designed to solve or alleviate environmental problems as exercises in overcoming collective-action problems.

The new institutionalism has become influential throughout the social sciences and in law. An interest in institutions treated as clusters of rights, rules, and decision-making procedures constitutes the glue that holds those who work in this realm together and gives this movement a distinctive “personality” that is well-known not only to practitioners of the new institutionalism but also to the movement’s critics. As one would expect from such a wide-ranging movement, however, the new institutionalism encompasses a number of analytic strands that are quite distinct (March and Olsen 1989; Rutherford 1994; Scott 1995). Research on environmental institutions has taken a particular interest in two of these strands which we call the *collective-action perspective* and the *social-practices perspective* on the nature and role of institutions (Young 2002a).

It will come as no surprise that the collective-action perspective is the better known of the two. This perspective assumes that individuals have preferences that are exogenous to their membership in groups, that they act on the basis of utilitarian calculations, and that they endeavor to maximize payoffs to themselves as individuals. Institutions form through a process – explicit or implicit – of developing social contracts. The prisoner’s dilemma, the free-rider problem, and, more generally, problems of burden sharing and compliance loom as critical concerns among collective action thinkers (Barrett 2002). The social-practices perspective, by contrast, assumes that the identities of individuals are shaped in part by group membership, that actors are influenced by what is known as the logic of appropriateness in contrast to the logic of consequences, and that compliance with institutional rights and rules often becomes a matter of second nature or habit (March and Olsen 1998; Hart 1962). Not surprisingly, economists and many political scientists are attracted to the collective-action perspective, whereas sociologists and many anthropologists find the social-practice perspective more appealing.

The collective-action and social-practices perspectives existed prior to the initiation of our research. During the course of our work, a third outlook on the links between institutions and environmental change has emerged. Less crisply articulated than the preexisting perspectives, this way of thinking, which we would characterize as the *knowledge-action perspective*, stresses agency, leadership, and the role of governance systems in shaping the way environmental problems are understood (Breitmeier, Young, and Zürn 2006). Knowledge brokers play particularly prominent roles in this perspective (Litfin 1994). So do those “champions” who have the ability to move issues to the top of the policy agenda and to make sure that they do not get relegated to the backwater of the policy process. We expect future research in this realm will make a concerted effort to enhance understanding of this perspective.

A hallmark of our research program is an effort to marry – or at least to deploy in tandem – the three perspectives to analyze the roles that institutions play both in causing and in addressing environmental problems. Difficulties in (re)forming institutions, for instance, can be attributed both to the transaction costs associated with institutional bargaining and to the “stickiness” of institutions once they are firmly entrenched and embedded in the thought processes or standard operating procedures of actors as a matter of second nature. Compliance with sets of rights and rules can be explained, then, both in terms of calculations regarding the costs of non-compliance and in terms of the influence of socialization or the habit of obedience. Sluggishness in responding to major environmental problems may reflect either opposition on the part of influential interest groups or the absence of clear characterizations of the problems and the champions needed to make sure

they are not ignored. We are not in a position at this point to merge the three perspectives fully to create a single, overarching theory of environmental institutions. But researchers studying these institutions regularly make use of all three perspectives, often in efforts to explain the success or failure of specific institutional arrangements (e.g. the successful ozone regime as articulated in the Vienna Convention of 1985 and the Montreal Protocol of 1987 as amended in contrast to the limp climate regime embedded in the 1992 UN Framework Convention on Climate Change [UNFCCC] and the Kyoto Protocol of 1997 as operationalized in the subsequent Marrakech Accords).

Complex causality: Beyond situating IDGEC research within three major social science perspectives to focus on environmental outcomes, a second fundamental and clearly related concern has to do with the roles that institutions play as determinants of societal outcomes. Mirroring broader perspectives in the social sciences, many observers of institutions approach this issue in terms of the idea of causal chains and draw a distinction between what are typically called underlying factors and proximate or intervening variables. From this perspective, the underlying forces in human affairs are factors like population growth, increases in affluence and shifts in consumption patterns associated with affluence, and the emergence of new technologies. Those who think in these terms typically treat institutions as intervening variables in the sense that they influence the impact of underlying forces but are not such forces themselves (Krasner 1983). Thus, institutions may play some role in channeling or guiding demographic forces or patterns of consumption and therefore steering interactions among the members of societies. But they do not account for the nature and causal impact of the underlying forces.

From a methodological point of view, this perspective actually makes life easier for students of institutions. As researchers have discovered time and again, the most recent links in causal chains are easier to identify and analyze rigorously than links located farther back in these chains. Clues regarding causal connections grow cold quickly as we move backward from one link in the causal chain to another. By contrast, it is often comparatively easy to identify the links in such chains located closest to outcomes of interest to the analyst. As an example, it is easy to see the causal connection between the 1987 Montreal Protocol and the title of the US Clean Air Act Amendments (CAAA) of 1990 dealing with the implementation of the Montreal Protocol. It is far more challenging to probe the economic and political sources leading to adoption of the Clean Air Act Amendments themselves (Bryner 1995).

At the same time, research on environmental institutions has raised profound questions about the usefulness of the simple view of causal chains outlined above (Young 2002b; Lambin and Geist 2006; Young, Lambin et al. 2006). Systems of rights and rules (e.g. arrangements regarding taxes and subsidies) can and often do serve to guide the choices individual subjects make regarding consumption. The operation of rules dealing with patents and copyrights can influence substantially the incentives of those endeavoring to develop new technologies. Even demographic trends are influenced by prevailing rights and rules. Compare China with its one child per family rule, for instance, with India that has no such rule. Restrictive rules regarding family size not only affect overall trends in population – India will soon surpass China as the world's most populous country – they also affect things like the sex ratio of children added to the population.

What can be concluded from these observations? Institutions certainly can operate as proximate forces. Arguably, this is an appropriate way to think about the arrangements set up to curb emissions of greenhouse gases or to preserve stocks of fish that move in and out of the jurisdictions of a number of coastal states. But institutions can also operate as underlying forces. One important inference can be drawn from the evidence that institutions can create effects in different ways and in

conjunction with forces at play beyond them: it often makes better sense to think in terms of causal clusters than in terms of causal chains. Systems of land tenure, for instance, often interact both with patterns of social stratification and with biophysical forces like patterns of rainfall and soil types to produce changes in land use and land cover over time (Lambin and Geist 2006). Emissions trading schemes interact with broader investment opportunities, tax policies, and technological advances to determine the results of efforts to use incentive mechanisms to curb greenhouse gas emissions.

Causal clusters made up of a number of interacting variables are difficult to analyze, a point examined later. Yet the shift from research into causal chains to causal clusters has major implications for how we think about the roles that institutions play in steering societies toward desirable outcomes and away from harmful outcomes. A focus on causal chains leading from deep structure to intervening variables and on to outcomes is perfectly appropriate in some settings. But in analyzing the institutional dimensions of environmental change, we regularly find ourselves seeking to sort out the various elements of causal clusters and, more often than not, analyzing the impacts of these clusters as composite drivers rather than engaging in frustrating attempts to assign weights to individual elements in these clusters as determinants of collective outcomes. One important consequence is that it is often helpful to employ the idea of complex systems to the study of institutions and to approach outcomes in terms of the concept of emergent properties.

Crosscutting applications: A third starting point centers on the observation that institutions constitute a crosscutting theme in research on issues of environmental change. Most projects launched under the auspices of the global environmental change research programs – the World Climate Research Programme (WCRP) and Diversitas as well as IGBP and IHDP – focus on more or less bounded issues. These include matters like industrial transformation, urbanization, coastal zone processes, the carbon cycle, and food systems. They strive to bring an extensive collection of tools to bear in efforts to enhance our understanding of matters like transitions from industrial to postindustrial societies, the extraordinary growth of cities during the 20th century, or changes in the concentration of greenhouse gases in the Earth's atmosphere. By contrast, researchers analyzing institutions seek to understand the roles that institutions play in all these realms. How do rules affecting the use of the atmosphere as a repository for wastes or residuals resulting from the burning of fossil fuels affect rates of emissions of greenhouse gases? How do systems of taxes and subsidies influence decisions about investments that have consequences for the introduction of new technologies or the development of new products involved in the transition from industrial to postindustrial society? Can the creation of quasi-markets help to control greenhouse gas emissions and avoid severe depletions of living marine resources? In each of these cases, will the results be favorable from the perspective of various conceptions of fairness or equity?

The crosscutting nature of the role of institutions is both an opportunity and a potential pitfall for analysts interested in environmental institutions. It has provided no end of requests for collaboration with those engaged in other projects, whether they involve issues relating to the allocation of carbon allowances, the development of entry barriers designed to conserve fish stocks, the protection of coastal wetlands and mangrove forests, or the degradation of dryland ecosystems. At the same time, researchers studying environmental institutions are acutely aware that the investigation of institutional issues of interest to other global change projects could easily divert attention from research on environmental institutions per se. The need to establish priorities does not preclude mutually beneficial collaboration between those focusing on institutions and those concerned with climate change, the loss of biological diversity, the allocation of freshwater to different uses, and so forth. But it does set up a tension within the global change research community that is worth considering carefully and reflecting on regularly.

Determining the Causal Significance of Institutions: Accomplishments and Challenges (Arild Underdal, in Young, O.R., Leslie A. King, Heike Schroeder eds. *Institutions and Environmental Change: Principal Findings, Applications, and Research Frontiers* (submitted 2007))

Deductive and experimental analysis leaves no doubt that certain types of rules – including those specifying property rights, regulating access to a particular resource, and decision-making processes – can make a substantial difference, and will do so under many real-world circumstances (e.g. Barrett 2003; Conybeare 1980). A wide range of empirical studies have produced compelling evidence that specific institutions, or particular institutional forms, do in fact have at least some degree of success in serving the purpose for which they were established (e.g. Breitmeier et al. 2006; Miles et al. 2002; Gibson et al. 2000; Ostrom 1990). In addition, studies focusing on local management systems and studies examining international resource regimes converge on one very important conclusion: “governance without government” can indeed be effective provided that certain conditions are met (compare e.g. Breitmeier et al. 2006 and Ostrom 1990).

An equally clear message, however, is that the causal significance of specific regimes and organizations varies substantially, depending on the extent to which they influence human activities driving or mitigating environmental change. Since institutions cause effects by guiding or modifying human behavior, they can affect only those elements of environmental change that are open to human influence. Although institutions as a distinct category of social arrangements do play important roles in shaping behavior and outcomes, no extensive search is needed to find regimes and organizations that make – at best – only a marginal difference.

Important progress has been made over the past decade or two in understanding roles played by different types of institutions in causing and mitigating environmental change. Four achievements stand out as particularly significant. They are accomplishments made by the research community at large, but activities initiated by or in other ways related to the IDGEC research program have contributed to the advancement along all four frontiers.

(1) Improved understanding of the causal *mechanisms* and *pathways* through which institutions shape behavior and outcomes: a number of studies published over the past 10-15 years have advanced our understanding of how institutions produce effects (examples include Ostrom 1990 and 2005; Haas, Keohane, and Levy 1993; Victor, Raustiala, and Skolnikoff 1998; Young 1999). For the field at large, this may well be the most important achievement made during this period – in part because progress has been substantial, in part because at least some causal mechanisms can be manipulated and used as tools. Thus, the study of mechanisms can generate knowledge that can serve as premises for the design of regimes and organizations.

(2) Improved understanding of *patterns of variance*, particularly with regard to regime effectiveness: several major studies have been published identifying and examining factors influencing institutional performance (e.g. Ostrom 1990; Victor, Raustiala, and Skolnikoff 1998; Weiss and Jacobson 1998; Young 1999; Miles et al. 2002; Breitmeier, Young, and Zürn 2006). More ambitious comparative studies have been undertaken. New databases have been developed, enabling researchers to search for patterns across a larger number of cases. These efforts have interacted productively with the study of causal mechanisms. As a result, we can now speak with greater confidence and precision about conditions for effectiveness and causes of failure.

(3) Progress in the study of *institutional interplay* and institutional complexes (e.g. Young 1996 and 2002; Stokke 2001; Raustiala and Victor 2004; Oberthür and Gehring 2006): ten years ago the relationship between or among institutions was of

marginal concern to most students of environmental governance. IDGEC has played a pioneering role in setting a new agenda for research, developing conceptual frameworks, and initiating empirical studies. A new subfield is emerging, with interesting findings already reported and more to come.

(4) More ambitious and sophisticated use of the *methodological repertoire* of social science (Underdal and Young 2004): such a trend can be seen in more frequent use of demanding techniques for explicit, transparent and rigorous measurement, in more systematic efforts to combine different modes of inquiry (such as intensive case studies and extensive statistical analysis), and in studies applying tools that have rarely been used in this field before (such as Boolean logic and agent-based simulation). Although by no means pervasive, these are important developments. Determining causality can be a major intellectual challenge, and the better use we can make of the methodological toolbox available to us, the more accurate and reliable will be the conclusions we reach.

Evaluating the Performance of Environmental Institutions: What to Evaluate and How to Evaluate It? (Ronald B. Mitchell, in Young, O.R., Leslie A. King, Heike Schroeder eds. *Institutions and Environmental Change: Principal Findings, Applications, and Research Frontiers* (submitted 2007))

Questions of performance are central to both scholars and practitioners interested in institutions. The central question to address becomes: "How well did this institution do at achieving a particular objective?" Performance questions add a normative aspect, in the sense of "standards to assess by," to questions about whether an institution causes outputs, outcomes, or impacts. Most causal analyses compare the state of the world in the presence of an environmental institution to a best estimate of what that state would have been in the institution's absence [see Underdal, same volume]. Performance analysis adds an *actual-vs.-aspiration* comparison to the *actual-vs.-counterfactual* used in causal analysis. The aspirations considered in evaluating performance are those held by creators of the institution, other interested parties, or the evaluator. Performance analysis, in short, seeks to identify how much an institution contributed to achieving - or at least made progress toward - a specified goal.

Performance questions involve two issues that often go unremarked in analyses of institutional causality: in what dimensions should institutional performance be evaluated; and, for any given dimension, how should researchers go about evaluating performance? As the beginning of a response, discussion here reviews work on institutional performance to date and identifies new research frontiers. The focus is on international environmental institutions. However, the arguments presented may apply equally well, with appropriate changes, to environmental institutions at other scales, from the local to the international and from the highly formalized to the completely informal.

Definitions and terminology

...The term *performance dimension* refers to the various criteria against which institutions can be evaluated. Institutions can be evaluated against the primary or subsidiary goals for which they were designed, but they can also be evaluated against the goals of actors outside the institution in question. Such actors can include, for example, non-governmental advocates, or scholars, researchers, and students. Examples of institutional performance dimensions include environmental quality, environmentally-related behaviors, the performance of particular functions, equity and social justice, and sustainability. Any institution can be evaluated along any dimensions involving institutional effects and the processes by which institutions produce those effects. Evaluating institutional performance requires at least one *performance scale* or system of measurement for each dimension being evaluated. Often several scales are available for a given performance dimension. Each scale requires a *performance reference point* to which observed outcomes can be compared. Reference points facilitate the estimation of the counterfactual state

of affairs along the chosen dimension - the likely scenario had there been no institution. This is necessary because claims of causality underpin assessments of performance evaluation. Scales also usually include additional *performance standards* against which performance can be evaluated. Such standards typically contain some normative judgment in which deviation from the standard allows categorization of an institution as performing well or poorly as with, for example, standards of compliance or collective optima. Finally, a *performance score* is the numeric or non-numeric value assigned to observed institutional outcomes on a given scale relative to either a reference point or a standard.

Global Change: Analyzing Scale and Scaling in Environmental Governance

(Joyeeta Gupta, in Young, O.R., Leslie A. King, Heike Schroeder eds. *Institutions and Environmental Change: Principal Findings, Applications, and Research Frontiers* (submitted 2007))

The concept of scale is problematic because it is used differently in different disciplines, generating insights that are not always mutually consistent or complementary. While political geography, economics, and ecology focus explicitly on different elements of scale, environmental governance looks more implicitly at scale related issues. However, the concept also has a strong unifying effect as concentration on different levels of scale and ways of scaling (see Figure 2) produces cross-disciplinary fertilization and richer analysis (cf. Cumming et al. 2006) ...

... The IDGEC (1999) project focused on understanding the conditions under which institutional solutions can be scaled up or down. While acknowledging that ecosystems and social systems differ, the project aimed to determine if similarities within these systems none the less allow for effective scaling up or down (Young 2002: 26). However, few articles in the literature actually focus directly on these questions. Some that do end by asking whether the question was useful (Berkes 2006).

The research questions and approach: Against the above background, this chapter addresses three research questions: a) what does the research tell us about the motives of actors and networks in considering the option of scaling? b) What are the findings on transferability of institutional solutions from one level to another? And c) What is the exploratory, explanatory and predictive value of the concept of scaling? ...

... We consider a problem as global when the direct and/or indirect causes and/or impacts of the problem occur worldwide; or when the problem arises all over the world; or when it affects the common good (as in Catholic social theory (Benson and Jordan forthcoming)). Thus, where a problem involves the hydrological cycle or the global climatic system it is viewed as a global problem. A problem can also be thought of as global when it arises locally but results from a global cause, say, an ideology or economic and political dynamics that prevail worldwide (Agarwal et al 1992). However, when a problem is seen as global, it needs also to be defined in terms of the way it manifests at national, state, and local levels. This helps to ensure the legality, legitimacy, and effectiveness of institutional solutions. Global problem solving, then, necessarily entails the development of complementary instruments designed to influence or for influence by governance at different levels. For example, while climate change is defined as a global problem, it takes different forms at different levels on the administrative scale from local to international (Gupta forthcoming). Wilbanks and Kates (2003) submit that climate change can be unpacked into distinct sets of problems at each level.

Some argue that the emissions problem is a global problem while the impacts and adaptation side of the problem are seen as local (Bodansky 1993). Others believe re-defining emissions as a local problem has certain advantages because it must be

addressed at the local level (Bulkeley forthcoming). The potential dilemmas involved in designation of levels was analyzed in 1985 by Clark (p. 2) who asserted that: "This need not be a problem, so long as participants in debates about the interactions of climates, ecosystems and societies concede that causal explanations, variables and generalisation relevant to one regime [level] are unlikely to be appropriate at others. The challenge is not to establish the pre-eminence of any particular [level] but rather to match scales of explanations, processes, and patterns in a realistic and effective way."

Interplay: Exploring Institutional Interaction

(Thomas Gehring and Sebastian Oberthür, in Young, O.R., Leslie A. King, Heike Schroeder eds. *Institutions and Environmental Change: Principal Findings, Applications, and Research Frontiers* (submitted 2007))

The Growth of Empirical Analyses: The number of empirical analyses of institutional interaction by both social scientists and lawyers has grown tremendously over the past decade. This work has confirmed the importance, ubiquity, and diversity of institutional interaction. Inter-institutional influence significantly affects the development and performance of virtually all institutions. Generally, the empirical research has focused on a limited number of "hot spots." A large potential exists for broadening the overall empirical coverage as well as for further comparative studies analyzing larger numbers of cases of interaction (large-n studies). Here, we review progress in the most prominent areas of research.

The World Trade Organization and Multilateral Environmental Agreements

Trade-environment interactions are one of the "oldest" areas of relevant scientific inquiry. A number of trade-related multilateral environmental agreements (MEAs) have been found to interact with the World Trade Organization (WTO). MEAs concern, on the one hand, the regulation of international trade, such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Basel Convention on the Transboundary Movement of Hazardous Wastes and Their Disposal, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, and the Cartagena Biosafety Protocol. On the other hand, MEAs, such as various fisheries agreements and the Montreal Protocol for the Protection of the Ozone Layer, employ trade restrictions as an enforcement measure (e.g. Brack 2002; Eckersley 2004; Palmer et al. 2006). Driven by the expansion of the world trade regime to cover, among other things, intellectual property rights and sanitary and phyto-sanitary measures, and by the emergence of further MEAs, the scope of trade-environment interactions has also expanded (e.g. Rosendal 2002; 2006; Andersen 2002; Oberthür/Gehring 2006a; Chambers et al. forthcoming).

Studies by social scientists and lawyers alike have highlighted the potential for conflict between the WTO and trade-related MEAs, and have identified potential solutions. Contributions have especially drawn attention to the ways in which the WTO, backed by its comparatively strong dispute-settlement mechanism, works against effective global environmental governance. The existing obligations under the WTO "chill" negotiations on MEAs because they constitute obstacles to agreement on environmental trade restrictions or limit the effectiveness of such restrictions (Brack 2002; Eckersley 2004). WTO obligations also undermine the effective implementation of MEAs by protecting free trade in goods irrespective of the environmental consequences of the underlying production processes. The identification of the conflicting areas has led to the analysis of various potential solutions, including mechanisms available in international law (Pauwelyn 2003) and options for institutional reform of the WTO (Tarasofsky 1997; Biermann 2001).

More recent studies have investigated in more detail the response of MEAs to the influence of the WTO. This has led to the insight that MEAs are not as weak in this conflict as they might appear at first glance. Trade-environment interactions are not a one-way street because MEAs have proven surprisingly robust in influencing the

WTO. Despite the chill effect of the WTO, more than 20 MEAs have introduced trade measures to date. They have found, and used, the room for maneuver to adapt to the WTO requirements while still pursuing their objectives with trade measures. Among other things, this has led to specific efforts to avoid discrimination against non-parties (Palmer et al. 2006). The introduction of trade-restrictive measures adapted in this way has in turn restricted the WTO's regulatory scope and authority (e.g. Oberthür/Gehring 2006c), and has triggered adaptations on the side of the WTO so as to allow for resulting multilateral trade measures. This has produced increasing acceptance of appropriately designed MEA trade-measures as reflected in the interpretation of the WTO regulations by the WTO Appellate Body and in the proceedings of the WTO Committee on Trade and Environment. As a result, no dispute concerning the implementation of an MEA has yet been brought before the dispute-settlement mechanism of the WTO (Charnovitz 1998; Palmer et al 2006: 187).

Overall, these results indicate that the interaction between the WTO and MEAs is more balanced than some early analyses might have suggested. An increasing number of studies during the past decade has highlighted the achievements of MEAs in shaping the balance between trade and environment. The emerging picture is one of an increasingly institutionalized (and thus recognized) division of competences and labor between MEAs and the WTO (Gehring 2007). Certainly, the current balance may not be sufficient or satisfactory, and tensions may worsen in the future based on the persisting societal conflict between free-trade and environmental objectives. However, the latent inter-institutional conflict between the WTO and MEAs highlighted in many early analyses appears to have been managed relatively successfully so far to avoid the conflict becoming acute. If this observation can be further confirmed, it would provide an indication that the current decentralized management of institutional interaction has been more successful than traditionally assumed [refer to "Implications for Policy-making" later in the volume].

The Problem of Fit between Ecosystems and Governance Systems – Insights and Emerging Challenges (Victor Galaz, Per Olsson, Thomas Hahn, Carl Folke, Uno Svedin, in Young, O.R., Leslie A. King, Heike Schroeder eds. *Institutions and Environmental Change: Principal Findings, Applications, and Research Frontiers* (submitted 2007))

Reference to governance in addition to institutions places a strong, appropriate emphasis on the multilevel patterns of interaction among actors, their sometimes conflicting objectives, and instruments besides institutions that are chosen to steer social and environmental processes within a particular policy area (c.f. Pierre 1999, Pierre and Peters 2005, Stoker 1998, Jordan et. al. 2005). The focus of this review of fit is through a "resilience lens," concentrating on the capacity of institutions and broader governance mechanisms to deal with environmental change as linked to societal dynamics, and to reorganize after unforeseen impacts. In this sense, the governance challenge lies not only in developing multilevel institutions and organizations for multiscale ecosystem management, but also in aligning with the dynamics of biophysical systems while taking social systems into full account. Governance needs to meet the demands of both incremental change when things move forward in roughly continuous and predictable ways, and of abrupt change when experience is often insufficient for understanding, consequences of actions are ambiguous, and the future of system dynamics is often uncertain (e.g. Adger et al. 2005). This discussion looks particularly at how to avoid the pathways of socio-ecological misfit institutions and wider governance that lead to constrained options for societal development and future capacity for adaptation (Gunderson and Holling 2002, Berkes et al. 2003).

Carl Folke and colleagues (1998), and Young (2003) have elaborated the "problem of fit" in detail. Our intention here is to provide a transdisciplinary update, linking

insights from research on socio-ecological systems, with advances in the social sciences related to governance theory, which encompasses research on institutions. The resilience literature generally uses the term “social-ecological systems” to highlight the strong interconnectedness and co-evolution of human-environmental systems (Berkes and Folke 1998, Berkes et. al. 2003). In this chapter however, we use the term “socio-ecological” to contribute to the compatible and uniform use of key terms and concepts in the book.

We aim to outline the “anatomy of misfits,” illustrate their underlying mechanisms, and present strategies derived from research to cope with the identified mismatches. We explore the tight connection between social and ecological systems. Human dependence on the capacity of ecosystems to generate essential services, and the vast importance of ecological feedbacks for societal development, show that social and ecological systems are not merely linked, but rather *interconnected*. In line with Berkes and Folke (1998), the need arises to address the interplay and fit between social and ecological systems by relating management practices based on ecological understanding to the social mechanisms behind these practices in a variety of geographical settings, cultures, and ecosystems.

We also present insights concerning the social processes and institutional structures that seem to build resilience in socio-ecological systems, that is, a capacity for living with and learning from, change, expected or unexpected. World wide changes in the socio-political landscape are examined such as decentralization, public-private partnerships, and the emergence of network-based governance. Here, we highlight the need to recognize the dynamic nature of not only socio-ecological but also governance systems, as well as the notion and features of adaptive governance.

The combined dynamics of social and ecological systems lead to a number of emerging governance challenges that will become important as a consequence of: the increased interconnectedness of social, economic, technical, and ecological systems (Young et. al. 2006, Held 2000); the non-linear nature of interconnected socio-ecological systems; and global environmental change (Steffen et. al. 2004). The problem of fit in this context leads to discussion also of the importance of innovations in knowledge production to better understand the behaviour of interconnected systems, and the need to create stronger linkages to policy.

Future research project

Thanks to continued interest of leading IDGEC researchers and participants, including many from Asia, a new project is being formed to carry research forward. The Earth System Governance project will pursue questions identified during the IDGEC Synthesis process and Conference.

3.0 APN-Funded Participants

APN funding financed a combination of flight, accommodation, and meeting costs for selected participants. (See list of participants below.)

Frank Alcock New College of Florida, USA falcock@ncf.edu
Paper: Trade, Property Rights and Fisheries Management
TOTAL Flight Accom Meeting Costs
597.32 0 300 297.32

Alka Bharat Sustainable Development and Environmental Planning, National Institute of Technology, Bhopal, India bharat@yahoo.com
Paper: Downscaling Climate Change Mitigation Tools in Local Government: From UNFCCC goals to India
TOTAL Flight Accom Meeting Costs

1467.57 800 390 277.57

Coming from a developing country, it was not possible for me to bear the expenses to attend the conference, the funding extended to me by APN helped me to be part of a great scientific community committed to the cause of global change and human dimensions. This fortunately coincides with my post doctoral area of research which is impacts due to development and climate change on water resources and I am fully committed to translate the findings of my research for social cause. I am grateful to APN for extending me this opportunity.

My research paper in the IDGEC synthesis conference entitled 'Downscaling Climate Change Mitigation Tools in Local Government - From UNFCCC Goals to India' talked of downscaling the mitigation tools from UNFCCC goals towards the local government in India and I received some invaluable feedbacks from the participants of the conference which has actually opened up new research avenues for me. I also received a chance to interact with a diverse group of participants from different scientific background and with different objectives of working and research. I am already in touch with many of the participants and hope to materialize more fruitful collaborations in near future.

Thanks for giving me opportunity to be part of such a good platform and hope to get this opportunity time and again to present my research findings and work. I will be more than happy to be part of this group working for such a noble social cause.

Maria Rebecca Campos Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA), Los Banos, Laguna, Philippines cmaribec@yahoo.com
Paper: Institutional Arrangements in Coastal Communities in The Philippines
TOTAL Flight Accom Meeting Costs
1342.34 767.02 240 335.32

Post Doctorate Researcher

I presented my paper " Institutional Arrangements in Coastal Communities in the Philippines" in the Panel on Applied Research on IDGEC Analytic Themes, specifically on Fit, Interplay, and Scale in Fisheries Management.

The IDGEC Synthesis Conference equipped me with appropriate methods and tools to tackle my research entitled "Assessment and Management of Risks Due to Natural Calamities in Support of Quedancor's Operations" at the Southeast Asian Regional Center for Graduate Study and Research in Agriculture (SEARCA). As a result, I was able to draw a paper "Risk and Risk Management Practices of Fishing Communities in the Philippines" from that research which I presented at the 21st Pacific Science Congress held in Okinawa, Japan last June 12-18, 2007. Moreover, I was able to get additional insights from IDGEC for my research on "Modelling the Impact of Philippine Fisheries Policies" where I had the opportunity to present it at the International Seminar: Sustaining Growth? Economic Transition and Natural Resource Management in East and Southeast Asia which was held from June 21-22, 2007 at Ho Chi Minh City, Vietnam.

Antonio Contreras De la Salle University, Manila, Phillipines
contreraspogi@yahoo.com
Paper: Discourse, Power, and Knowledge in the Mekong: The Case of Water Governance
TOTAL Flight Accom Meeting Costs
939.32 480 240 219.32

Julia Ekstrom Bren School of Environment, University of California at Santa Barbara, USA
jekstrom@bren.ucsb.edu
Paper: Applying a Technological Tool to Quantitatively Assess Institutional Interplay to Implement Marine Ecosystem-Based Management
TOTAL Flight Accom Meeting Costs
597.32 0 300 297.32

S.T. Hettige Department of Sociology, University of Colombo, Sri Lanka
sthetti@webmail.cmb.ac.lk
Poster: Vulnerability, Resilience and Adaptation of Disaster Victims
TOTAL Flight Accom Meeting Costs

1059.32 600 240 219.32

Louis Lebel Unit for Social & Environmental Research, Chiang Mai University, Thailand
louis@sea-user.org

Paper: Institutional change and stasis: how fast is fast enough?

TOTAL	Flight	Accomm	Meeting Costs
1040.57	737	180	123.57

Louis Lebel is interested in interdisciplinary action-oriented research around multi-level environmental change challenges in the southeast Asia region.

The IDGEC synthesis conference was very helpful for networking because it brought together several communities: those with a history of close engagement, the silent supporters, and some new faces from parallel universes. The new links were, in my opinion, particularly important to the future of institutional research within the Earth System Science programs: I expect several younger researchers will make a major contribution to the Earth System Governance program of IHDP that is now being planned. The conference was also important for its content in at least two ways. First it pushed the barriers on the idea of diagnostic rather than rules-for-all-time approach to institutional analysis. Second, by allowing in more attention to issues of agency, the politics of knowledge and going beyond the confines of environmental regimes in looking for solutions to global environmental change problems it laid the foundations for a re-organization of research around the theme of governance.

Jesse Manuta School of Arts & Sciences, Ateneo de Davao University, The Philippines
jbmanuta@yahoo.com

Poster: Climate change and the risk of flood disaster: Crafting adaptive and just institutions in Asia

TOTAL	Flight	Accomm	Meeting Costs
1196.32	754.75	240	201.57

Jessie Manuta is the Dean of the School of Arts & Sciences, Ateneo de Davao University, Davao City, Philippines. His research interests include (1) environmental change, vulnerability and disaster risk governance; and (2) sustainable, secured and empowered livelihoods.

The IDGEC Synthesis Conference has further nuanced research on the role of institutions in shaping differences in vulnerability brought about by the changing bio-physical and socio-political landscapes. The Conference likewise identified possible collaborative researches and projects in the region (Southeast Asia) in looking at the interplay of institutions, both formal and informal, across scales in increasing community resilience to climate-related disaster for example.

Chanda L. Meek University of Alaska Fairbanks; Institute of Arctic Biology, Alaska US
chanda.meek@uaf.edu

Paper: Evaluating the effect of federal agency culture, structure, and history on institutional performance

TOTAL	Flight	Accomm	Meeting Costs
502.32	0	260	242.32

PhD student, University of Alaska Fairbanks
IDGEC conference participant and APN scholarship recipient

My research focuses on community-based resource management regimes and resilience of socio-ecological systems in coastal Alaska. I am in the fourth year of a PhD program, and am working on a dissertation examining the role of organizational culture and institutional performance in marine mammals management in Alaska. At the IDGEC conference in Bali, Indonesia, I presented research relating to my dissertation work during the Evaluating Environmental Performance conference panel chaired by Dr. Tun Myint. During this panel and the conference in general, I gained insight into methodological problems and solutions that will be useful to me not only in my PhD program, but also in my later career. The plenary sessions were akin to an incredible course in institutional research on environmental issues and will help me to develop course curricula on environmental policy and further research ideas as I look for a teaching position at a university or avenues for a post-doctorate position. I also appreciated the opportunity to network with senior scholars and

fellow graduate students with similar academic interests.

Aminur Rahman School of Business, Independent University, Bangladesh
aminur@iub.edu.bd
Paper: Global Environmental Change, Institution & High System Loss in Public Sector
Irrigation Projects in Bangladesh: Hard and Soft Options
TOTAL Flight Accommm Meeting Costs
1150.90 691.58 240 219.32

Atiq Rahman Bangladesh Centre for Advanced Studies, Bangladesh
atiq.rahman@bcas.net
Paper: Improving North-South dialogue on climate change: Enhancing equity, technology
empowerment and sustainable development opportunities
TOTAL Flight Accommm Meeting Costs
1467.32 650 520 297.32

P.S. Ramakrishnan School of Environmental Sciences, Jawaharlal Nehru University, New
Delhi, India psr@mail.jnu.ac.in
Paper: Traditional Ecological Knowledge and Global Environmental Research
TOTAL Flight Accommm Meeting Costs
1287.32 750 240 297.32

Professor P.S. Ramakrishnan works in the area of socio-ecological systems analysis, linked
with conservation, management of biodiversity in all its scalar dimensions, and working in
the broad area of 'Ecology and Sustainable Development.' He helps manage networks of a
large number of young scientists across India, capacity building in the field of ecological
studies, and creating links with many national and international research initiatives.

Professor Ramakrishnan organized two, well attended, interrelated workshop sessions during
the Bali, Indonesia conference of the IDGEC-IHDP, entitled: (i) traditional Ecological
Knowledge and Global Change, and (ii) The Role of Stakeholders in Sustainability
Assessments. The latter workshop session was jointly organized with Dr. Marleen van de
Kerkhof, Amsterdam, The Netherlands. His participation in the Bali conference has directly
benefited him and indirectly all the others in the networks with which he is involved.

Bernadette Resurreccion AIT, Bangkok, Thailand
babette@ait.ac.th
Paper: Tentative Title: Gender and Institutions in Water Governance in the Mekong Region
TOTAL Flight Accommm Meeting Costs
742.57 397 260 85.57

Asian Institute of Technology
Title of Paper for IDGEC Synthesis Conference, Bali (December 2006):
'Watered Down and Washed Away'
Discourses on Gender Mainstreaming Water Governance in the Mekong Region

The conference was an eye opener in the sense that I saw how much work has been done/is
being done on institutional dimensions of global environmental change. However, there was
none that I identified that did work specifically on gender issues. I received valuable and
useful comments on my paper, which I have sent to a scientific journal. It was also useful to
touch base with other Southeast Asian scholars doing work on issues of governance and
natural resources. These were the most positive benefits I gained from participating in the
conference.

Atanu Sarkar TERI (The Energy and Resources Institute), New Delhi, India
contactatanu@yahoo.co.in
Poster: Roles of inequality and inequity in occurrence and severity of chronic arsenicosis: A
lesson learnt from Bengal basin
TOTAL Flight Accommm Meeting Costs
1277.03 739.71 240 297.32

I am a public health physician specialized in social and environmental epidemiology. Currently I am engaged in multiple researches on sustainable development, health and environmental issues, particularly focusing on arsenic contamination of groundwater, climate change and health and toxic waste (e-waste). IDGEC Synthesis conference has benefited me in development of new perspective in environmental health and role of institutions. It has provided me new understanding of institutions and using the concept in forthcoming research projects. Interaction with researchers with multidisciplinary backgrounds has further enriched my knowledge and increased the scope for collaborative research.

R.B. Singh Delhi School of Economics, University of Delhi, India rbsgeo@hotmail.com
 Paper: Water Governance - Key to Livelihood, Security, and Environmental Sustainability in India: Issues and Responses

TOTAL	Flight	Accomm	Meeting Costs
1287.32	750	240	297.32

As Secretary General of the National Association of Geographers, India (NAGI) and Steering Committee Member of the IGU Commission Lucc, I am able to promote outcomes of the IDGEC Synthesis Conference held at Bali with particular reference to my disciplinary research interest water governance, performance of the environmental institutions, vulnerability and mitigation of the natural disasters. I published 29 research volumes/Books and more than 150 research papers appeared in national and international journals. In future a few volumes are being planned for publications related to: 1. Biogeography and Biodiversity 2. Water Resources Sustainability in the Context of Global Change. Such volumes will promote IDGEC objectives. Colleagues who are Interested to contribute may contact: rbsgeo@hotmail.com

Sangeeta Sonak Western Regional Centre, The Energy and Resources Institute, India
sonaksangeeta@rediffmail.com

2 papers: Two papers and one poster: The problems of fit, interplay, scale and competing interests in fisheries management; Why was traditional common property resource management system more successful in the coastal wetlands of Goa

Poster: Exporting hazardous waste

TOTAL	Flight	Accomm	Meeting Costs
1879.32	1190	240	449.32

Participation in the IDGEC conference was an excellent experience for me. Having trained in natural science and shifted to policy analysis work later, the conference worked as training in the area of my interest that is, Institutions and Global environmental change. It also served to help in networking with people of similar interest. I record our appreciation of the organizers, particularly Heike Schroeder, for the excellent organization. The team led by Dr Oran Young ensured that the highest academic standards achieved at the conference, in no way compromised with the warmth and camaraderie throughout. I am grateful to the APN for the financial support provided for my participation in the conference.

Shanty M.F. Syahril Yayasan Pelangi Indonesia, Indonesia
shanty-s@indo.net.id

Paper: Building Model, Building Understanding: Lesson Learned from Developing Strategies for Clean Air

TOTAL	Flight	Accomm	Meeting Costs
689.07	133.50	240	315.57

Zhang Yili Institute of Geographical Sciences & Natural Resources Research (IGRNR), CAS, China zhangw@igsnr.ac.cn

Paper: Adaptive Policies of High Himalayas in the Context of Global Environmental Change a Case Study in Northern Slope of Qomolangma (Everest) Mt.

TOTAL	Flight	Accomm	Meeting Costs
1476.76	446	300	487.32

Prof. Zhang Yili and his working group have been studying on Tibetan Plateau since 1998. Great effects have been taken on Land use/cover change, climate change and its impacts, and adaptation to climate change and the Mt. Qomolangma (Everest) area is the studying area of adaptation to climate change. Some new studying items about adaptive polices, according to the good advice to our proposal, have been appended to the research program

after the IDGEC Synthesis Conference. We added the concept of regionalization to the adaptive policies so that we can take out different and pertinent policies and some institutional innovation to the local government.

4.0 Conclusions

Importance of research network

As seen in the accounts of some of those who attended, the IDGEC Synthesis Conference Project showed the importance of maintaining a network of researchers through the life of a research program. The use of modern technology in the form of a listserve and a website naturally made related tasks much easier for the IDGEC Project. Without an active network of researchers, other research groups, and allied organizations, the Synthesis Conference could not have drawn the number and diversity of submissions and attendees that it did, and nor would the substantive work presented have been as rich.

Knowledge distilled by synthesis

The conference outputs demonstrate the value of a lively and intensely engaged process of synthesis as led by key researchers. The Conference built on nearly a decade of well coordinated research by a range of scholars in various parts of the world. However, it occurred as the deliberate culmination of 16 months of a planned synthesis process led by a designated team that met in plenary and subgroups several times throughout the build up to the event. This successful process ensured very well directed and structured debate and constructive review, at the Conference. Lead researchers gained valuable feedback on work conducted in narrower arenas over several years. Junior researchers benefited by the opportunity to take away cutting edge findings to sharpen their own exploration of and contributions to the field. In the same way, decision-makers gained much useful information for application in their respective policy fields. The process might be improved by efforts to synthesise phases of research as it progresses over the lifetime of a project. Assessment of synthesis conference demographics, consultation with attendees, and evaluation of submission content make it possible to see more clearly where gaps lie in the science-policy interface. More work, again continuous during the project, on establishing links to policy makers, on determining other appropriate audiences, and on making the research "user-friendly," could help refine a research program and increase the value of synthesis and the very useful forum created by a final conference.

The importance of a well-defined research agenda

IDGEC benefited greatly from the guidance of its Science Plan and its SSC. The Plan provided the basis for measurable evolution of the Project and for a final conference agenda. Rather than limiting exchange, the original project agenda facilitated the formulation of an advanced platform for an in-depth review of institutional architectures, agency beyond the state, adaptability, accountability, allocation, and analysis and assessment.

Need to continue successful efforts to recruit junior and leading scientists from developing countries

New research efforts will build on the IDGEC research network and model of a stable IPO, but with more emphasis on inviting contributions on earth system governance themes as the project develops – encouraging new research, capacity building, and ongoing synthesis by scientists from developing countries. Such scientists can identify where governance capacity needs building and/or enhancing.

References

Institutions and Environmental Change: Principal Findings, Applications, and

Research Frontiers (Young, O.R., King, L., Schroeder, H. (eds.)), submitted.

"Institutions and Environmental Change: A Summary for Policymakers" *IHDP Update*, January 2007.

Appendix

Conference

Institutional Dimensions of Global Environmental Change (IDGEC)
Synthesis Conference

Institutions for Sustainable Development in the
Face of Global Environmental Change: Questioning-Explaining-Demystifying (QED)

Conference Venue

Grand Hyatt Bali

P.O. Box 53, Nusa Dua,

Bali, Indonesia

Tel: +62 36 177 1234 Fax: +62 36 177 2038

Email: baligh.reservation@hyattintl.com

<http://bali.grand.hyatt.com/hyatt/hotels/index.jsp>

Conference Dates

Pre-Conference workshops: December 5

December 6 – 9, 2006

Workshops and Special Sessions

December 5, 9:30-5:30

Workshop on Scale and Design Questions in Carbon Management at Urban and Regional Levels, co-organized by GCP, NIES, and IDGEC

This workshop will explore and apply the conceptual tools of scale, interplay, and institutional diagnostics that were developed by IDGEC to the issue of urban and regional level carbon management. This is an area where carbon emissions are increasing rapidly in many countries. Thinking about what approaches to carbon management different cities and regions are adopting and whether they are the most effective way forward is therefore important and timely. Workshop participants will present case studies of urban and regional carbon management in Europe, Latin America, Japan, China, and the US, and round off with a developing community perspective on this issue. Finally, these cases will be discussed and compared and next steps in this collaborative research activity will be identified.

Workshop for Constructing a Strategy for Exploring Governance Issues in the Coastal Zone, co-organized by LOICZ and IDGEC

This workshop will explore the contribution that research by the IDGEC community and others can make towards the overarching LOICZ Theme 3 topic of "How can comparative analysis inform the improvement of the governance of human

activities in changing coastal ecosystems?" This question addresses the primary goal of LOICZ II: "to provide knowledge, understanding and prediction to allow coastal communities to assess, anticipate and respond to the interaction of global change and local pressures in determining coastal change". A coastal community is defined to include policy makers, managers and stakeholders. The term "coastal ecosystems" embraces large marine ecosystems (LMEs), coasts and their associated watersheds. The workshop will explore analysis and approaches that focus upon successes and failures in instigating the changes in human behavior (institutions, markets and civil society) that mark the implementation of a coastal ecosystem management initiative. In all cases the analysis will examine coastal governance within the context of the next larger system – a watershed, a Large Marine Ecosystem or geographic region. The workshop will focus on three central questions:

1. How are overviews of ecosystem condition being developed and trends being communicated?
2. How can coastal ecosystem governance initiatives affect the collective behavior of societies more effectively?
3. What are the resulting outcomes and how can we improve upon them?

December 8

1:30-3:00

Informal Consultation - Roundtable Discussion: Preparing for CSD-15: Institutional and governance aspects regarding energy, climate change, air pollution, and industrial development

The informal consultation seeks to generate new ideas and approaches, consolidate views, and prepare for a successful 15th session of the Commission for Sustainable Development (CSD). Participants will have the opportunity to interact with members of both the IDGEC and the CSD community, which is particularly opportune as we are about to enter into the second year – the policy year – of the second implementation cycle, focusing on the areas of energy for sustainable development, industrial development, air pollution/atmosphere, and climate change.

A representative each from the Government of Indonesia and the IDGEC project will jointly lead a roundtable discussion with leading government representatives, practitioners, and members of the IDGEC scientific community to highlight cases where institutional dimensions are of great importance. The roundtable discussion will be followed by a workshop looking specifically at China and India in exploring how institutions matter for energy and climate change.

December 8

3:30-5:00

Informal Consultation - Preparing for CSD-15: Institutional and governance aspects regarding energy and climate change – India and China

Climate change constitutes one of the largest challenges that humanity has experienced in its recent history. The UN Framework Convention on Climate Change (UNFCCC) has been adopted for more than a decade and further enhanced by the Kyoto Protocol in 1997 which set up emission reduction targets and implementation mechanisms. The UN Commission on Sustainable Development (CSD) is reviewing climate change and energy issues and searching for policy solutions. This session will discuss current institutional practices at national and international levels to address energy and climate change in China and India, two developing countries with rising energy consumption and great contribution potential to greenhouse gas emissions. This session will start with two presentations and will be followed by several responses commenting on national practices. The objective of this session is to offer policy recommendations for the CSD in 2007 and recommendations to IDGEC on how scholarly research can be conducted in ways that better support

policy practitioners in their efforts to foster sustainable development.

In particular, the presentations will address the following questions: What institutions (e.g., policies and practices) have China and India established to address energy and climate change challenges? What roles have these institutions played in addressing these challenges? What are major barriers affecting the effectiveness of institutions? How have research findings influenced the institutional design? The presentations will conclude with recommendations on institutional design that can effectively address energy and climate change and on how IDGEC's research findings and CSD or UNFCCC can contribute to effective institutional design and governance. Discussants will make comments and recommendations on the above questions from different perspectives (e.g., academia, developed and developing countries).

December 8

5:15-6:45

Traditional Ecological Knowledge and Global Environmental Research

There is an increasing realization today that sustainable management of natural resources and biodiversity have not been effective given the absence of community participation, particularly in the biodiversity rich developing tropics. Arising from this there is now increasing evidence emerging that traditional ecological knowledge (TEK) has a major role to play in understanding socio-ecological systems as an integrated whole. In the context of emerging environmental uncertainties, community participation could contribute to our ability to cope and to ensure sustainable ecosystems and production. Issues to be discussed will include the following:

(i) In a developing country context where much of the TEK still remains conserved, the traditional rural societies being the custodians of this biodiversity, and much of this knowledge having been lost, how do we perceive the issues linked with TEK in the developing tropics vs. developed temperate world context?

(ii) What are the kinds of methodological issues in an interdisciplinary sense that are involved in evaluating available TEK and rediscovering and integrating the lost knowledge to address sustainability concerns, both in terms of natural resource management and sustainable developmental concerns?

(iii) Where does TEK fit in the areas both of natural and human-managed ecosystems management/ Restoration? This question considered in the context of coping more effectively with environmental uncertainties arising from 'global change' and in the context where strategies at present are thought to be based on text-book based formal knowledge alone.

(iv) How do we perceive TEK from the point of view of institutional dimensions, and community participation?

(v) In the context of economic globalization and with increasing concerns being expressed about rapid erosion in TEK at all scalar dimensions (species, ecosystems and landscape levels in a biophysical sense; and at the family, community, region levels at the level of decision-making in a social sense), what future role do we see for conserving TEK and using the same in the area of global changed linked mitigation efforts?

(vi) There is an increasing realization today among all sections of the scientific community drawn from all disciplinary interests that 'knowledge systems' hold the key for global human security. What role do we see for TEK in this area of human security at the local, regional and global levels, in the context of 'global change' further complicated by economic globalization that is gaining ground?

December 8

5:15-6:45

Teaching Global Environmental Change and Governance

Global environmental governance is currently taught in political science

departments under a wide range of titles (international environmental policy, global environmental politics, international development and globalization, etc.) and in environmental studies departments within a wide range of traditional courses (international environmental law, climate change policy, biodiversity preservation, etc). Due to the truly interdisciplinary nature of the subject, spanning a vast array of issues and established academic fields, there is currently no “canon” of literature, theory, and case studies, and thus no authoritative textbooks on the subject. Without a common baseline of information and knowledge for students, courses are largely formed around the primary research interests of faculty. How should global environmental governance be taught to various audiences? Should we create coherent courses grounded in political science and international relations theories or should we explore the issues through the prisms of economics, natural science, law, and public policy? The workshop on Teaching Global Environmental Change and Governance at the 2006 IDGEC Synthesis Conference will explore these questions in an effort to foster learning among faculty, students, and researchers. The goals of the workshop will be to: 1) provide a common forum to discuss the core issues in the discipline; 2) begin to identify and build a common body of literature, theory, and case studies; and 3) exchange best practices and methodologies for effectively teaching global environmental governance in both political science and environmental studies departments.

We seek to initiate and sustain a vibrant discussion and intellectual exchange. No papers will be presented at the workshop. Rather, participants are invited to provide a 6-8 minute overview of their answers to at least some of the following questions before engaging in a discussion with each other and the audience:

1. How do you teach global environmental change, institutions, and governance? (or how is this subject matter being taught at your university) Are there courses on the subject or is the subject part of other courses? What are the pros and cons of the methods you describe?
2. What do you expect students to take away from your course? Should teaching at the Bachelors and Masters levels be different, and if so, why and how? Who are we preparing for international environmental policy careers and how well?
3. What sets of theories are/could be used to explain the character and function of global environmental change, institutions, and governance? What sets of case studies and teaching techniques have proved most and least useful and why?
4. How does your research on global environmental change and governance influence your teaching? Have your research and teaching influenced the international policymaking process?
5. How do you link the local and the global aspects of environmental governance in your courses? How do you help students to engage in the subject?

December 10

9:30-3:30

IHDP Workshop to discuss opportunities for organizing future work on institutional/governance issues as a theme of interest

IHDP's core research projects are implicitly inter-linked by four crosscutting themes, which crystallize key aspects of human dimensions research:

- Vulnerability/Resilience/Adaptation

What factors determine the capacity of coupled human-environment systems to endure and produce sustainable outcomes in the face of social and biophysical change?

- Thresholds/Transitions

How can we recognize long-term trends in forcing functions and ensure orderly transitions when thresholds are passed?

- Governance

How can we steer tightly coupled systems towards desired goals or away from undesired outcomes?

- Social Learning/Knowledge

How can we stimulate social learning in the interest of managing the dynamics of tightly coupled systems?

The core of IDGEC has been an analysis of the roles that social institutions play as determinants of the course of human/environment interactions. Institutions are systems of rules, decision-making procedures, and programs that give rise to social practices, assign roles to participants in these practices, and guide interactions among the occupants of the relevant roles. Unlike organizations, which are material entities that typically figure as actors in social practices, institutions may be thought of as the rules of the game that determine the character of these practices. The conceptual notion of “governance,” as opposed to “institutions,” implies a normative understanding of how actors, policies, and instruments can contribute to collectively

The IHDP post-conference workshop on “governance and institutions” as a cross-cutting theme in all of IHDP’s research endeavors aims at (a) analyzing the conceptual differentia specifica between “governance” and “institutional dimensions;” (b) identifying ways and means to mainstream both discourses into future IHDP research; and (c) convening on a master plan on how to further institutionalize the cross-cutting themes in IHDP’s activities.

Agenda

December 5, 2006

9:00-5:00

Pre-Conference Training Workshop for ENB and Science

9:30-5:30

Workshop on Scale and Design Questions in Carbon Management at Urban and Regional Levels, co-organized by GCP, NIES, and IDGEC

9:30-5:30

Workshop with LOICZ

December 6, 2006

4:30-5:00

Opening Ceremony

5:00-6:30

Opening Plenary

7:00

Welcome Dinner

December 7, 2006

9:00-10:15

Plenary: IDGEC Research Foci - Causality, Performance, and Design

10:15-10:45

Coffee Break

10:45-12:30

Concurrent Panels: IDGEC Research Foci

1. Causality 2. Performance 3. Design

12:30-1:30

Lunch

1:30-2:15

Plenary: Policy Implications from the IDGEC Research Foci

2:15-3:30

Plenary: IDGEC Analytic Themes: Fit, Interplay, and Scale

3:30-4:00

Coffee Break

4:00-5:45

Concurrent Panels: IDGEC Analytic Themes

1. Fit 2. Interplay 3. Scale

6:00-7:00

Poster Session, Poster Competition, and Reception hosted by the Donald Bren School of Environmental Science & Management

December 8, 2006

8:00-8:45

Plenary: Policy Implications from the IDGEC Analytic Themes

Programme

Day 1: December 6, 2006

4:30-5:00 Ballroom A Opening Ceremony

5:00-6:30 Ballroom A Opening Plenary

Chair: Agus Sari (Pelangi/Ecosecurities, Indonesia)

Speakers:

- Andreas Rechkemmer (IHDP):

Welcome speech from the International Human Dimensions Programme on Global Environmental Change (IHDP)

- Made Bakta (Rector of Udayana University, Bali):

Welcome speech from Udayana University, Bali and overview of Indonesia's research priorities regarding the institutional dimensions of global environmental change from a research perspective

- Oran Young (University of California, Santa Barbara):

Welcome speech from one of IDGEC's 'founding fathers' with a summary of the history of IDGEC, a description of conference objectives, an introduction of conference captains, and charge to the participants

- H.E. Rachmat Witoelar (Indonesian Environment Minister):

Welcome speech to Indonesia and overview of Indonesia's priorities regarding the institutional dimensions of global environmental change from a policy perspective

7:00 Pasar Senggol Welcome Dinner

Day 2 morning: December 7, 2006

9:00-10:15 Ballroom A Plenary 1a: IDGEC Research Foci – Causality, Performance, and Design.

Central to the IDGEC research foci has been an effort to enhance our understanding of the roles that institutions play as determinants of the course of human-environment interactions. With the understanding of the causal role of institutions, we proceeded to analyze the factors that determine how well specific institutions perform in solving environmental problems, and then identified opportunities for (re)designing institutions to address environmental problems.

Chair: Dan Bodansky (University of Georgia)

Speakers:

- Arild Underdal (University of Oslo):

"Determining the Causal Significance of Institutions: Accomplishments and Challenges – a Summary"

- Ronald Mitchell (University of Oregon):

"Evaluating the Performance of Environmental Institutions: What Should We Evaluate and How Should We Evaluate it? – a Summary"

- Oran Young (University of California, Santa Barbara):

"Building Regimes for Socio-Ecological Systems: The Diagnostic Method – a Summary"

10:15-10:45 Break

10:45-12:30 Concurrent Panels 1: IDGEC Research Foci

Badung Room Causality

Chair: Joyeeta Gupta (Vrije Universiteit Amsterdam)

Keynote paper: Arild Underdal (University of Oslo):

"Determining the Causal Significance of Institutions: Accomplishments and Challenges"

Response:

- Thomas Gehring (University of Bamberg)

- Regine Andersen (Fridtjof Nansen Institute)

- Antonio Contreras (De La Salle University, Philippines)

Singaraja Room Performance

Chair: Bernd Siebenhüner (University of Oldenburg)

Keynote paper: Ronald Mitchell (University of Oregon):

"Evaluating the Performance of Environmental Institutions: What Should We Evaluate and How Should We Evaluate it?"

Response:

- Thomas Bernauer (ETH Zurich)
- Mark Halle (IISD)
- Norichika Kanie (Tokyo Institute of Technology)

Ballroom A Design

Chair: Sebastian Oberthür (Vrije Universiteit Brussel)

Keynote paper: Oran Young (University of California, Santa Barbara):

"Building Regimes for Socio-Ecological Systems: The Diagnostic Method"

Response:

- Elena Nikitina (EcoPolicy, Russia)
- Steinar Andresen (Fridtjof Nansen Institute)
- Xuemei Bai (CSIRO, Australia)

Day 2 afternoon: December 7, 2006

1:30-2:15 Badung Room Plenary 1b: Policy Implications from the IDGEC

Research Foci

The plenary will explore the policy implications of IDGEC's research findings on the causality, performance, and design of institutions in human-environment interactions from the perspective of a knowledge broker, i.e. a communicator or mediator between the science and practitioner communities.

Chair: Ronald Mitchell (University of Oregon)

Knowledge Brokers:

- TBD

"Response to 'Determining the Causal Significance of Institutions: Accomplishments and Challenges'"

- Liana Bratasida (Senior Adviser to the Environment Minister of Indonesia):

"Response to 'Evaluating the Performance of Environmental Institutions: What Should We Evaluate and How Should We Evaluate it?'"

- Marilyn Wasson (Australian National University):

"Response to 'Building Regimes for Socio-Ecological Systems: The Diagnostic Method'"

2:15-3:30 Singaraja room Plenary 2a: IDGEC Analytic Themes: Fit, Interplay, and Scale

One of the most significant results of the IDGEC project has been findings related to the three analytical themes interplay, fit and scale. How do institutions relate and interact with one another in the increasingly dense institutional environment, both at the same and different levels of social organization and what are the impacts of that interaction? How do we account for and correct pervasive mismatches between institutions and their ecosystems of concern? Can we scale up and down institutional solutions that have proved effective at one or another level?

Chair: Leslie King (University of Manitoba)

Speakers:

- Carl Folke (Stockholm University):

"The Problem of Fit between Ecosystems and Governance Systems: Insights and Emerging Challenges – a summary"

- Sebastian Oberthür (Vrije Universiteit Brussel) and Thomas Gehring (University of Bamberg):

"Interplay: Exploring Institutional Interaction – a summary"

- Joyeeta Gupta (Vrije Universiteit Amsterdam):

"Can Theoretical and Practical Insights on Scale Improve Environmental Governance? – a summary"

3:30-4:00 Break

4:00-5:45 Concurrent Panels 2: IDGEC Analytic Themes

Badung Room Fit

Chair: Alf Hakon Hoel (University of Tromsø)

Keynote paper: Carl Folke (Stockholm University) et al.:

"The Problem of Fit between Ecosystems and Governance Systems: Insights and Emerging Challenges"

Response:

- Fikret Berkes (University of Manitoba)
- William Freudenburg (University of California, Santa Barbara)
- Gary Kofinas (University of Alaska, Fairbanks)

Ballroom A Interplay

Chair: Leslie King

Keynote paper: Sebastian Oberthür (Vrije Universiteit Brussel) and Thomas Gehring (University of Bamberg):

"Interplay: Exploring Institutional Interaction"

Response:

- Ron Mitchell (University of Oregon)
- Arild Underdal (University of Oslo)
- Daniel Bodansky (University of Georgia)

Singaraja Room Scale

Chair: Oran Young (University of California, Santa Barbara)

Keynote paper: Joyeeta Gupta (Vrije Universiteit Amsterdam):

"Can Theoretical and Practical Insights on Scale Improve Environmental Governance?"

Response:

- Shobhakar Dhakal (Global Carbon Project)
- Louis Lebel (Chiang Mai University)

6:00-7:00 Ballroom B Poster Session, Poster Competition, and Reception hosted by the Donald Bren School of Environmental Science & Management

Day 3 morning: December 8, 2006

8:00-8:45 Ballroom A Plenary 2b: Policy Implications from the IDGEC

Analytic Themes

The plenary will explore the policy implications of IDGEC's research findings on the fit, interplay, and scale of institutions in human-environment interactions from the perspective of a knowledge broker, i.e. a communicator or mediator between the science and practitioner communities.

Chair: Leslie King (University of Manitoba)

Knowledge Brokers:

- Gail Osherenko (University of California, Santa Barbara):

"Response to 'The Problem of Fit between Ecosystems and Governance Systems: Insights and Emerging Challenges'"

- TBD

"Response to 'Interplay: Exploring Institutional Interaction'"

- Fikret Berkes (University of Manitoba)

"Response to 'Can Theoretical and Practical Insights on Scale Improve Environmental Governance?'"

9:00-10:30 Concurrent panels 3: Applied Research on the IDGEC Research Foci

This half-day explores a variety of applications of the research foci and analytic themes from the day before.

Ballroom A Evaluating Environmental Performance at the Domestic, Transnational, and International Environmental Levels

Chair: Tun Myint (Indiana University)

Presenters:

- Maria Ivanova (College of William and Mary):

"Means and Capabilities: Explaining the Performance of International Organizations"

- Chanda Meek (University of Alaska Fairbanks):

"Evaluating the Effect of Federal Agency Culture, Structure, and History on Institutional Performance"

- Tobias Siegfried (ETH Zurich) and Thomas Bernauer (ETH Zurich):

"Improving Policy Performance Measurement in International Water Management"

- Nathaniel Logar (UC Boulder):

"Missed Opportunities versus Useable Science in the US Department of Agriculture's Global Change Research: Utilizing Mechanisms for Stakeholder Interaction"

Badung Room A World Environment Organization and its Alternatives

Chair: Dave Huitema (Vrije Universiteit Amsterdam)

Presenters:

- Frank Biermann (Vrije Universiteit Amsterdam):
"A World Environment Organization and international environmental meta-governance"
- Andreas Rechkemmer (IHDP):
"The Initiative for the Establishment of a UN Environment Organization (UNEO)"
- Harish Kumar Jeswani (University of Surrey) and Karla Solis (University of Surrey):
"The potential for increasing the effectiveness of the UN in global environmental governance"
- Norichika Kanie (Tokyo Institute of Technology):
"Functioning emerging forces in environmental governance – towards coordinated distributive governance on climate change"
- Mark Halle (IISD):
"Function not form: doubts about a WEO"

Singaraja Room Principles of Design at Different Levels

Chair: Ronald Mitchell (University of Oregon)

Presenters:

- Edward Miles (University of Washington):
"Principles for designing international environmental institutions"
- Jimin Zhao (University of Michigan):
"Principles for designing local environmental institutions"
- Michele Betsill (Colorado State University):
"Principles for designing non-governmental organizations"

Khingkung Room Institutional Processes: Science, Discourse, or Markets?

Chair: Frank Alcock (New College of Florida)

Presenters:

- Pia Kohler (University of Alaska, Fairbanks):
"Searching for the magic formula: balancing diversity concerns in designing science advisory bodies to multilateral environmental agreements"
- Markku Lehtonen (University of Sussex):
"Sustainable development and organizational discourse: could and should the OECD discourse ever change?"
- Michael Hatch (University of the Pacific):
"From voluntary agreements to emissions trading: regulating greenhouse gas emissions in Germany, the Netherlands, and the United States"
- Esteve Corbera and Katrina Brown (Tyndall Centre for Climate Change Research):
"Building institutions to trade ecosystem services: marketing forest carbon in Mexico"

Gianyar Room Balancing Environmental Performance and Economic Development

Chair: Fariborz Zelli (University of East Anglia)

Presenters:

- Isabel Plocher (University of Bamberg):
"The Global Environment Facility: Good Governance through Procedures?"
- Andrei Marin (University of Bergen):
"(Re)Designing pastoralist institutions to confront environmental change in Mongolia"
- Monica Tennberg (University of Lapland):
"International environmental cooperation in northwestern Russia: an assessment of performance"

10:30-11:00 Break

11:00-12:30 Concurrent panels 4: Applied Research on IDGEC Analytic Themes

Ballroom A Fit, interplay, and scale in fisheries management

Chair: Martin le Tissier (LOICZ)

Presenters:

- Alf Hakon Hoel (University of Tromsø) and Russell Reichelt (Cooperative Research Center, Australia):
"PEEZ state of the art"
- Sangeeta Sonak (TERI) et al.:

"The problems of fit, interplay, scale and competing interests in fisheries management"

• Maria Rebecca Campos (Southeast Asian Regional Center for Graduate Study and Research in Agriculture)

"Institutional arrangements in coastal communities in the Philippines"

• Julia Ekstrom (University of California, Santa Barbara):

"Applying a Technological Tool to Quantitatively Assess Institutional Interplay to Implement Marine Ecosystem-Based Management"

Badung Room Exploring Dimensions of Institutional Fit

Chair: Carl Folke (University of Stockholm)

Presenters:

• Markku Lehtonen and Sylvia Karlsson (University of Sussex):

"When Is 'Fit' Not Enough in Environmental Governance?"

• Leslie King (University of Manitoba) and Marie Rarieya (Rensselaer Polytechnic Institute):

"Institutional dimensions of sustainable development initiatives in Western Kenya"

• Per Olsson (Stockholm University):

"Enhancing the fit: Creating and maintaining bridging functions for matching scales in social-ecological systems"

• Gail Osherenko (University of California, Santa Barbara):

"Mismatches in Ocean Governance"

Singaraja Room Institutional Interplay in Sustainable Development Governance: Threat or Opportunity?

Chair: Antonio Contreras (De La Salle University, Philippines)

Presenters:

• Stefan Jungcurt (Humboldt University, Berlin):

"Institutional Interplay in the Regime Complex on Plant Genetic Resources – Domestic Politics and Institutional Learning in Interdependent Issue Areas"

• Luca Tacconi (Australia National University):

"The interplay between governance and economic factors in the sustainable management of tropical forests in developing countries"

• Fariborz Zelli (University of East Anglia):

"The Regime Environment of Environmental Regimes. International Regime Conflicts in Global Environmental Governance"

• Mark Axelrod (Duke University/Stanford University):

"Exploring the 'Chilling Effect': Are Environmental Agreements Alone in the Freezer?"

Khingkung Room Institutional Interplay in Global Climate Governance: Vertical and Horizontal Aspects

Chair: Sebastian Oberthür (Vrije Universiteit Brussel)

Presenters:

• Sylvia Karlsson (Turku School of Economics and Business Administration) and Marcel Kok (MNP/RIVM): *"Theory, Rhetoric and Action of Mainstreaming the Environment – Institutional Interplay in the Nexus between Climate, Energy and Development"*

• Atsushi Ishii (Tohoku University): *"Capturing Domestic Institutions in the Analytical Framework of Regime Interplay - with an exemplar case of Japanese carbon sink policy"*

• Heike Schroeder (University of California, Santa Barbara) and Leslie King (University of Manitoba): *"Vertical interaction in climate policy"*

• Yasuko Matsumoto (Kyoto University): *"Analysis of New Regime Interplay Arising from the CDM, and of the Political Implication of Institutional Design Meant to Mitigate Damaging Impacts"*

• Harro van Asselt (Vrije Universiteit Amsterdam): *"Legal and Political Aspects of Resolving Conflicts and Enhancing Synergies between International Agreements Related to Climate Change"*

Gianyar Room Can Theoretical and Practical Insights on Scale Improve Environmental Governance?

Chair: Joyeeta Gupta (Vrije Universiteit Amsterdam)

Presenters:

- David Huitema (Vrije Universiteit Amsterdam):
"Scale issues in water – extrapolating from the EU to the global level"
- Alka Bharat and Divya Sharma (M.A. National Institute of Technology):
"Downscaling Climate Change Mitigation Tools in Local Government: From UNFCCC goals to India"
- David Benson and Andrew Jordan (University of East Anglia):
"Scale issues within the EU"
- Thomas Hahn (Stockholm University):
"Lessons from the Sub-Global Assessments: Scaling down the Ecosystem Approach of the CBD to local policies and processes"

Day 3 afternoon: December 8, 2006

1:30-3:00 Ballroom A Informal Consultation - Roundtable Discussion:

Preparing for CSD-15: Institutional and governance aspects regarding energy, climate change, air pollution, and industrial development

Chair: Leslie King (University of Manitoba) and Dana Kartakusuma (Indonesian Environment Ministry)

Speakers:

- Agus Purnomo (Senior Adviser to the Environment Minister of Indonesia)
- Ambassador Ton Boon van Ochssee (Ambassador for Sustainable Development, Head of Netherlands Delegation to CSD-13)
- Heather Creech (IISD)

3:30-5:00 Concurrent Workshops 5: Policy and Learning

Badung Room Informal Consultation - Preparing for CSD-15:

Institutional and governance aspects regarding energy and climate change – India and China

Chair: Song Li (World Bank)

Speakers:

- Zhou Dadi (Director General, Energy Research Institute, State Development Planning Commission, China)
- TBA

Discussants:

- Frances Seymour (CIFOR)
- Jimin Zhao (University of Michigan)
- Preeti Bhandari (TERI)

Singaraja Room Institutional Dimensions as a Crosscutting Concern in the GEC Research Community: Identifying Synergies and Forging Ties

Chair: Andreas Rechkemmer (IHDP)

How can we steer tightly coupled systems towards desired goals or away from undesired outcomes? This workshop will explore this question from the vantage point of a number of IHDP and ESSP projects. The goal is to develop institutions/governance into a crosscutting theme across projects of the IHDP and ESSP.

Speakers:

- Shobhakar Dhakal (GCP)
- Polly Ericksen (GECAFS)
- Martin le Tissier (LOICZ)
- Maria Ivanova (College of William and Mary)
- Frits Penning de Vries (MAIRS)
- Falk Schmidt (IHDP)
- Heike Schroeder (IDGEC)

5:15-6:45 Concurrent Workshops 5 cont: Policy and Learning

Ballroom A Traditional Ecological Knowledge and Global Environmental Research

Chair: P.S. Ramakrishnan (Jawaharlal Nehru University, India)

Speakers:

- Ismid Hadad (Indonesian Biodiversity Foundation)
- Henri Bastaman (Indonesian Environment Ministry)

- Dana Kartakusuma (Indonesian Environment Ministry)
- Liang Luohui (UNU)
- Louis Lebel (Chiang Mai University)
- Fikret Berkes (University of Manitoba)
- Gary Kofinas (University of Alaska, Fairbanks)

Singaraja Room Teaching Global Environmental Change and Governance

Co-chairs: Maria Ivanova (College of William and Mary) and Ruben Mnatsakanian (Central European University)

Speakers:

- Oran Young (UC Santa Barbara Bren School)
- Leslie King (University of the Arctic)
- Patricia Romero Lankao (National Center for Atmospheric Research (NCAR))
- Ruben Mnatsakanian (Central European University, Hungary) and Maria Ivanova (College of William and Mary)
- Norichika Kanie (Tokyo Institute of Technology)

Day 4 morning: December 9, 2006

9:00-10:15 Ballroom A Plenary 6: Institutional change and stasis: how fast is fast enough? Natural resource and environmental regimes or institutions exhibit a wide range of social dynamics, sometimes appearing to remain highly stable for long periods and at other times capable of being discarded or transformed in a short period. Some regimes seem to come about rather quickly whereas others seem to take decades to emerge or fundamentally transform. In this plenary session a group of invited speakers will offer their views and debate two sets of questions about institutional dynamics:

(1) What are the main drivers and barriers to institutional change? How do you explain stasis and rapid change?

(2) How fast is fast enough? Are there rates of institutional change beyond which regimes lose their capacity to influence behavior as intended? Can institutions ever become too responsive to changing resource or social conditions? How do societies learn what are feasible rates of change?

Chair: Louis Lebel (Chiang Mai University)

Speakers:

- Lorrae van Kerkhoff (Australian National University, Australia)
- Elena Nikitina (EcoPolicy, Russia)
- Claudia Pahl-Wostl (University of Osnabruck, Germany)
- Antonio Contreras (De La Salle University, Philippines)

10:15-10:45 Break

10:45-12:15 Concurrent Panels 6:

Ballroom A Agency and Institutional Change

Chair: Louis Lebel (Chiang Mai University)

Presenters:

- Antonio Contreras (De la Salle University, Philippines):
"Discourse, Power, and Knowledge in the Mekong: The Case of Water Governance"
- Babette Resurreccion (AIT, Bangkok):
"Watered Down and Washed Away: Discourses on Gender Mainstreaming Water Governance in the Mekong Region"
- Tatiana Kluvánková-Oravská (Slovak Academy of Sciences):
"Shifting Governance: Managing the Commons: the Case of Slovensky Raj National Park"
- Bernd Siebenhuener (University of Oldenburg, Germany):
"Institutions for Social Learning Towards Sustainable Development"

Badung Room Knowledge and Institutional Change

Chair: Merrilyn Wasson (ANU)

Presenters:

- Lorrae van Kerkhoff (Epid, ANU):
"How do global-scale institutional experiments affect knowledge? A case study of the Global Fund to fight AIDS, Tuberculosis and Malaria"
- Adnan Hezri (LESTARI, Malaysia):

"Informing Institutional Change? Sustainability Indicator Systems and Policy in Malaysia, Australia, and Indonesia"

• Regine Andersen (Fridtjof Nansen Institute, Norway):

"Governing agrobiodiversity: international regimes, plant genetics and developing countries"

Singaraja Room Governance and Institutional Change

Chair: Xuemei Bai (CSIRO, Australia)

Presenters:

• Jens Newig and Dirk Guenther (University of Osnabrück):

"Network Governance, Institutional Learning and Environmental Effectiveness"

• Sanjeeta Sonak (The Energy and Resources Institute, India):

"Why was traditional common property resource management system more successful in the coastal wetlands of Goa"

• Po Garden (USER, Thailand): *"The consequences of Institutional Interplay and Density on Local Governance in northern Thailand"*

Khingkung Room Adaptation, Resilience & Vulnerability

Chair: Fikret Berkes (University of Manitoba)

Presenters:

• Claudia Pahl-Wostl (University of Osnabrück):

"Water, social learning, resilience and study of regimes"

• Elena Nikitina (Russian Academy of Sciences):

"Institutional Capacities in Flood Risk Reduction: Design and Action of Institutions"

• Kanako Morita (Tokyo Institute of Technology):

"A Study of the GEF Financing System for Climate Adaptation Policy"

• Katharine Vincent (Tyndall Centre for Climate Change Research):

"Facilitating or constraining adaptation to climate change? Examining how the changing institutional framework affects household decision-making in a rural dryland village in South Africa"

• Frank Jotzo (ANU):

"Institutions and criteria for funding climate change adaptation for development"

Ballroom B Water Governance

Chair: Amy Lovcraft (University of Alaska, Fairbanks)

Presenters:

• Emeka Obioha (Nigerian Institute of Social and Economic Research):

"Institutional Response Framework to Climate-Induced Drought and Competing Access to Freshwater in West Africa: The Nigerian Experience"

• Ram Singh (University of Delhi):

"Water Governance - Key to Livelihood, Security, and Environmental Sustainability in India: Issues and Responses"

• Aminur Rahman (Independent University, Bangladesh):

"Global Environmental Change, Institution and High System Loss in Public Sector Irrigation Projects in Bangladesh: Hard and Soft Options"

• Judith Dominguez Serrano (Independent University of Madrid, Spain):

"Adaptive water governance in Mexico"

Gianyar Room Trade, Environment, and Development

Chair: Simon Tay (SIIA)

Presenters:

• Thomas Bernauer (ETH Zurich):

"Dispute-escalation in the WTO: are conflicts over environment, health and safety regulation riskier?"

• Chun-Chieh Chi (National Dong-Hwa University):

"Not Necessarily Bottom-up: Sustainable Development Policy, Implementations in Taiwan"

• K. Nsiah-Gyabaah (Sunyani Polytechnic, Ghana):

"Institutional Framework for Sustainable Management of Natural Resources and Watersheds in the Urban and Peri-Urban Areas in Ghana"

• Geoffery Nwaka (Abia State University, Nigeria):

"The Urban Poor, the Informal City and Environmental Health Policy in Nigeria"

Day 4 afternoon: December 9, 2006

1:15-2:30 Ballroom A Plenary 7: *New Directions*

Chair: Oran Young (University of California, Santa Barbara)

Speakers:

- Frank Biermann (Vrije Universiteit Amsterdam):
Earth System Governance as a Crosscutting Theme of Global Change Research
- Agus Sari (EcoSecurities)

2:45-4:15 Concurrent Panels 7:

Ballroom A *The Institutional Dimensions of Earth System*

Science: *Methodological Challenges*

Chair: TBA

Presenters:

- Klaus Eisenack, Jurgen Kropp and Matthias Lüdecke (Potsdam Institute for Climate Impact Research): *"Construction of archetypes as a formal method to analyse social-ecological systems"*
- Jan-Peter Voss (Oeko-Institute) et al.: *"Innovation of governance. A proposal on how to study institutional dynamics and design, exemplified by a case study on emissions trading"*

Badung Room *Institutional Architectures*

Chair: Sebastian Oberthür (Vrije Universiteit Brussel)

Presenters:

- Steinar Andresen (Fridtjof Nansen Institute): *"The role of the UN in global environmental governance: Institutions and actors"*
- Karin Bäckstrand and Johannes Stripple (Lund University): *"Primary Institutions and Global Environmental Governance"*
- Tun Myint (Indiana University): *"How do phenomena of globalization shape institutional dimensions of global environmental change?"*
- Atiq Rahman (Bangladesh Centre for Advanced Studies): *"Improving North-South Dialogue on Climate Change: Enhancing equity, technology empowerment and sustainable development opportunities"*

Singajara Room *Agency beyond the State (I): Private/Transnational Institutions*

Chair: Ronald Mitchell (University of Oregon)

Presenters:

- Philipp Pattberg (Vrije Universiteit Amsterdam) et al.: *"The effectiveness of transnational partnerships in sustainability politics: A preliminary assessment"*
- Charles Chester (Tufts University): *"Governance in transborder civil society conservation initiatives: A comparative analysis"*
- Kyla Tienhaara (Vrije Universiteit Amsterdam): *"Investment institutions and global environmental change"*
- Renata Calsing and Maria Marinho (University of Paris): *"The role of institutions in international environmental law"*

Ballroom B *Agency beyond the State (II): Participatory Governance*

Chair: P.S. Ramakrishnan (Jawaharlal Nehru University)

Presenters:

- Malcom Eames, S. Marvin and M. Hodson (Brunel University):
"Governing the transition towards a hydrogen economy: A novel participatory expert stakeholder led scenario" (working title)
- Shanty Syahril (Yayasan Pelangi Indonesia) et al.:
"Building model, building understanding: Lesson learned from developing strategies for clear air"
- Marleen van de Kerkhof, Matthijs Hisschemöller and Ries Bode (Vrije Universiteit Amsterdam):
"Governing the transition towards a hydrogen economy: Methods and results from a stakeholder dialogue"

Khingkung Room *Allocative Effects of Institutions*

Chair: Joyeeta Gupta (Vrije Universiteit Amsterdam)

Presenters:

- Sangeeta Sonak (TERI) Mashesh Sonak (A/G-26) and Asha Giriyan (TERI):

"Exporting hazardous waste: Where has the environmental equity gone?"

• Frank Alcock (New College of Florida):

"Trade, property rights, and fisheries management"

Gianyar Room Adaptive Institutions

Chair: Claudia Pahl-Wostl (University of Osnabrück)

Presenters:

• Lisa Schipper (International Water Management Institute, Sri Lanka), Emily Boyd (Oxford University / CTM Stockholm), and Pia Kohler (University of Alaska, Fairbanks): *"The mutuality of adaptation and natural resource management: exploring synergies"*

• Yili Zhang (Institute of Geographic Sciences and Natural Resources Research, CAS), Wi Zhang, Wanqi Bai, Zhaofeng Wang, Xuedong Lin (ITP), Zhizhong Wang (Tingri): *"Adaptive policies of high Himalayas in the context of global environmental change – a case study in northern slope of Qomolangma (Everest) Mt."*

• Dave Huitema and Wouter Egas (Vrije Universiteit Amsterdam):

"Adaptive water management institutions"

• Brent Doberstein (University of Waterloo): *"Human dimensions of natural hazards: adaptive management lessons from Pupuan, Bali and Jimani, Dominican Republic"*

4:15-4:45 Break

4:45-6:00 Ballroom A Closing Plenary

Chair: Leslie King (University of Manitoba)

Speakers:

• Oran Young (University of California, Santa Barbara):

"Distilling IDGEC's scientific legacy"

• Simon Tay (SIIA):

"Communicating key findings to policymakers"

• Frank Biermann (Vrije Universiteit Amsterdam):

"Mapping future research directions"

• Agus Sari (Pelangi):

"Closing remarks"

7:00 Closing buffet style dinner (fisherman village theme) on the Hyatt beachfront, hosted by IHDP.

December 10, 2006

9:30-3:30 Ballroom A IHDP Workshop to discuss opportunities for organizing future work on institutional/governance issues as a theme of interest

Poster Session

Acharya, Bijan (USAID-Nepal) *"Restoration of Native Plants in Community Forests: A Locally Taken Initiative towards Biodiversity Conservation"*

Aldunce, Paulina and Alejandro Leon (University of Chile) *"Institutions and community participation in the disaster management: the Limari River Basin case study"*

Allali, Abdil Kadir (Ministry of Agriculture, Rural Development and Fishing, Morocco) *"Sustainable development of CDM projects"*

Alpay, Savas (Asia Technology University, Turkey) *"How can trade liberalization be conducive to a better environment?"*

Cunha, Kamlyla and Fernando Rei (Institute for Energy and the Environment) *"The role of institutions in promoting the interface between climate change and energy in Brazil's context"*

Enders, Judith (University of Kassel) *"The role and influence of academic knowledge networks in international climate policy decision-making, with particular regard to IDGEC"*

Hettige, Siri (University of Colombo) *"Vulnerability, Resilience and Adaptation of Disaster Victims"*

Houdret, Annabelle (University of Duisburg- Essen, Germany) *"Water scarcity conflicts: cooperative solutions through new institutional arrangements"*

Jones Lewis, Arthur (Sunyani Polytechnic, Ghana) *"Vulnerability, resilience, and adaptability (VRA) of environmental resources: Ghana's experience"*

Lee, Ho-Ching (Chung-Yuan Christian University) "Understanding institutional design and bargaining in Taiwan: all about adaptation under the framework of the Kyoto Protocol"

Manuta, Jessie (Ateneo de Davao University) "Climate Change and the Risk of Flood Disaster: Crafting Adaptive and Just Institutions in Asia"

Martinez, Alejandra (Geophysical Institute of Peru) "Vulnerability and Adaptation to Climate Change in the Peruvian Central Andes from a Gender Perspective: The Case of Huancayo City"

Mukwaya, Paul, Charles Basalirwa, Gordon Pirie (Makarere University) "Planning for climate and carbon friendly cities: institutional challenges in Kampala City region"

Nsiah-Gyabaah (Sunyani Polytechnic) "The role of institutions in managing global environmental problems in Ghana"

Parrish, Bradley D (University of Leeds): "Entrepreneurship and the Design of Organizations in the Natural Environment"

Pena-Neira, Sergio (Universidad del Mar, Chile) "Balancing rights and obligations in sharing benefits from natural genetic resources: problems, discussions and possible solutions"

Pokharel, Sujata (ENPHO, Nepal) "Beyond mainstream forestry: rattan management in Sati Kamali community forest in Nepal"

Priess, Joerg (Center for Environmental Systems Research), Roger Weber (University of Goettingen), Matthias Mimler (CESR), Alexander Oltchev (University of Goettingen), Kamaruddin Abdullah (Agricultural University Bogor) "Impact of regional and local institutions on the conversion of protected forests in Sulawesi, Indonesia"

Sarkar, Atanu (TERI) "Roles of inequality and inequity in occurrence and severity of chronic arsenicosis: A lesson from Bengal basin"

Schuchmann, Uta (Free University Berlin) "Decentralization and global trade – changes and risks for marine ecosystems, food security and the self-governance of coastal communities"

Surjadi, A. J. (CSIS, Indonesia) "Analysing Pathways to Sustainability in Indonesia"

Watts, Nicholas (London Metropolitan University) "The Role of Regional and International Organisations in the Sustainable Development of Small Island Developing States in the Anglophone Caribbean"

Participants - list

Alcock, Frank New College of Florida, USA falcock@ncf.edu

Aldunce, Paulina University of Chile paldunce@uchile.cl

Allali, Abdelkader Min. of Ag., Rural Dev., & Fish, Morocco allali05@yahoo.fr

Alpay, Savas TOBB Econ. & Tech. Univ., Turkey savas.alpay@tapdk.gov.tr

Andersen, Regine Fridtjof Nansen Institute, Norway regine.andersen@fni.no

Andresen, Steinar University of Oslo, Norway steinar.andresen@stv.uio.no

Axelrod, Mark Duke/Stanford University, USA mark.axelrod@duke.edu

Bäckstrand, Karin Lund University, Sweden johannes.strippel@svet.lu.se

Bai, Xuemei CSIRO, Australia xuemei.bai@csiro.au

Benson, David University of East Anglia d.benson@uea.ac.uk

Berkes, Fikret University of Manitoba, USA berkes@cc.umanitoba.ca

Bernauer, Thomas Fed. Inst. of Tech. (ETH), Switzerland bernauer@ir.gess.ethz.ch

Betsill, Michelle Colorado State University, USA mbetsill@colostate.edu

Bhandari, Preety The Energy and Resources Inst. (TERI), India

Bharat, Alka Nat'l. Institute of Technology, India bharat@yahoo.com

Biermann, Frank Vrije Universiteit, Amsterdam frank.biermann@ivm.vu.nl

Bodansky, Dan Technology Univ. of Georgia, USA bodansky@uga.edu

Bratasida, Liana Ministry of Environment, Indonesia dokie@cbn.net.id

Brown, Katrina University of East Anglia, UK k.brown@uea.ac.uk

Calsing, Renata University of Paris, France recalsing@yahoo.com.br

Campos, Maria SEARCA, Philippines cmaribec@yahoo.com

Chester, Charles Brandeis University, USA charles.chester@tufts.edu

Chi, Chun-Chieh Nat'l Dong-Hwa University, Taiwan jjjih@mail.ndhu.edu.tw
 Contreras, Antonio De La Salle University, Philippines contreraspogi@yahoo.com
 Corbera, Esteve University of East Anglia, UK e.corbera@uea.ac.uk
 Dadi, Zhou Energy Research Institute, China e.corbera@uea.ac.uk
 Dhakal, Shobhakar Global Carbon Project, Japan shobhakar.dhakal@nies.go.jp
 Eisenack, Klaus Potsdam Institute, Germany eisenack@pik-potsdam.de
 Ekstrom, Julia UC Santa Barbara, USA jekstrom@bre.ucsb.edu
 Ericksen, Polly GECAFS, UK polly.ericksen@eci.ox.ac.uk
 Folke, Carl Stockholm University, Sweden calle@ecology.su.se
 Gehring, Thomas University of Bamberg, Germany
Thomas.Gehring@sowi.uni-bamberg.de
 Guenther, Dirk University of Osnabrück, Germany dirk.guenther@usf.uos.de
 Gupta, Joyeeta Vrije Universiteit, Amsterdam joyeeta.gupta@ivm.vu.nl
 Hadad, Ismid Indonesian Biodiversity Foundation
 Hahn, Thomas Stockholm University, Sweden hahn@ctm.su.se
 Hatch, Michael University of the Pacific, USA mhatch@pacific.edu
 Hettige, S.T. University of Colombo, Sri Lanka sthatti@webmail.cmb.ac.lk
 Hezri, Adnan LESTARI, Malaysia hezri@cres10.anu.edu.au
 Hoel, Alf Hakon University of Tromso, Norway hoel@sv.uit.no
 Houdret, Annabelle University of Duisburg-Essen, Germany
annabelle.houdret@inef.uni-duisburg.de
 Huitema, Dave Vrije Universiteit, Amsterdam dave.huitema@ivm.vu.nl
 Ishii, Atsushi Tohoku University, Japan ishii@cneas.tohoku.ac.jp
 Ivanova, Maria College of William and Mary, USA mivanova@wm.edu
 Jeswani, Harish Kumar University of Surrey, UK H.Jeswani@surrey.ac.uk
 Jotzo, Frank Australian National University jotzo@anu.edu.au
 Jungcurt, Stefan Humboldt University, Berlin stefan.jungcurt@agrار.hu-berlin.de
 Kanie, Norichika Tokyo Institute of Technology, Japan kanie@valdes.titech.ac.jp
 Karlsson, Sylvia Finland Futures Research Center Sylvia.Karlsson@tse.fi
 King, Leslie University of Manitoba, Canada lking@cc.umanitoba.ca
 Kohler, Pia University of Alaska, Fairbanks, USA pkohler@mit.edu
 Kofinas, Gary University of Alaska, Fairbanks, USA ffgpk@uaf.edu
 Kok, Marcel RIVM, the Netherlands marcel.kok@mnp.nl
 le Tissier, Martin LOICZ, Germany m.le-tissier@envision.uk.com
 Lebel, Louis Chiang Mai University, Thailand louis@sea-user.org
 Lehtonen, Markku University of Sussex, UK M.Lehtonen@sussex.ac.uk
 Li, Song World Bank Sli@worldbank.org
 Lovecraft, Amy University of Alaska, Fairbanks, USA ffall@uaf.edu
 Manuta, Jesse Davao University, Philippines jbmanuta@yahoo.com
 Marin, Andrei University of Bergen, Norway Andrei.Marin@geog.uib.no; loicz
 Matsumoto, Yasuko Kyoto University, Japan
yamatsumoto@gsges.mbox.media.kyotou.ac.jp
 Meek, Chanda University of Alaska, Fairbanks, USA chanda.meek@uaf.edu
 Miles, Edward University of Washington, USA edmiles@u.washington.edu
 Mitchell, Ronald University of Oregon, USA rmitchel@uoregon.edu
 Mnatsakanian, Ruben Central European University, Hungary mnatsaka@ceu.hu
 Morita, Kanako Tokyo Institute of Technology, Japan kmorita@bren.ucsb.edu
 Mukwaya, Paul Makerere University, Uganda p_mukwaya@yahoo.com
 Myint, Tun Indiana University, USA tmyint@indiana.edu
 Newig, Jens University of Osnabrück, Germany jens.newig@usf.uni-osnabrueck.d
 Nikitina, Elena EcoPolicy, Russia enikitina@mtu-net.ru
 Oberthür, Sebastian Vrije Universiteit, Brussels, Belgium
sebastian.oberthuer@vub.ac.be
 Obioha, Emeka Nigerian Inst. of Soc & Econ. Research eeobioha@yahoo.com
 Olsson, Per Stockholm University, Sweden per@ctm.su.se
 Osherenko, Gail UC Santa Barbara, USA gail.osherenko@gmail.com
 Pahl-Wostl, Claudia University of Osnabrück, Germany
claudia.pahl-wostl@uni-osnabrueck.de
 Parrish, Bradley University of Leeds, UK b.parrish@see.leeds.ac.uk

Pattberg, Philipp Vrije Universiteit, Amsterdam Philipp.Pattberg@ivm.vu.nl
Plocher, Isabel University of Bamberg, Germany
isabel.plocher@sowi.uni-bamberg.de
Priess, Jörg University of Kassel, Germany priess@usf.uni-kassel.de
Rahman, Aminur Independent University, Bangladesh aminur@iub.edu.bd
Rahman, Atiq Bangladesh Centre for Adv. Studies atiq.rahman@bcas.net
Ramakrishnan, P.S. Jawaharlal Nehru University, India psr@mail.jnu.ac.in
Rarieya, Marie Rensselear Polytechnic Institute, USA rariem@rpi.edu
Rechkemmer, Andreas IHDP, Germany rechkemmer.ihdp@uni-bonn.de
Resurreccion, Babette Asian Institute of Technology, Thailand babette@ait.ac.th
Romero Lankao, Patricia Nat'l. Cntr. For Atm. Resesarch, USA
prlankao@correo.xoc.uam.mx
Sari, Agus EcoSecurities, Indonesia agus.sari@ecosecurities.com
Sarkar, Atanu The Energy and Resources Inst., India contactatanu@yahoo.co.in
Schipper, Lisa Int'l. Water Mgmt. Institute, Sri Lanka l.schipper@cgjar.org
Schmidt, Falk IHDP, Germany schmidt.ihdp@uni-bonn.de
Schroeder, Heike UC Santa Barbara, USA heike.schroeder@ouce.ox.ac.uk
Sharma, Divya National Institute of Technology, India esharma@icimod.org.np
Siebenhüner, Bernd University of Oldenburg, Germany
siebenhuener@uni-oldenburg.de
Siegfried, Tobias Foundation for Ecological Security, India
siegfried@ihw.baug.ethz.ch
Singh, Ram B. University of Delhi, India rbsgeo@hotmail.com
Solis, Karla University of Surrey, UK K.Solis@surrey.ac.uk
Sonak, Sangeeta The Energy and Resources Institute, India
sonaksangeeta@rediffmail.com
Syahril, Shanty Yayasan Pelangi, Indonesia shanty-s@indo.net.id
Tacconi, Luca Australian National University Tacconi@anu.edu.au
Tay, Simon Singapore Inst. of Int'l Affairs chairman@siaonline.org
Tennberg, Monica University of Lapland, Finland monica.tennberg@ulapland.fi
Tienhaara, Kyla Vrije Universiteit, Amsterdam kyla.tienhaara@ivm.falw.vu.nl
Underdal, Arild University of Oslo, Norway arild.underdal@stv.uio.no
van Asselt, Harro Vrije Universiteit, Amsterdam harro.van.asselt@ivm.vu.nl
van Kerkhoff, Lorrae Australian National University
lorrae.vankerkhoff@anu.edu.au
van de Kerkhof, Marleen Vrije Universiteit, Amsterdam
marleen.van.de.kerkhof@ivm.vu.nl
Vincent, Katharine University of East Anglia, UK katharine.vincent@uea.ac.uk
Voss, Jann-Peter Institute for Applied Ecology, Germany j.voss@oeko.de
Young, Oran UC Santa Barbara, USA young@bren.ucsb.edu
Zelli, Fariborz University of East Anglia, UK zelli@glogov.org
Zhang, Yili, IGRNRR, China zhangw@igsnrr.ac.cn
Zhao, Jimin University of Michigan, USA jmzhao@umich.edu

Conference Co-sponsors

IDGEC Synthesis Process and Conference Sponsorship

1. Synthesis Process & Conference

Planning Meeting, Personnel, and International Project Office Costs

NSF Grant

Year 1: \$54,554.00

Year 2: \$110,446.00

TOTAL: \$165,000.00 (see NSF entry in table below)

2. Synthesis Conference Sponsors - TOTAL

	NSF	Research Council of Norway	UNU-IAS	IAI	IHDP	CDU	Bren School, UCSB	Taylor & Francis Publishers - promotional booth	Non-APN Funding TOTAL
<i>Foreign Currency Amount</i>		<i>100,000 NOK</i>	<i>1 million Yen</i>						
Single Installment		15,800.00	10,000.00	3,647.00	8,250.00	578.56	1,200.00	800.00	
Installment 1	54,554								
Installment 2	110,446								
Sponsorship Total	\$165,000.00	\$15,800.00	\$10,000.00	\$3,647.00	\$8,250.00	\$578.56	\$1,200.00	\$800.00	\$204,475.56

Financial Statement
APN Funded Project CBA2006-10NSY-Sari

**Institutions for Sustainable Development in the Face of
Global Environmental Change:
Questioning-Explaining-Demystifying (QED)**

all amounts in US\$

Item No.s of Expenditure	Descriptions of Expenditure	Amounts
1	IDGEC Synthesis Conference	20,000.00
	GRAND TOTAL	20,000.00

Date: August 16, 2007

Signature(s) of the Project Leader and/or Officers in Charge of Financial Administration:

Financial Report of Expenditure of APN Funded Projects
Detailed Financial Breakdown
APN Funded Project CBA2006-10NSY-Sari

Institutions for Sustainable Development in the Face of Global Environmental
Change:
Questioning-Explaining-Demystifying (QED)

No.	Items of Expenditure	Descriptions of Expenditure	Persons		Subtotal	Total	Remarks
1	Synthesis Conference						
1.1		Travel cost (Airfare, Round Trip)			10,130.00		
			Alcock, F.	0.00		300.00	- Delhi-Kuala Lumpur-Denpasar
			Bharat, A.	800.00		390.00	Singapore-Denpasar
			Campos, R.	767.02		240.00	e-Denpasar Manila-Singapore
			Contreras, A.	480.00		240.00	e-Denpasar
			Ekstrom, J.	0.00		300.00	- Colombo-Singapore
			Hettige, T.S.	600.00		240.00	e-Denpasar Chiang Mai-Bangkok-Denpasar
			Lebel, L.	737.00		180.00	Manila-Hong Kong-Denpasar
			Manuta, J.	754.75		240.00	Denpasar
			Meek, C.	0.00		260.00	- Dhaka-Singapore
			Rahman, Aminur	691.58		240.00	e-Denpasar Dhaka-Singapore
			Rahman, Atiq	650.00		520.00	e-Denpasar Delhi-Kuala Lumpur
			Ramakrishnan, P.S.	750.00		240.00	- Denpasar
			Resurrection, B.	397.00		260.00	Bangkok-Denpasar Delhi-Kuala Lumpur-Denpasar
			Sarkar, A.	739.71		240.00	Delhi-Singapore
			Singh, R.B.	750.00		240.00	e-Denpasar Mumbai-Kuala Lumpur-Denpasar
			Sonak, S.	1,190.00		240.00	- Denpasar
			Syahril, S.	133.50		240.00	Jakarta-Denpasar

				Zhang, Y.	689.44		300.00	Beijing_Singapore-Denpasar
1.2		Ground Transport	Denpasar Airport - Hotel 8.17 x 18	Alcock, F. <i>Bharat, A.</i> Campos, R. Contreras, A. Ekstrom, J. Hettige, T.S. Lebel, L. Manuta, J. <i>Meek, C.</i> Rahman, Aminur <i>Rahman, Atiq</i> Ramakrishnan, P.S. Resurrection, B. Sarkar, A. Singh, R.B. Sonak, S. Syahril, S. Zhang, Y.	8.17 8.16	147.05 4,960.00		5-Dec 3-Dec 4-Dec 6-Dec 5-Dec 6-Dec 6-Dec 5-Dec 5-Dec 6-Dec 5-Dec 5-Dec 7-Dec 5-Dec 5-Dec 3-Dec 2-Dec 3-Dec
1.3		Accommodation	Inna Putri Bali 60.00/day x 76 <i>Grand Hyatt</i> 130/day x 9	Alcock, F. <i>Bharat, A.</i> Campos, R. Contreras, A. Ekstrom, J. Hettige, T.S. Lebel, L. Manuta, J. <i>Meek, C.</i> Rahman, Aminur <i>Rahman, Atiq</i> Ramakrishnan, P.S. Resurrection, B. Sarkar, A.	300.00 390.00 240.00 240.00 300.00 240.00 180.00 240.00 260.00 240.00 520.00 240.00 260.00 240.00	3,740.00 1,170.00 4,910.00		Dec 5-10 Dec 3-09 Dec 4-10 Dec 6-10 Dec 5-10 Dec 6-10 Dec 6-9 Dec 5-9 Dec 5-10 Dec 6-10 Dec 5-10 Dec 5-12 Dec 7-9 Dec 5-10

				Singh, R.B.	240.00			Dec 5-10
				Sonak, S.	240.00			Dec 3-12
				Syahril, S.	240.00			Dec 2-9
				Zhang, Y.	300.00			Dec 3-13
1.4		Grand Hyatt Meetings	Meeting Packages & Beverage Package Dec 7 38/day x 76 + 25			3,338.00		
				Alcock, F. Bharat, A.	177			Dec 5-10
				Campos, R.	215			Dec 3-09
				Contreras, A.	215			Dec 4-10
				Ekstrom, J.	139			Dec 6-10
				Hettige, T.S.	177			Dec 5-10
					139			Dec 6-10
				Lebel, L. Manuta, J.	101			Dec 6-9
					139			Dec 5-9
				Meek, C. Rahman, Aminur Rahman, Atiq	177			Dec 5-10
					139			Dec 6-10
				Ramakrishnan, P.S.	177			Dec 5-10
				Resurreccion, B.	177			Dec 5-12
				Sarkar, A.	63			Dec 7-9
				Singh, R.B.	177			Dec 5-10
				Sonak, S.	177			Dec 5-10
				Syahril, S.	329			Dec 3-12
					253			Dec 2-9
				Zhang, Y.	367			Dec 3-13
1.5		Grand Hyatt Dinners	12/6/2007 40 x 13 12/9/2007 55 x 13			1,180.00		
				Alcock, F. Bharat, A.	95			Dec 5-10
				Campos, R.	40			Dec 3-09
				Contreras, A.	95			Dec 4-10
				Ekstrom, J.	55			Dec 6-10
				Hettige, T.S.	95			Dec 5-10
					55			Dec 6-10
				Lebel, L. Manuta, J.	0			Dec 6-9
					40			Dec 5-9
				Meek, C. Rahman, Aminur Rahman, Atiq	40			Dec 5-10
					55			Dec 6-10
					95			Dec 5-10

				Ramakris hnan, P.S.	95			Dec 5-12
				Resurrec cion, B.	0			Dec 7-9
				Sarkar, A.	95			Dec 5-10
				Singh, R.B.	95			Dec 5-10
				Sonak, S.	95			Dec 3-12
				Syahril, S.	40			Dec 2-9
				Zhang, Y.	95			Dec 3-13
1.6		Grand Hyatt Meeting Services	connection 11.65 x 18 projector 2.75 x 18 projector 2.75 x 13	Alcock, F.	17.15	294.95		Dec 5-10
				<i>Bharat,</i> A.	14.40			Dec 3-09
				Campos, R.	17.15			Dec 4-10
				Contrera s, A.	17.15			Dec 6-10
				Ekstrom, J.	17.15			Dec 5-10
				Hettige, T.S.	17.15			Dec 6-10
				Lebel, L.	14.40			Dec 6-9
				Manuta, J.	14.40			Dec 5-9
				<i>Meek, C.</i>	17.15			Dec 5-10
				Rahman, Aminur	17.15			Dec 6-10
				<i>Rahman,</i> <i>Atiq</i>	17.15			Dec 5-10
				Ramakris hnan, P.S.	17.15			Dec 5-12
				Resurrec cion, B.	14.40			Dec 7-9
				Sarkar, A.	17.15			Dec 5-10
				Singh, R.B.	17.15			Dec 5-10
				Sonak, S.	17.15			Dec 3-12
				Syahril, S.	14.40		Dec 2-9	
				Zhang, Y.	17.15		Dec 3-13	
	GRAND TOTAL					20,000.00		