

Linking Research to Practice
(*Linking the Social and Natural Sciences*)

Presenter: BAL KRISHNA UPADHYAY

Author(s): *BAL KRISHNA UPADHYAY, Vikas Chitre*

Participatory Forest Management and the Trade-off between Current and Future Consumption of Forest Produce: Empirical Evidence from Nepal Based on a Model for Fuel Wood Consumption

The current forest policy in Nepal empowers people to establish community-based forest management institutions/Community Forest User Groups (CFUGs) of their own with the major tasks of distributing forest products among them and protection of the Community Forest as well. Thus, institutional efficiency of the CFUG is critical in the trade-off between current and future consumption of fuel wood. This issue is analyzed using household and CFUG level survey data. This paper develops a choice-theoretic model of a typical hill household as its point of departure. It examines households' time preference for current consumption of fuel wood with respect to CFUGs' management characteristics/activism and households' future consciousness about the protection of the forest. It also estimates Marginal Rate of Substitution (MRS) between current and future consumption of fuel wood and Marginal Rate of Transformation (MRT) of current consumption of fuel wood into its future produce by conservation and re-generation and examines to what extent the democratic decision making/institutional behavior of the CFUG influences the trade-off between current and future consumption of fuel wood. From a policy standpoint, our findings suggest that the institutional efficiency/effectiveness of the functioning mechanism of CFUG will be a major factor in determining the trade-off between current and future consumption of fuel wood/forest products.

Linking Research to Practice
(*Linking the Social and Natural Sciences*)

Presenter: Guillermo Andres Ospina

Author(s): *Guillermo Andres Ospina*

Governance, conflict and risk in "protected" areas to conservation

The contemporary concept of "protected area" go beyond of natural places that must be conserved free of human intervention owing to the set of tensions among the interests of conservation agents and local hazardous socio-political dynamics. This kind of tensions faced by social agents in protected areas management, are limited in the practice by the capability to make effective actions as governance in their intervention contexts, more over when these areas are placed at marginal contexts in the territory of the countries or remote regions without a presence of hegemonic governance power.

This paper presents a description – analyses of classification and response ways in hazardous situations defined from National Protocol of Public Risk in a country as Colombia that live the consequences of armed conflict and illicit colonization processes. Risk management in conservation under armed conflict contexts could be one of the most critical aspects in the contemporary concept of protected area as part of commons perspective. Public risk is a contradictory concept opposite to safe conditions as prerequisite to governance in conservation. From conflict perspective, there are complexes of categories and actions associated with current conceptualization of nature as a common under human responsibility.

The paper suggest a way to understand the cultural production of categories associated with governance, conflict and risk in conservation as responses among social actors directly linked with protected areas, from the experience of risk among institutional social agents and their interventions with the aim of identify possible strategies to increase adaptive capabilities in conflict contexts.

Linking Research to Practice
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Presenter: Katina Kuhn

Author(s): *Katina Kuhn, Anke Schmidt, Meinfried Striegnitz*

Transdisciplinary Governance of Coastal Zones: Coming to Terms with the Regional and Temporal Effects of Global Climate Change in the Southern North Sea

Coastal protection strategies increasingly have to take into account the effects of climate change. At present, engineering and natural science models that assess the impact of global climatic transformations on regional coastal zones and their protection structures remain rather detached from the knowledge and insights of practitioners. The paper argues, that innovative coastal protection requires transdisciplinary research that takes into consideration the whole array of actors involved in regional coastal protection strategies.

The findings presented in this paper result from the five year research project A-KÜST – “Changes in the Coastal Climate: Evaluation of Alternative Strategies in Coastal Protection” – that was launched in 2009 in the context of the Climate Impact Research Programme (KLIFF) of the German federal state of Lower Saxony.

Qualitative interviews have been conducted with all decision-makers participating in the design and implementation of present and future measures of coastal protection in the project region. In addition, natural and engineering scientists involved in the regional climate modelling process were interviewed. The interview guide focuses perceptions and orientations towards coastal protection strategies and climate change and aims at accommodating the diversity of scientific and life world perceptions of these problems. The analysis reveals that perceptions and orientations towards the significance of climate change in the southern North Sea and the evaluation of different strategies show a variegating argumentative landscape. Furthermore it becomes clear how close processes of decision-making and the selection of certain strategies depend on political and economic criteria as well as socio-cultural acceptability.

Linking Research to Practice
(*Linking across Scale*)

Presenter: Dana Fisher

Author(s): *Dana Fisher, James Connolly, Erika Svendsen, Lindsay Campbell*

Who Volunteers to Steward the Urban Forest? An analysis of participants in MillionTreesNYC planting events

Who volunteers to steward the urban forest and how do volunteer stewards get involved in these activities? This paper presents results from research on volunteer stewards at the MillionTreesNYC tree planting events in 2010. Although recent academic and policy studies have focused on the increasingly wide range of organizations working as stewards to conserve, manage, monitor, advocate for, or educate the public about the local environment, it remains unclear how individual citizens get involved in local stewardship initiatives. Our findings indicate that planting trees leads to better citizenship—in other words, the more a person is involved in environmental stewardship, the more s/he engages with other types of civic and political activities. The findings from this paper contribute to our general understanding about civic engagement and environmental stewardship. It also discusses how this research is being used to provide necessary information for professionals working to manage large scale urban forestry campaigns. This research is linked to practice through the New York City Urban Field Station, which is a joint initiative of researchers at the USDA Forest Service Northern Research Station and the New York City Department of Parks and Recreation that worked in collaboration with university researchers on this study.

Linking Research to Practice
(*Linking the Social and Natural Sciences*)

Presenter: Herminia Tanguilig

Author(s): *Herminia Tanguilig*

Institutional Aspects of Local Participatory Strategies in Natural Resource Management

The Philippine Local Government Code provides the basis for local natural resources management. However, it is not necessarily the driving force for many Local Government Units (LGU's) who have made breakthroughs in local natural resources management (NRM). The paper provides case studies that reveal the policy and institutional hurdles in implementing local and participatory natural resources management programmes; the lessons and experiences amongst LGU's in linking good governance with NRM; the research and development activities on local and participatory NRM; and the key institutional and policy issues to be communicated at the national level.

Through public-private partnerships and capitalizing the presence of research and non-governmental organizations, agri-business and other community sectors, the Municipality of Lantapan, a local government unit, succeeded in overcoming constraints such as: lack of budget, manpower, technical skills, and poor community involvement.

The Landcare Program, which centers on formation of community landcare groups, created the wider adoption of conservation practices. It is a grassroots approach for rapid and inexpensive dissemination of available, simple, and lower-cost technologies of agroforestry and conservation practices. It was also found out that communities have important roles to play but local government units have greater responsibility to provide the policy and institutional basis for supporting community-based initiatives.

The responsibility for producing environmental goods goes beyond the normal practices of governance and is intertwined with the need for long-term education and managing the political culture through a pragmatic approach that directly links NRM with good governance.

Linking Research to Practice
(*Linking across Scale*)

Presenter: Joseph Adelegan

Author(s): *Joseph Adelegan*

Cows to Kilowatts: Abattoir Waste Turned into Clean Energy

Introduction

"Cows to Kilowatts" abates water pollution, improves ecosystem health, mitigates greenhouse gas emission and creates cheap source of domestic energy with environmentally safe organic fertiliser from slaughterhouse waste through the installation of sustainable biogas plant. The innovation is a winner of the prestigious 2005 Supporting Entrepreneurs for Environment and Development (SEED) International Awards (www.seedinit.org).

The Problem and Alternative: Cows to Kilowatts

Slaughterhouses are a major source of water pollution and greenhouse gas emissions, especially in the developing world. Specific regulations for abattoirs do often not exist or are poorly enforced. This represents an immediate environmental problem, affecting among others the development of aquatic life. Slaughterhouse waste also often carries zoonotic diseases – animal diseases that can be transferred to humans.

Business Model and Benefits

The project was designed to be commercially viable. Producing around 270 m³ of compressed biogas a month, the plant generates return on investment after 2 years. With an estimated lifespan of 15 years, the plant creates substantial economic returns. The plant was designed to capture 900 m³ of methane per day and emission reduction of 22,300 tons of CO₂ per year.

Roll-out and replication

Many other cities across Africa are facing similar environmental challenge from untreated slaughterhouse waste. Through the use of innovative technology, it presents a solution to the problem of waste treatment which at the same time minimises the carbon footprint of slaughterhouse operations and other organic wastes. Moreover, it is an economically self-sustainable and profitable initiative, generating a classical win-win situation.

Linking Research to Practice
(*Linking across Scale*)

Presenter: CRISTINA INOUE

Author(s): *CRISTINA INOUE, CAROLINA CABRAL, LARISSA DOUTO, ANDERSON PAZ, EVELLYN BERNARDES*

Civil society and the promotion of environmental sustainability: how the realisation about the links between local and global actions motivated students to become actors in changing consumption patterns at the University of Brasília, Brazil. Drawing gover

This paper describes and analyses a concrete local action experience to promote environmental sustainability. The experience was initiated in 2007 by international relations students at the University of Brasília, Brazil, who were concerned with global environmental change and also with the role of civil society as actors of change. They created a project to promote sustainable consumption practices within the university campus having in mind the local–global links of environmental issues. It was called *Tome Consciência*, and had three main objectives: 1) to promote awareness about sustainable consumption, 2) to reduce the use of plastic disposable glasses in the University Canteen and, 3) to establish institutional partnerships in order to influence the university policies and decision–making. To fulfil such objectives, the students organised awareness–raising campaigns, as well as campaigns to distribute permanent cups in the canteen, and they also established a partnership with the university administration through its "Environmental Agenda Centre".

In 2009 the project was institutionalised. Actions are still going on and other students have been engaged. The university administration stopped to give away plastic disposable glasses in August 2010. Now, the students are starting to focus on other issues concerning environmental sustainability at the university.

This micro–level experience offers the opportunity to discuss several issues related to earth system governance like the role of civil society to respond to environmental problems, the importance of building partnerships with actors who have agency, and of creating alternative institutions, here, represented by new rules and practices within the university.

Linking Research to Practice
(*Linking the 5As*)

Presenter: Shabnam Mirsaeedi

Author(s): *Shabnam Mirsaeedi*

New Approaches to the governance of multilateral science, technology and innovation (STI) research: a Case Study on Biofuels

This proposal seeks to analyse the complexity demanded by a global governance architecture seeking to advance multilateral science, technology and innovation (STI) research to meet the global challenge of climate change. The historical governance and decision-making process on the international level has been almost entirely driven by states, yet in recent years a gradual shift to other international actors beyond international organisations, e.g. international networks, has been observed. This shift has been followed by new forms of partnerships and co-operations on the international level that are no longer only in legally binding international documents but hold other forms, e.g. public-private partnerships that require innovative and more adaptive forms of governance. These developments have created multilayered systems of rule-making and rule-implementing that create diffuse authority patterns for international organisations and overlapping working areas requiring adapted types of governance structures.

Amongst many drivers multilateral cooperation in STI has been determined to be fundamental in filling the knowledge gap of developing and developed countries in furthering innovations and applications in the environmental and tangent sectors. Of particular relevance has been the development of low-carbon energy provision that has been deemed necessary to meet the challenge of greenhouse gases and climate change. This paper is specifically concerned with the question of multilateral STI research between four clusters of stakeholders: non-governmental organizations, intergovernmental organizations, private companies and knowledge networks. The study will use biofuels as a case study highlighting the different cooperation mechanisms between researchers and practitioners needed to facilitate STI research and implementation.

Linking Research to Practice
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Presenter: Aranka Podhora

Author(s): *Aranka Podhora, Katharina Helming*

The policy–relevance of Impact Assessment Tools – examples from European research projects

EU Policy Impact Assessment (IA) plays a key role in the EU's objective to reach sustainable development. Since 2002, the economic, social and environmental effects of major EU policies are jointly analysed in an ex–ante procedure. The results of IA studies contribute to the decision making process and thus emphasizes the adaptiveness of governmental actions towards sustainable development. The innovative character but also the ex–ante approach of IA require research based on the development of assessment tools. They need to assure that all impact areas covered by the policy are evaluated in order to reach a high credibility and accountability of the results and to increase the policy–relevance of the IA. A strong linkage between researchers as knowledge suppliers and policy–makers as user community is the central element to feed evidence–based knowledge into practise. The paper (a) outlines the characteristics for tools to become policy–relevant for IA and (b) illustrates researcher needs to create these tools. The paper is based on a literature review on policy–relevance combined with expert workshops and an analysis of projects that develop policy–related tools funded by the 6th and 7th EU Framework Programme for research. The results show that a variety of tools could directly and indirectly contribute to the IA process. However, it requires guidelines to assure standards to reach the policy–relevance of IA tools. Thus the paper concludes by presenting tools that serve as best practise in order to reach policy–relevance in the IA process and by giving an outlook to possible guidelines.

Linking Research to Practice
(*Linking the Social and Natural Sciences*)

Presenter: Muhammad Qasim

Author(s): *Muhammad Qasim, Klaus Hubacek, Mette Termansen*

The causes of land use and land cover change in District Swat, Pakistan: Gaps in policies and practices

Swat is part of the high mountain Hindu–Kush Himalayan region of Pakistan, with diverse biophysical and socio–economic characteristics. The region is endowed with many fragile and fragmented ecosystems but land use and land cover changes have accelerated processes with irreversible effects on ecosystems. The paper aims to 1) find evidence of land use and cover change in the context of very disparate accounts on the state of forest resources in Pakistan; 2) analyze the drivers of change; and 3) reflect on governance and policy failures. We used remote sensing and GIS for the temporal analysis of land use and cover change between 1968 and 2007 and found clear evidence of fragmentation and deforestation; which is contrary to official Pakistani sources.

Results of household surveys and expert interviews showed that agriculture expansion due technological and environmental factors, accessibility and proximity to local markets, , conflicting property rights and other institutional weaknesses were amongst the main driving forces.

Given the fragmented governance structure of forest management in Pakistan a multi–sectoral and multi–scale framework is required to coordinate activities based on an understanding of local history and institutional changes. Land degradation could be reduced through a combination of latest science and local traditional knowledge such as enhancing agricultural productivity through conservation of traditional crops diversity and efficient resource recycling within agro ecosystems using scientific inputs paired with traditional soil and fertility conservation, and education and raising awareness for sustainable use of forest resources.

Linking Research to Practice
(*Linking the 5As*)

Presenter: Louis Lebel

Author(s): *Louis Lebel, Claudia Pahl-Wostl, Christian Knieper, Nikitina Elena*

A comparative analysis of the performance of water governance regimes

This paper reports on a comparative analysis of the water governance regimes of 29 river basins in Europe, Asia, Latin–America and Africa as a contribution to the Twin2Go project building on several basin twinning projects.

The main objective of the study was to test ten hypotheses about features of adaptive water governance regimes widely believed to be important for their performance. A secondary objective was to explore the dataset to identify other potentially important associations and improve understanding of the roles of social–ecological context and evidence for best practices.

The dataset was based on a set of expert workshops held around the world with preparatory and follow–up activities to improve, validate and help interpret expert judgments and values from global datasets. A standard questionnaire initially consisting of 86 indicators was developed and applied to all basins.

This paper presents findings from two analyses. The first explored ten hypotheses using logistic regression. Support was found for some but not all hypotheses. For example horizontal and vertical coordination are strongly associated with several measures of performance of governance regimes. The second explored relationships between set of variables describing context, regime and performance using factor analysis and multiple regression. This identified, for example, economic and institutional development as an important dimension of context.

The primary significance of this study is that it demonstrates the plausibility of systematic and comprehensive comparison of water governance regimes. The set of indicators are a good foundation for more rigorous testing of propositions and developing best practice guidelines.

Linking Research to Practice
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Presenter: Louis Lebel

Author(s): *Louis Lebel*

Scenarios as boundary objects in the allocation of water resources and services in the Mekong Region

Scenarios are internally coherent stories of the future and such important tools for long-term planning. Scenario-building exercises could strengthen the quality of deliberations around water allocation problems in the Mekong Region. Scenarios could be important boundary objects, helping bring different forms of knowledge together and lead to co-production of new knowledge. This paper reviews how scenarios have been used in the Mekong Region. The scenario activities considered in this paper varied in several important dimensions. Most had a strong emphasis on qualitative models and only a few on developing full, qualitative, story lines. Most were built by experts, sometimes with consultation with a relatively narrow group of peers, and only a few with a broader range of stakeholders. As a consequence development in the Region is often viewed through the lens of roads, dams and diversions – the hydropower they might generate, hectares of fields which might be irrigated – and not the many other ecological and social changes that would accompany major infrastructure development. Scenarios as boundary objects have primarily helped experts work together on models and communicate findings from those modelling exercises to a narrow set of clients concerned with primarily gross changes in flows. This is a very narrow interpretation of what scenarios are that restricts the boundary functions they could play in improving water governance in the Mekong Region. The full potential of scenario-building exercises as boundary objects to support deliberative processes, in short, has not been realized.

Linking Research to Practice
(*Linking across Scale*)

Presenter: Jonatan Lassa

Author(s): *Jonatan Lassa*

Decentralized Governance and Institutional Challenge on Disaster Risk Reduction and Climate Change Adaptation In Indonesia

Disaster risk management policy reform and present climate adaptation policy in Indonesia takes place in the midst of three complex processes: First, the unfinished business of political reform at the national and local level. Second, complex decentralisation processes at local level where there are missing links in vertical and horizontal governance; and third, there is an increase in demand for more competing sectoral reform such as water sector reform, legal reform, environmental policy reform, ongoing economic reform after the financial crisis, governance reform many more sectors including disaster risk management reform.

This paper aims understand the institutional arrangement for disaster reduction and climate adaptation including their divides and possible policy integration in Indonesia, drawing on a single research question: "Under the increasing trend in disaster risks, climate risks and vulnerability coupled with complex decentralization process, how can local institutions in Indonesia succeed to create sustainable arrangement for risk reduction and climate adaptation?"

The exploratory social network analysis (centrality test such as betweenness centrality, degree centrality and betweenness centrality) will be used as the main methods to: firstly, analyse local level disaster management regulations from districts/provinces in Indonesia and secondly analyse the informal social network of disaster management and climate adaptation professional in Indonesia. The main data sources are: secondary data regarding local decentralization and local legislation of disaster management; In addition, data from online survey of key disaster management and climate adaptation actors in Indonesia conducted in August–Sept 2009.

Policy recommendation will be provided in the paper.

Linking Research to Practice
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Presenter: Claire Dupont

Author(s): *Claire Dupont*

Climate policy integration into EU energy policy: development and drivers

This paper assesses and explains the level of integration of climate policy objectives ('climate policy integration') into EU energy policy in three steps. First, with reference to literature on environmental policy integration (EPI), 'climate policy integration' is conceptualised and operationalised – outlining indicators to measure the different levels of integration. Second, this analytical framework is applied to the case of climate policy integration into energy policy over time, with particular reference to the EU's policy framework on security of electricity supply. This includes developments from the 2009 renewable energy directive, as part of the EU's 'climate and energy package'. Third, the paper derives important factors that may assist in understanding the progress in climate policy integration from general theories of European integration. These factors include political saliency, functional overlap, policy pathways etc. An exploration of the explanatory power of these factors with regard to the case of climate policy integration into EU energy policy is then carried out. This should enable us to derive tentative conclusions on general conditions for advances of EU climate policy integration, and on conditions hindering such integration.

Linking Research to Practice
(*Linking across Scale*)

Presenter: Christine Kirchhoff

Author(s): *Christine Kirchhoff*

Climate Information and Water Resources Management: Integrating Science and Policy to Build Resilience to Climate Variability and Change

Water managers face significant challenges given the multiple competing demands on water resources and the uncertainty involved in managing those resources to be resilient in the face of climate variability and change. Water managers historically relied on information about past climatic variability to inform decision making and planning. However, there is recognition that past management practices may not be adequate given the potential impacts of climate change.

Water managers are already seeking additional climate information to inform decision making. This research investigates the supply of climate information by two NOAA RISAs and the use of that information by water managers across five states in the Pacific Northwest (PNW) and the Southwest (SW) United States. A survey (n=2,651) of water managers at Community Water Systems (i.e., non-RISA clients) was conducted to examine information sources, collaborations, and barriers to and drivers of climate information use. Interviews of water managers who worked with the RISAs (i.e., RISA clients) were conducted to better understand how water managers use climate information for decision making and for building resilience to climate variability and change. Interviews were also used to explore how institutional frameworks help or hinder water management under a changing climate. Results suggest boundary work is critical to bridge the gap between science and policy- and decision-making. Findings also suggest RISAs, acting as part of knowledge-action systems, help water managers build resilience to climate variability and change across scales of decision-making (i.e., local, regional, state).

Linking Research to Practice
(*Linking across Scale*)

Presenter: Ana Eugenia Martínez

Author(s): *Leticia Merino, Ana Eugenia Martínez*

Community Forest Management and Global Climate Change Policies. Between Local Governance and Authoritarian Conservatism.

Mexico is recognized as a leader in community forest management. CFM is enabled by the legal recognition of property rights to communities over 70% of the forestland. During the last 25 years CF operations –that carry on logging, timber processing, non timber forest harvest and eco-tourism– emerged as an outcome of the joint efforts of forest communities and supportive public policies. Different authors show how CFM has promoted local development, strengthened local governance and favored conservation including the maintenance of key eco-systemic services. Social vulnerability has decreased in communities with CFM, environmental and climatic vulnerability are lesser, as they are more able to respond to pressures on forest areas (fires, pests, illegal logging and illegal cropping).

Mexican forests do not play key roll as contributors to the mitigation of net carbon emissions (as the Amazon or the Congo basins) but may provide a model of local forest governance and management that could link mitigation measures with adaptation strategies. Nevertheless it is to be said that forest development has only taken place in a minority of FC (around 15%) facing increasing hardship (from out-migration, economic globalization, over-regulation and violence). Most public policies –particularly since 2000– are lead by a misreading of the causes of deforestation investing huge resources in reforestation and Payment for Environmental Services Program, giving CF a marginal roll. The commitments adopted by the Mexican government in the IPCC may translate in a new wave of anti-productive and centralizing policies with important impacts on local forest governance and livelihoods.

Linking Research to Practice
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Presenter: Molly Brown

Author(s): *Molly Brown, Elizabeth Brickley*

The Use of Environmental and Socioeconomic Indicators of Food Security in Early Warning Assessments for Africa

This paper uses 1342 food security update reports from the US Agency for International Development (USAID)'s Famine Early Warning System Network (FEWS NET) that consider the biophysical, socioeconomic, and contextual influences on the food security in 17 countries in Africa from 2000–2009. A textual analysis was conducted using these reports as a primary data source to evaluate the responsiveness of food security analysis to environmental variability and food production deficits. The paper demonstrates a consistent approach across all 17 countries as to the discussion and use of rainfall information, agricultural production, food prices and food access parameters. There are significant differences in the use of remote sensing and other technical information between East, West and Southern African country analysts, with satellite remote sensing of vegetation being used 28% of the time, rainfall imagery 84% and gridded crop models 10%. Significantly more discussion of biophysical information was seen during the rainy season than during the dry season. However, there is little discrepancy between the use of satellite products during periods of agricultural production deficits as opposed to periods of adequate or surplus agricultural production. As the demand for early warning information grows to more countries in different ecosystems, there is likely to be an increased need for the effective utilization of remote sensing, market, and livelihood data, and it is probable that this information will be critical for improved policy-making regarding climate extremes in the future.

Linking Research to Practice
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Presenter: Stephen Mumme

Author(s): *Stephen Mumme*

Multi-level Governance of Binational Waters on the U.S.–Mexico Border

Scholarly interest in multi-level Type II governance (Hooghe and Marks, 2003) has led analysts to characterize environmental management along the U.S.–Mexico border as an emergent case. Hooghe and Marks's characterization of transboundary governance in Europe, of course, a classic use of ideal type analysis. Ideal types are analytically useful but may not conform to actual situations. While some features of Type II governance are evident at border, the evolution of dense webs of functionally specialized and locally centered environmental institutions has yet truly to emerge. Evidence of this is found in the field of water management.

This paper examines the promise of Type II governance in border water management. Type II structures are few at the border and have limited articulation with other institutions vital for solving important water problems. In the case of water, as this paper shows, the Type II institutions marginally supplement pre-existing, Type I, organizations in critical areas like drought management and responses to catastrophic flooding. The mere presence of Type II institutions in an issue-area is certainly not sufficient to insure sustainable management of critical issue areas in border water management. Moreover, new Type II governance forms may be insufficient to overcome political and administrative obstacles to binational cooperation in border water management. The case of border water raises both practical and theoretical questions bearing on the role and nature of Type II governance for sustainable environmental management in transboundary situations.

Linking Research to Practice
(*Linking across Scale*)

Presenter: Nathanael Peach

Author(s): *Nathanael Peach*

Energy and Economic Growth: A State-level Analysis

This paper explores the causal relationship between energy consumption and economic growth. A comparative analysis of state-level economies within the Western U.S. is applied. There are two competing hypothesis within the literature regarding the relationship between these variables. The energy neutrality hypothesis suggests that economic growth has become neutral with respect to energy consumption. This suggests that energy conservation will not adversely impact growth. The second hypothesis is known as the necessity hypothesis. It asserts that energy is a limiting factor of growth. In order for an economy to grow more energy must be used. In contrast to the neutrality hypothesis economies that are categorized by the necessity hypothesis energy conservation measures will adversely impact economic growth. The existence or lack of causality between energy consumption and economic growth will inform current debates regarding energy issues such as climate change and energy security. At the international level numerous studies can be found which support each of these hypotheses. To date a state-by-state analysis within the U.S. has not been conducted. The uniqueness of states' natural endowment of energy sources and energy consumption, industrial mix, and energy policies motivated the decision to analyze their economies individually. Preliminary results suggest that in the Western U.S. Alaska, Idaho, New Mexico, Oregon and Wyoming are categorized by the necessity hypothesis and Arizona, Hawaii, Montana, Nevada, Utah, and Washington are energy neutral.

Linking Research to Practice
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Presenter: Laura Stocker

Author(s): *Laura Stocker, Deborah Kennedy, Carolyn Hofmeester, Chiara Danese Galano, Sarah Metcalf, David Wood*

Coastal governance in Western Australia: A Complex Adaptive System?

The south west coast of Western Australia (SW WA) is highly vulnerable to climate change. We explore the extent to which the coastal governance system of SW WA is able to respond to the complex challenge of climate change adaptation given multiple and fragmented jurisdictional responsibilities, rapid population growth with significant development pressures and globally significant biodiversity at risk. We report the results of a participatory action workshop and interviews designed to map and model the current coastal governance system in SW WA and examine governance futures. Over 70 stakeholders are participants in this research including natural and social scientists and researchers, technical experts and consultants, participants from all three levels of government, private sector developers, environmental/natural resource NGOs, and community and Indigenous representatives. In the first stage the existing coastal governance system in SW WA was mapped using a qualitative complex systems approach. The second stage identified impediments to coastal adaptation in WA in a plenary discussion. A hypothetical scenario designed to promote thinking about improved coastal governance and coastal adaptation was worked through in small diversified groups. In the final stage the common threads of these deliberations were drawn together by all participants in order to model a new system of coastal governance for SW WA. Follow up interviews clarified and refined points raised in the workshop. Our results focus on the development of SW WA coastal governance as a complex adaptive system, featuring high connectivity, multi-lateral collaboration, strengthened knowledge-policy flows and adaptive learning.

Linking Research to Practice
(*Linking the 5As*)

Presenter: Jeremy Bourgoin

Author(s): *Jeremy Bourgoin, Jean-Christophe Castella, David Pullar, Guillaume Lestrelin, Bounthanom Bouahom*

**The promises and premises of participatory land use planning in Lao PDR:
Towards a land zoning negotiation support platform.**

It is widely acknowledged that managing complex landscape mosaics in areas dominated by poverty requires addressing conflicting objectives and managing trade-offs, e.g. between maintaining/enhancing ecological functions and improving human livelihood. Laos, like many other developing countries depending on agriculture and natural resource for subsistence of a mostly rural population, has used land use planning (LUP) as a core policy instrument to reach these goals. However, reviews of LUP implementation showed large discrepancies between policies and practices as well as between intended goals and actual outcomes. There is a need for increased participation, improved integration of scales and harmonization of superimposed plans, enhanced coordination between implementing agencies and with other stakeholders. As a consequence, former prescriptive approaches to LUP have been gradually replaced (at least on the paper) by a new paradigm. Participatory land use planning (PLUP) has become one of the flagships of donor-supported programs in developing countries .

However, despite the good intentions of PLUP principles, the process remains entangled in confused on-the-ground implementation issues that compromise effective participation. As alternative to complex 'silver bullet' models that local stakeholders are not able to use and replicate, a communication platform supporting negotiations among multiple stakeholders during the critical stage of land zoning has been tested in a village cluster of Luang Prabang Province in Laos. Our innovative approach based on a combination of role playing game, Participatory 3D Modelling and GIS-based socioeconomic and environmental impact assessment allows stakeholders to explore the consequences of potential land-use decisions and choose between alternative landscapes.

Presenter: Camilla Adelle

Author(s): *Camilla Adelle, Andrew Jordan, John Turnpenny*

Linking Practice and Research: Uncovering complex relationships in policy appraisal

Policy Appraisal (PA) is a potentially important platform on which knowledge of earth system governance can inform policy making in practice. But precisely how might this be achieved and does it happen in practice? The utility of a technical rational model (TRM) of PA – in which 'objective assessment' is assumed to lead straightforwardly to better decisions (via instrumental learning) – has been significantly undermined by a post-positivist critique (PPC) – which assumes that policy making is far more chaotic and so looks for evidence of wider forms of (conceptual) learning. How far have these theoretical developments led to innovation in both the practice of and research on PA? This article reports on a systematic review of the literature which takes stock of the developments in the practice of and research on PA – specifically impact assessment – with regards to the theoretical underpinnings. It appears that the research on PA is moving beyond the TRM and incorporating insights produced by the PPC, whereas the practices of PA remain highly influenced by the TRM. What therefore is sustaining the TRM? Where and when is its hold beginning to loosen? What are the implications for the relationship between the everyday practices of and research on PA? This paper discusses these questions in the light of the findings of the systematic review, before developing a future research agenda in this important and dynamic area of earth system governance.

Linking Research to Practice
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Presenter: Sabine Weiland

Author(s): *Sabine Weiland*

Policy appraisal – a contribution to policy learning towards sustainability governance?

Policy appraisal can be defined as a methodological framework and an administrative procedure for better informed policymaking by predicting and evaluating the consequences of regulatory activities. Recent years have seen a shift to more institutionalised systems of policy appraisal in many countries. As such –it is argued– policy appraisal has the potential to deliver more sustainable policies and to address large–scale global change challenges such as climate change and food safety. In practice, however, the impact of policy appraisal on actual policies falls far short of expectations. Obviously, it is not self–evident if and how appraisals translate into ‘better’ policies. Technical–rationalist expectations that appraisals produce evidence for best policy options which only need to be put into practice appear somewhat naïve. Post–positivist positions, in contrast, stress the relativity of knowledge and the discursive nature of policy–formation, thereby focussing on other factors such as interests and power positions, rather than evidence. This paper analyzes how policy appraisal is related to policy development. What is the role and function of policy appraisal in political decision–making? Under which conditions does evidence play a role in informing policies? What does policy learning mean in this context? Who is learning what, and what factors account for the learning? Finally, how can governance arrangements be designed to foster evidence–based policymaking for sustainable development? Thereby, the paper wishes to contribute to the conference theme ‘Linking research (here: evidence) to practice’.

Linking Research to Practice
(*Linking the 5As*)

Presenter: Dries Hegger

Author(s): *Dries Hegger, Carel Dieperink*

Dealing with sustainable development through knowledge co-production: from theory to practice

Matching supply and demand for knowledge in the fields of global change and sustainability is a daunting task. Science and policy domains have different timeframes, epistemologies, objectives, process-cycles, and criteria for judging the quality of knowledge. Additionally, global change and sustainability issues involve value pluralities and large uncertainties. It is often argued, in governance literature and in practice, that knowledge co-production through collaboration between (and within) science and policy domains can bridge the gap between science and policy.

This paper reports the results of a systematic review of the (conceptual and empirical) literature on knowledge co-production. Based on this review, we developed an integrated framework characterizing different forms of knowledge co-production; their opportunities and barriers; and success criteria. The framework enabled us to formulate normative hypotheses on how to co-produce knowledge "successfully", addressing, amongst others, the need for organized reflection on the co-production process, and for adapting the reward structures in which the actors involved have to operate.

As a next step in our ongoing research project our typology will be empirically validated (through interviews, focus-groups, participatory action research and a Q-sorting survey) leading to recommendations for scientists, policymakers and financiers involved in knowledge co-production. The project drafts a research agenda for governance research on the boundary between science, policy and society and provides lessons on how to make (often publicly funded) research more relevant.

Linking Research to Practice
(Linking the 5As)

Presenter: Gabriela Marques Di Giulio

Author(s): *Gabriela Marques Di Giulio, Bernardino Ribeiro de Figueiredo, Lucia da Costa Ferreira, Phil Macnaghten*

Building dialogue through public engagement and participative communication – the increasing need to deal with risk situations

Lead pollution is a major health risk issue in Brazil and Uruguay, and has been the subject of increasing attention from researchers and official governments. However, notwithstanding such activity, there is a clear mismatch between widespread and pervasive lead contamination and a correspondingly weak and modest policy and research response. Drawing on empirical research in four Latin America communities exposed by lead, our research analyses what strategies of risk communication have been used by researchers/governments/authorities to communicate the risks to local people, and how those risk situations have been handled. Our research has suggested a lack of institutional response to the problem coupled with a failure to communicate the risks to those affected. The results highlight that researchers/experts/policymakers have all gravitate towards a risk management approach that underestimates the potential input from the public, and that considers only technical and scientific knowledge as legitimate knowledge. The findings suggest that these actions have generated a prevalent understanding (by communities) that health and environmental research is not being undertaken for the public good – which has created a strained relationship among the social actors. Our analysis point to some implications of these case studies for wider risk communication and governance debates, in particular in situations where the residents are living in a collective stress because of the physical conditions in their neighborhood, and possible impacts on their health. Our research provides tips for facilitating public engagement, and for stimulating dialogue with policymakers/regulators/researchers and local public in participating in the decision making process.

Linking Research to Practice
(*Linking the Social and Natural Sciences*)

Presenter: Md Abedin

Author(s): *Md Abedin*

Integrated Trans–boundary Water Resources Governance: Regulatory Challenges and Prospects

Currently Integrated Water Resources Management (IWRM) approach brings success for sustainable development, utilization, conservation and management of water resources within a country. However, most of the international trans–boundary rivers are not governed by integrated multilateral legal and institutional framework planning for their development and management. In these cases, IWRM success is relatively low. There is no integrated regional/multilateral legal and institutional framework planning for Integrated Trans–boundary Water Resources Management (ITWRM) in the Eastern Himalayan rivers of the South Asian region. As an example, this paper tries to find out the primary challenges of the Ganges–Brahmaputra–Meghna (GBM) river basins that require IWRM approach for its sustainable development and management. It explores whether an integrated regional legal and institutional framework can address those challenges through an ITWRM planning with an arrangement of NIWRM planning at the GBM river basins. And how far this integrated approach helps to improve the uniform policy making in that region and effective practice of implementation for sustainable earth governance system. In this context it evaluates 'the Mekong Agreement' as a model legal framework and 'Mekong River Commission (MRC)' as a model institutional framework of ITWRM approach. Finally, it argues that a regional regulatory and institutional framework for ITWRM can be developed for any trans–boundary water resources for its sustainable governance. The multilateral regulatory and integrated monitoring institution can ensure the equal and fair allocation and access to the international water which ultimately minimize the water related conflicts among states and eliminate the obstacles to earth system governance

Linking Research to Practice
(*Linking the Social and Natural Sciences*)

Presenter: leila ferreira

Author(s): *leila ferreira, fabiana barbi, martins rafael, mello leonardo, alberto urbinatti*

Governing Climate Change in Brazilian Coastal Cities: risks and strategies.

In Brazil, where major cities are located in coastal zones, climate change is an extremely relevant issue. Coastal areas are considered particularly vulnerable to climate change; at the same time they concentrate an expressive contingent of world's population, and are development centers of the worldwide economy due to their infrastructure and natural resources. This paper reflects on the challenges of climate change, for these areas, how it is being framed and how local governments in Brazilian coastal cities are responding to it in terms of policy strategies and instruments. Although this debate is in its early stages in Brazil, this paper brings the first attempt to investigate some of the political-institutional structures that have some effect on relevant areas for intervention in terms of climate change at the local level in the 16 coastal cities of the State of São Paulo.

Linking Research to Practice
(*Linking across Scale*)

Presenter: Sebastian Linke

Author(s): *Sebastian Linke, Michael Gilek, Oksana Udovyyk, Michael Karlsson*

Interactions of social and ecological systems in Europe's marine management: Interpretations and implementation of the ecosystem approach to management

Decades of efforts to improve the resilience of Europe's marine ecosystems have exposed the need for a more profound understanding of how social and ecological processes interact across various scales. Today the ecosystem approach to management (EAM) is widely promoted in policy and science as a means of integrating social, economic and ecological objectives and thereby facilitating sustainable development of Europe's seas. However, the EAM is a broad concept, including for example, management based on the vulnerability and resilience of entire ecosystems, cross-sectoral integration as well as multi-actor and multi-level perspectives. Therefore, the views on what the EAM is and how it should be implemented vary among and within different stakeholder groups.

Our paper reports on results from the EU funded project RISKGOV, which analyses and compares different environmental governance processes (e.g. over-fishing, hazardous chemicals, eutrophication). We investigate the interfaces between scientific assessments and policy developments and the communication of environmental risks among various actors in society (e.g. scientist, policymakers, NGOs). The comparison reveals how scientists and policymakers (e.g. from European Commission, Governments, HELCOM, ICES) frame and define the EAM, its merits and challenges. Initial results indicate that the investigated actors focus on various aspects, merits and challenges of the EAM and differ in their views on the role of science in management. Our results thus expose problems and potential solutions on how science and other knowledge contributors (e.g. agriculture or fisheries) could better communicate to policy-making and vice versa: e.g. how policy should approach science in seeking advice.

Linking Research to Practice
(*Linking the Social and Natural Sciences*)

Presenter: Teresa Da-Silva-Rosa

Author(s): *Teresa Da-Silva-Rosa, Louise Dal'Col, Priscila Guio, Diogo Mafra, Manuela Monteiro, Renato Maluf*

Knowledge production, actors and networks: the case of climate change in Brazil

Earth's governance system requires that the process of public policies formulation adopt in its discourse the knowledge produced by different fields of science, thus better informing decision-makers. One of the stages in this process involves mapping out knowledge production in order to understand its dynamics, and the themes that interest the many actors involved. This paper intends to present the results on the knowledge produced on climate change in Brazil. The nature of climate change demands an interdisciplinary knowledge to account for the complexity in the lives of the most vulnerable. The documents selected for analysis (reports, articles, papers presented in congress, books) are those with free access and published between 2002 and 2010, from scientific institutions and non-governmental international organizations (OINGs) operating in the country. Up until 2009, 57 research group leaders with interest in the theme were identified, with 11 researchers responsible for 51% of the production, most of them from the Exact and Earth Sciences, with only one from the Social Sciences. As for the organizations, 27 documents from five OINGs were identified. The analysis aims at identifying issues, themes, interest biomes, as well as consensus, divergences and the interdisciplinary aspect, in an attempt to characterize the dynamics of that production and the actor networks. At a first glance, it can be observed that: (i) in the Field of Science, knowledge is fragmented, showing lack of communication between the many areas with interest in climate change (ii) in the Field of OINGs, an interest in social perspective.

Linking Research to Practice
(*Linking the 5As*)

Presenter: Sarah Burch

Author(s): *Sarah Burch, Heike Schroeder*

Novel Multi-sector Networks and Entrepreneurship (NMNE) in Metro Vancouver: a study of small business as an emerging non-state actor on climate change mitigation

While large industrial emitters are the first businesses to be required to report on their greenhouse gas (GHG) emissions, the invisible majority of commercial emitters are small- and medium-sized enterprises (SMEs) for which legislated GHG reductions are extremely unlikely. Novel partnerships and networks are emerging however, which align the goals of SMEs, municipal governments, and regional authorities in support of greenhouse gas management in cities. The 2008–2009 economic crisis has brought to the fore the importance of engendering entrepreneurial approaches to the problem that simultaneously accomplish the dual goals of economic development and climate change mitigation.

This study links the Earth System Governance themes of agency and architecture, links theory with practice and addresses multi-level governance by presenting the first part of a comparative case study analysis that focuses on the region of Metro Vancouver, Canada. The following questions were asked in the Metro Vancouver context: what are the political and legislative triggers of these emerging private/public sector partnerships? How can these arrangements help to manage or alter institutional path dependence in cities? What is the long term potential for deepening this brand of institutional architecture, facilitating entrepreneurial agents in support of greenhouse gas management, and ultimately mitigating climate change? How do these partnerships and networks extend vertically into national and international networks? Finally, we ask: how feasible might it be for this model to extend beyond mitigation to climate change adaptation and sustainability more broadly?

Linking Research to Practice
(Linking across Scale)

Presenter:

Author(s): *Canfa Wang, Jing Huang*

Empirical Analysis of Linking Research and Practice in Environmental Law: A Case Study on Center for Legal Assistance to Pollution Victims in China

How to link research and Practice in environmental law is a critical issue for environmental law scholars and practitioners. In order to enhance this linkage, this article introduces Center for Legal Assistance to Pollution Victims (CLAPV) in China as a successful example. CLAPV aims to protect the environmental rights and interests of pollution victims and to promote the environmental law research. To fulfill these two goals, CLAPV launches a lot of programs and activities such as providing free legal consultancy service for pollution victims, cooperating with law firms to deal with environmental cases, offering free professional training on environmental law practice, organizing symposiums on implementation of environmental law and promoting academic exchanges. Two lessons can be learned from CLAPV. First, try to find the shortcomings of existing environmental law through the practice of legal aid, and then strengthen the related research. Second, set up a platform to exchange of ideas for legal scholars and practitioners through national environmental lawyer network and symposiums. Finally, we shall bear in mind that research cannot be completely guided by the practice while practice cannot copy the result of research, either.

Linking Research to Practice
(*Linking across Scale*)

Presenter: Tarja Söderman

Author(s): *Tarja Söderman, Kirsi Mäkinen, Laura Chamak*

Supporting scale sensitive policymaking: scale consideration in policy appraisal

Policy appraisal is used in the European Union and many OECD countries to contribute more evidence-based and transparent knowledge to support policymaking. Scale considerations have a key role in various stages of the policy appraisal, from problem framing and scoping to the assessment of impacts and inclusion of stakeholder views and scale choices affect the outcomes of assessment processes significantly. Policy appraisal offers a platform for transferring knowledge across scales and linking different levels of governance. Better recognition of the complexity of scale dimensions and levels in policy appraisal processes is necessary for delivering scale sensitive and scale effective impact assessments and policies. The paper builds on traditional views of primarily biophysical scales in impact assessment by integrating wider socio-economic scale dimensions and provides a framework for the systematic recognition of scale dimensions in policy appraisal. Experience shows that implementing scale sensitive policy appraisal is full of challenges rooted both in theoretical foundations and practical limitations. The practice of scale considerations in policy appraisal is tested in a case study of the Finnish national climate strategy. Based on the case study and literature on scalar problems in policy appraisal, the paper concludes by discussing elements that can support scale sensitive policy appraisal and promote sustainable environmental governance.

Linking Research to Practice
(*Linking the 5As*)

Presenter: Anna Kaijser

Author(s): *Anna Kaijser*

Implications of Climate Change Discourses in International Development Cooperation: A Study of Sida's Work in Bolivia

In international climate politics, a dominant discourse can be identified which portrays the issue as an apocalyptic threat that can only be addressed by concerted global effort and large-scale management. However, this discourse is under constant negotiation and is challenged by alternative discourses. I am interested in the material effects of climate discourses within a certain field: international development cooperation.

An increasing amount of interest has lately been directed towards international development cooperation as an instrument for dealing with climate change, in terms of both mitigation and adaptation. In line with this international trend, the Swedish government has increasingly emphasized climate change as a crucial factor to consider in development cooperation. The framings of climate change promoted by Swedish officials are very much in accordance with the discourses dominating international climate politics. I want to explore how this is reflected in the international development cooperation channelled through Sida, the Swedish International Development Cooperation Agency.

The Sida office in La Paz, Bolivia, is a particularly interesting research unit. In Bolivia, climate change is gaining increasing attention as an urgent development issue and there is a strong local climate discourse which diverges greatly from the Swedish official approach to the climate problematique. Through interviews and observations on different levels of Sida in Stockholm and La Paz, I hope to gain an understanding of how discourses travel through the organization. I am looking at how they are interpreted and challenged, and how this affects the practical development activities.

Linking Research to Practice
(Linking the 5As)

Presenter: George Stetson

Author(s): *George Stetson*

Hydrocarbon development in the Amazon: indigenous participation/exclusion and environmental governance solutions

This paper examines Peru's hydrocarbon policy agenda and its impact on indigenous peoples from the Amazon region. Specifically, I look at the intersection between the government's natural resource policy regime, indigenous rights to free, prior informed consent, and governance–designs that will produce environmentally sustainable solutions to current natural resource problems. I argue that, in spite of the government's use of sustainable development principles, in Peru, indigenous peoples are excluded from any meaningful participation in the making of hydrocarbon development policy. This has exacerbated conflict between indigenous peoples and the state, placed at risk the environmental sustainability of the entire region, and prevented the inclusion of indigenous perspectives on development that, in the long run, might be more sustainable. Moreover, given that future conflicts over natural resources between indigenous peoples and states are more likely (i.e. the state's ever-increasing search for natural resources on indigenous territorial spaces), this paper provides recommendations for how governments might seek solutions to natural resource conflicts on indigenous territories.

Linking Research to Practice

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Presenter: Linse Anderson

Author(s): *Linse Anderson*

Linking climate scientists and policy in Colorado: Experiences in participatory research

The literature on the relationship between science and policy suggests that the way scientists engage with the policy process makes a difference in how science is integrated into policy making. It is important, then, to analyze the way scientists themselves conceptualize and engage with the policy frontier. This paper builds on a study of how a group of climate scientists conceptualize and engage with policy and presents an analysis of linking their research to policy making. With consideration to the current attitudes and behaviors of this group of scientists I explore how they may be linked to policy through relevant boundary organizations. Since I am member of the group that constitutes the research subjects, interwoven throughout this paper are reflections on conducting participatory research. I explore the opportunities and constraints of conducting this type of research and draw implications regarding effective strategies for linking research to practice.

Linking Research to Practice
(*Linking the 5As*)

Presenter: Saleh Ahmed

Author(s): *Saleh Ahmed*

Climate Change and Societal Responses: A Review on the International Labour Organisation (ILO)'s approach in promoting green jobs and sustainable development at the local level

Climate change is intensifying disasters world wide, including different types of extreme weather events. It is vital that the international development agencies along with local communities will promote different development strategies, that will incorporate measures to strengthen community resilience through economic development, income diversification, strengthened natural/infrastructural defences and disaster preparedness. While no area can escape the adverse impacts of climate change, the Arctic, small islands, mega-deltas in Asia Pacific and Africa overall seem to be especially vulnerable because of their high exposure to the effects of climate change and their populations' limited capacity to adapt to the consequences.

The purpose of this paper is to review the ILO's responses to climate changes by promoting green jobs and sustainable development at the local level as a measure to respond, mitigation and adaptation to global climate change phenomena. ILO is a specialized United Nations Organization dealing with many factors associated with employment and labour issues. Climate change obviously will affect the areas of employment and so the other associated fields. ILO's Local Economic Development (LED) Program is aimed for knowledge sharing and partnership building to boost local economies, creating employment and reducing poverty. Following a brief discussion of some salient links between climate change, green jobs and local economic development processes, this paper critically evaluates the ILO's approach to local economic development, which may contribute for employment creation in the context of climate change.

Linking Research to Practice
(*Linking the 5As*)

Presenter: Henry Neufeldt

Author(s): *Henry Neufeldt*

Benefit sharing in rewards for environmental service schemes

Fair, effective and efficient benefit sharing schemes to the providers of the ecosystem services are essential if biocarbon is to significantly contribute to climate change mitigation. Next to the positive effect on mitigation, important benefits for poverty reduction, livelihood improvement and climate change adaptation can be expected for successful approaches.

However, information about successful benefit sharing schemes is scarce (particularly for carbon projects), and the experiences from the few projects that are ongoing are not available in a structured way. An internet survey was conducted between May and June 2010 to close some of the information gaps in order to see which lessons can be learned so far, where the main challenges lie and what can be done to develop appropriate benefit sharing for carbon sequestration schemes in the future.

Over 100 responses from projects dealing with rewards for environmental services (RES) in the carbon, water and biodiversity sectors responded to the questions. Initial results indicate that most respondents viewed the projects they described as successful in achieving the desired goals while describing various challenges. Contrary from the expected, only few respondents identified land tenure as a major problem, possibly because the projects presented had well defined by-laws and contracts for benefit sharing in place.

In this paper the final results of the online survey will be presented and assessed vis-à-vis among others differences between RES schemes, project countries, benefit sharing structures and funding agencies.

Linking Research to Practice
(*Linking the Social and Natural Sciences*)

Presenter: Robin Reid

Author(s): *Robin Reid, Stacy Lynn, V. Lee Scharf, Ch'aska Huayhuaca, Kara Loyd*

Collaborative conservation in practice: Current state and future directions

Collaborative conservation is difficult to define, largely due to the breadth of environmental governance regimes it encompasses. Here, we describe and define the current state of collaborative conservation practices as distinguished from community-based conservation (CBC), community-based natural resource management (CBNRM), ecosystem management, co-management and other governance models. We then explore the following questions based on the existing literature, case studies and outcomes of a national conference on collaborative conservation that was held at Colorado State University in 2009:

When does the process of collaboration allow participants to reach conservation goals more effectively and when does it not?

What are the possible partnerships among actors in collaborative conservation and how do these influence collaboration goals?

Is collaborative conservation different when practiced in different environments such as forests, rangelands, watersheds or marine systems and what lessons can be learned from these experiences?

Is there an inherent scale to collaborative conservation or is it practiced at all scales from local to global?

Does collaborative conservation differ in the US and internationally?

What is the place for livelihood goals in collaborative conservation?

What processes and practices distinguish collaborative initiatives that succeed in reaching their goals over time from those that do not?

Is collaborative conservation successful relative to other governance models from a conservation perspective?

We then conclude about the current state of practice in collaborative conservation and suggest future trends and opportunities. We also discuss what these trends say about environmental governance more generally.

Linking Research to Practice

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Presenter: Kelli Archie

Author(s): *Kelli Archie, Lisa Dilling*

Climate Change Adaptation and Western Public Lands: Do Decision Makers Have the Information and Tools They Need to Govern?

Climate change and its associated consequences increasingly threaten the physical landscape of and ecosystem services delivered by public lands in the Western United States. Much science exists that details projected changes in climate and land cover, strategies that are available to adapt to future conditions, and adaptation activities that are currently taking place. However, it is not obvious that public lands managers are aware of such resources nor that the science itself is always practically usable. This paper seeks to examine the information needs of public lands managers in the Western US and to explore whether demand for information varies across types of public land agencies (NPS, USFS, BLM, FWS). Through case studies and surveys, we examine the difficulties managers currently face in regard to implementation of adaptation strategies, what information they currently use and why, and what types of additional resources decision makers need in order to prepare for adaptation. This study can be viewed under the overarching theme of how science can better support decision makers as they plan for adaptation to climate change. Recent research suggests that decision makers don't always make use of available resources and could greatly benefit from specific types of resources not currently available. Data that we collect detailing practitioner demand for information can be used to inform and direct future research, ensuring that adaptation science aligns properly with adaptation policy and practice.

Linking Research to Practice
(*Linking the Social and Natural Sciences*)

Presenter: Maria Rebecca Campos

Author(s): *Maria Rebecca Campos*

Governance of Climate Change Financing of Farmers in the Philippines

More than half a million small fishers in the Philippines have been availing of loans from Quedancor, the credit arm of the Department of Agriculture. The financing scheme has been quite successful with repayment rate at 95%. However, the occurrence of natural calamities such as typhoons; as well as pests and diseases has affected the productivity of fisheries, thus, hindering fishers from paying and renewing their loans. Failure to access credit could disable them to continue venturing on fishing activities and could eventually jeopardize the welfare of their entire household. The inability of creditors to pay their loans and meet their obligations also impair, to a large extent, the financial operation and viability of the lending institutions. This study analyzes the natural risks and risk management practices of these fishers. It recommends mitigation mechanisms to minimize the impact of natural calamities. Moreover, it suggests a bridge financing scheme that can be an effective and efficient instrument to enable fishers to carry on their livelihood activities and support their families' basic needs and slowly recover from their losses.

Linking Research to Practice
(*Linking the Social and Natural Sciences*)

Presenter: Peter Cronkleton

Author(s): *Peter Cronkleton*

Rethinking management norms to promote adaptive decision support mechanisms for sustainable forest management

To improve forest management practices, local user groups and communities could benefit from better decision support tools that draw on both scientific and indigenous knowledge. Formal forest management plans, a key policy instrument used around the world to encourage sustainable forest management, are typically expected to supply such support. Despite widespread initiatives to promote forest conservation and development through the adoption of management planning, formal management plans have not been as widely adopted or successful in sustaining forest resources as expected, and as a result forest degradation and loss continue to be widespread problems in the tropics. One reason is that the concepts and models underlying formal management plans are poorly adapted to the conditions faced by many smallholders and communities, groups that control increased areas of forest lands in the tropics. This paper will draw on global literature to examine the assumptions often embedded in legal norms related to forest management and will use practical examples from the Latin American tropics to illustrate how these assumptions, concepts and models can have unintended consequences for smallholders and communities. The paper will build on these examples to suggest approaches that could engage local forest stakeholders to develop methods to support adaptive management decision making.

Linking Research to Practice
(*Linking across Scale*)

Presenter: Rafael Martins

Author(s): *Rafael Martins, Leila da Costa Ferreira*

Climate Change Policy and Action at the City Level in Brazil: Tales from Two Mega Cities

Climate change poses not only a local place-based problem, but also cross-scale challenge. Addressing this unprecedented challenge requires actions at different levels (multilevel) ranging from conventions and treaties at the global level to climate protection measures at the city level. The relationship between cities and climate change is usually based on a complex balance between vulnerability and responsibility. Building on that, this paper analyses the factors shaping climate policies in two mega cities in Brazil through a multilevel perspective: São Paulo and Rio de Janeiro. It explores how climate change is being framed and how local governments are responding to it in terms of policy strategies and instruments. We argue that the participation in transnational networks of subnational governments has been crucial for promoting and supporting climate change actions in both cities. However, the organization, steering and implementation of these measures rely heavily on a landscape formed by multiple actors with a variety of interests, capacities, and challenges often spanning several sectors. This fragmented landscape of actors, interests and sectors combined with structural governance problems pose significant challenges for the advancement of these efforts in the two cities. We discuss the governing of climate change action and analyze the factors that can constrain or undermine these actions.

Linking Research to Practice
(*Linking across Scale*)

Presenter: Glen Hyman

Author(s): *Glen Hyman*

Living on the Edge: Bringing science, students and sites together for learning partnerships on Urban Protected Areas (South Africa, Kenya, India and beyond)

A number of tools are available for nature conservation. One common strategy consists of demarcating Protected Areas, where restrictions on human activity aim to permit ecosystem functioning with minimal disturbance.

Though most PAs are relatively remote, a large number are also found in urban settings. In such places – despite obvious interdependencies – City and Park management are often treated as though they were independent activities.

By looking at how urban communities treat such places, scientists can learn how a wide variety of actors' interests find expression around space they share. More importantly, conducting research in a symmetrical partnership with the full range of site-level actors can help make explicit the interests they implicitly share, clearing pathways for future cooperation.

In 2009, the Sciences Po Master of Public Affairs began a series of applied research projects (called "Capstones") on Urban PAs. The first took place in South Africa, where an extensive campaign of interviews led the students to produce an *Atlas of Aims, Effects, Synergies and Contradictions of Park & Urban Policy* around Table Mountain National Park. More durable than this document, however, are the discussions their work stimulated – which continue still today.

In 2010, we are reproducing this project in Mumbai and Nairobi – both sites where national park and city managers function relatively isolated from each other.

For the ESG-2011, we offer a synthesis of our methodology and lessons learned from these experiments – which bring together scientists, practitioners and students to work together on shared problems.

Presenter: KK Kaushal

Author(s): *KK Kaushal*

Restocking Indian Forests through Microfinance

India has embarked upon a community involvement process to restock the state-owned forests through an Indian version of community forestry called Joint Forest Management (JFM). People's participation is structured through specially established local village level institutions called Village Forest Councils (VFCs). But the success of the Joint Forest Management program lies in the provision of alternative livelihoods to woodcutters and grazers. This article presents how the forest department of a southern state of India devised a potent tool of microfinance promotion by VFCs for weaning those who are dependent on the forest while implementing a Japan Bank for International Cooperation funded 100 Million US \$ Joint Forest Management Project. Each VFC is provided a grant of 12000 US \$ for provision of productive loans to the forest dependents. Presently, extending credit is the main financial activity of the VFC. But the term Microfinance has been applied as some VFCs arrange for insurance of members and purchased cattle. The collection, processing and sale of Non Timber Forest Products is also done by the VFCs. A field study was undertaken in 27 program villages in the Tamilnadu state. Recovery and recycling of VFCs' fund were rated on a scale of 0 to 1. Forest protection and regeneration status of each programme village were also rated on a scale of 0 to 1. Data showed that there is a direct correspondence between the microfinance working and the forest protection.

The paper concludes that the degraded Indian forests can be restocked by providing microfinance to villagers through a people's representative body—the Village Forest Council. The forest department was successful in this unusual task of promoting microfinance even in villages where formal microfinance institutions have failed, which corroborates an earlier finding that microfinance is more workable and successful if it is properly packaged in a locally suitable development program .

Keywords: Joint forest management, microfinance, forest dependents