Parallel Sessions

1.1   The Governance of Resource Allocation and Access: A Multilevel Perspective
Chair: Bruce Lankford, Room: JSC 1.02

The Limits of Control: Policy networks as regulators of access and allocation of water? A case study of multilevel water governance in the Equatorial Nile Basin

Nina Hissen

This paper examines multilevel water governance and its implications for access and allocation of water in the Equatorial Nile Basin (EQNB) in the context of climate change. For the EQNB riparians (Uganda, Kenya, Tanzania, Burundi, Rwanda and DR Congo) water is of great importance for socio-economic development and a lack of water due to ineffective water governance or climatic impacts is expected to lead to political tensions and conflicts. The research addresses the question of how multilevel governance (MLG) regulates the access and allocation to water resources in the EQNB. The study critically analyses the formal institutional governance architecture, focussing on the relationships between actors, how they exert influence, and the outcomes of governance processes in the light of access and allocation to water.

The research uses an embedded case-study approach. It is based on an in-depth study of MLG in the Mara River Basin, a tributary to Lake Victoria shared by Kenya and Tanzania, and results are integrated into the wider context the EQNB. As a transboundary river, the Mara faces challenges of water quantity (rising demand for agricultural water, increase in tourism and domestic consumption), and water quality (high pollution through farming, mining, and lacking wastewater management).

The study uses a mixed methods approach, including semi-structured interviews and Q-sort based interviews.

The study finds that MLG in the Mara River Basin occurs via policy networks, a parallel structure to the formal institutional governance architecture. The two competing policy networks in the Mara play an important role in distributing and redistributing material and immaterial resources to various actors within and outside the network. Hence, policy networks influence the access and allocation of water, either 1) indirectly, through modifying an actor's political leverage in negotiations over water or 2) directly, by developing the water resource through e.g. building water infrastructure.

Pro-poor Policy Instruments & Urban Water Governance Issues in São Paulo and Maputo: a multi-level analysis

Raquel dos Santos, Joyeeta Gupta, Klaas Schwartz, Nicky Pouw

Although the 2010 United Nations Resolution on the Human Right to Water and Sanitation represents an important advance in acknowledging this right, the provision of water supply and sanitation services (WSS) in the context of poverty and rapid urbanization remains a challenge for integrated urban water management and governance in many cities worldwide. Where WSS are inadequate, the poor are the most affected, resulting on negative impacts to society: waterborne diseases, environmental pollution, social exclusion etc. The scientific literature focuses on technical aspects but recent studies suggest that institutional and governance issues should receive greater attention in the pro-poor water supply debate. Against this background, this research examines pro-poor policy instruments, institutional arrangements and, its implementation challenges at provincial level by means of comparative case studies in São Paulo and Maputo. It aims to contribute to a wider body of scientific and practical knowledge on institutional arrangements for water supply and sanitation services provision pro-poor in order to improve integrated urban water management and governance in the cities of the future. Using an adapted version of Young Oran analytical framework proposed in 2005, a multi-level institutional analysis was carried out, examining policies, incentives/instruments, drivers and actors and, success factors contributing to improve WSS access and allocation to the urban poor. Partial findings indicate that: WSS access and allocation pro-poor are often driven by factors external to the Water Sector; water supply and sanitation pro-poor policies and its instruments/incentives are influenced by other sector policies (e.g. development/urban planning), depending on issues such as land use and tenure rights defined at municipal level; concession contracts, regulatory frameworks and subsidies are the main incentives for Water Utilities to expand WSS pro-poor in urban areas. This research has also contributed to a practical mutual learning process through engagement of key stakeholders at local level.

Multi-level biofuel governance: do the means achieve the ends?

Auke Pols, Henny Romijn

Biofuels have been hailed as contributing to energy security, emission reductions and rural development, as well as criticized for failing to achieve any of these benefits while contributing instead to food insecurity, ecological degradation and land and water grabbing. Particularly since the launch of the EU's most ambitious biofuel promotion scheme to date in 2009, the EU RED, numerous papers have appeared that highlight its perverse global and local governance effects, including carbon accounting conundrums, complexities of certification and artificial profitability of biofuel exports to the EU at the expense of local market development in energy-starved developing countries. To our knowledge, however, there has not yet been a systematic attempt to connect these various governance issues in a multi-level framework and analyze their impacts as resulting from complex constellations of decisions taken by diverse actors with different interests and perspectives across regional, national, European and global levels. In our paper we make this systematic attempt, using Ostrom's Institutional Analysis and Development framework in combination with Houkes's and Vermaas's Use Plan Analysis to analyze the adequacy of current governance measures and their resulting processes to achieve the desired ends (e.g. certification as a means to sustainable biofuels; sustainable biofuels as a means to energy security). We use both frameworks not only to identify governance and responsibility gaps, but also to flag opportunities for creating more sustainable development patterns that are as yet insufficiently recognized by high-level actors. An example would be the potential of tropical biofuel crops to contribute to rural development for smallholder farmers through social enterprise models revolving around decentralized cultivation, local processing and domestic use. We conclude by offering recommendations for sustainable multi-level biofuel governance and suggesting directions for further research.

The role of transnational networks in transforming earth system governance: a case study of water

Michele-Lee Moore

The Anthropocene is recognized as an era in which the human-environmental relationship has become locked into an unsustainable trajectory. Transformation of governance systems is increasingly understood to be essential for altering this pathway. But questions remain about how transformation, or governance innovation may best be achieved. Within business and organizational studies, networks have long been understood to play a crucial role in innovation and transformation. Yet, this scholarship focuses primarily on networks that support the invention and diffusion of technological innovations. Innovation within Earth system governance may follow a different path, and is defined here as any strategy, program, policy, process or initiative that transforms the standard routines, resource and authority flows, or beliefs of the governance system in which the innovation occurs. However, questions then remain about if, how and why networked structures and processes play a role in shaping pathways of transformative change within any aspect of Earth System Governance. Therefore, using water as a lens to study networks in governance innovation, this paper will explore the relationships of two domestic, nontransboundary river basin organizations to transnational actors and organizations. Based on empirical evidence from the Murray-Darling Basin Authority (Australia) and the Prachinburi River Basin Committee (Thailand), this paper will demonstrate the following: firstly, transformation in water governance is a multi-phased process, and local networks play a critical role in the early phases of generating innovative strategies and policies. However, a network of transnational actors and organizations shape and influence the adoption and implementation of these governance innovations within the domestic watershed, indicating an important impact of these cross-scale, networked interactions. Secondly, at the organizational level, new strategies are required to manage cross-scale interactions in order to maximize the benefits of networked structures for innovation and ultimately, transformation.

Addressing the Absorptive Capacity Gap of Climate Finance Beneficiaries: The Case of Brazil and Indonesia

Roman Röhrl, Ursula Flossmann-Kraus

Significant investments are required to realize the transition to low carbon, resilient and sustainable pathways in developing countries. Currently, the international community is mobilizing additional public and private climate finance through bilateral and multilateral institutions, targeting at 100 billion USD annually by 2020. However, traditional modalities of managing and delivering climate finance will be challenged with absorbing significantly increased climate finance. This paper recommends improvements to existing tools applied by bilateral and multilateral aid agencies in programming climate finance.

So far, development finance practice and academic research has provided little solutions to well-known challenges of international aid, such as misallocation of financial resources and disbursement constraints with beneficiary institutions in developing countries. This paper argues that with increasing mobilization of climate finance, more appropriate approaches to allocate and absorb financial resources are needed in order to make climate finance work, reduce the risk of inefficiencies in the climate aid sector, and ultimately increase transformative impacts in beneficiary countries. The paper reviews and critically discusses existing tools for programming financial cooperation used by bilateral and multi-lateral donors. It argues that the absorption capacity of intermediary managing institutions as well as targeted beneficiary institutions needs to become a key focus of programming financial aid. Recipient countries need capacity development not only for accessing climate finance but also for allocating, managing and delivering climate finance; the article contributes to a better understanding of these needs.

It uses the empirical cases of Brazil (Amazon Fund, Climate Fund, Brazil's Low-Carbon Agriculture Program) and Indonesia (Indonesia Climate Change Trust Fund, Financing Reducing Emissions from Deforestation and Forest Degradation in Indonesia). It concludes with proposing suitable? approaches to assessing and increasing the "absorptive capacity" of financial flows earmarked to finance and implement climate policy.

1.2 Resource Access and Allocation: What are the Determinants of Conflict and/or Cooperation?
Chair: Oran Young, Room: JSC 1.03

Demand, supply, and restraint: Determinants of domestic water conflict and cooperation

Tobias Boehmelt, Thomas Bernauer, Halvard Buhaug, Nils Petter Gleditsch, Theresa Tribaldos, Gerdis Wischnath

This article focuses on one of the most likely empirical manifestations of the "environment- conflict" claim in that it examines how demand for and supply of water may lead to domestic water conflict. It also studies what factors may reduce the risk of conflict and, hence, induce cooperation. To this end, the article advances several theory-based arguments about the determinants of water conflict and cooperation, and then analyzes time-series cross-section data for 35 Mediterranean, Middle Eastern, and Sahel countries in 1997-2009. The empirical work shows that demand-side drivers, such as population pressure, agricultural productivity, and economic development are likely to have a stronger impact on water conflict risk than supply-side factors, represented by climate variability. The authors also find evidence that violent water conflicts are extremely rare, and that factors conducive to restraint, such as stable political conditions, may stimulate cooperation. Overall, these results suggest that the joint analysis of demand, supply, and restraint improves our ability to account for domestic water-related conflict and cooperation.

Water Conflict or Water Cooperation? The Discursive Dimensions of Interaction over Water Access and Allocation in Israel and Palestine

Tobias Ide, Christiane Fröhlich

In the face of climate change and environmental degradation, concerns about an increasing number of conflicts about the access to and allocation of water rank high on the political and scientific agenda. Proponents of the environmental peacebuilding approach, by contrast, claim that cross-border environmental problems facilitate cooperation. According to this view, parties can create mutual benefits via cooperation on water issues and thus achieve both conflict de-escalation and the conservation of crucial ecosystem services. We integrate both debates by developing a discursive understanding of socio-environmental conflict and cooperation, which is inspired by recent developments in political ecology, poststructuralist and constructivist conflict research as well as discourse theory. We start with the assumption that every interaction regarding water access and allocation contributes to the improvement or deterioration of intergroup relations. Since the existence and meaning of water-related problems as well as the identity of the Self and the Other are discursively constructed, the dominant discourses of the parties have to be analyzed in order to understand intergroup interaction regarding water management and distribution. We demonstrate the utility of our framework by comparing the inter-national water conflict between Israel and Palestine with an instance of inter-local water cooperation between Israeli and Palestinian villages, namely the Good Water Neighbours project. By using a most similar systems design - both cases are located in the same geographic, ecological, historical and political context - we are able to show that discourses do indeed make a difference regarding the development of water-related conflict or cooperation.

Conflicting Resource Uses and the Provision of Transboundary Environmental Goods

Tobias Belschner

Regime theory suggests that the provision of transboundary environmental goods presents a cooperation dilemma, in which states have to overcome a distribution and an enforcement problem. In many cases, transboundary environmental goods are however used for different purposes, which triggers domestic and transnational conflict between user groups rather than interstate conflict. In this paper I argue that domestic and transnational conflicts between user groups can transform interstate constellations so that distribution and enforcement problems between states disappear.

Empirically, I analyse the regulation of waste dumping in the North Sea between 1970-1995. I find that the issue is dominated by a domestic and transnational conflict between the chemical industry that used the North Sea as a sink, and users that valued different ecosystems services of the North Sea such as fishermen, the tourism industry and environmentalists. Relying on information about environmental protest and an analysis of party manifestos, I show how the alliance between user groups affected by North Sea waste dumping gained the upper hand over the industry. This shift in the domestic politics of the involved countries largely explains the gradual phasing out of waste dumping across North Sea riparian states. The analysis shows that what appeared to be an international collective action problem was largely a transnational conflict between different users of a resource.

The case study demonstrates that analyses of the provision of transboundary environmental goods must take the interactions between different uses of these resources into account since these structure political conflict over regulation. In order to do this, it is necessary to move beyond classic collective action theory, which is based on the assumption of unifunctional goods. Rather, multilevel theories are required, which take into account both synergistic and conflictual relationships between different types of resource use.

Back to the Basics: Using "Hydrosocial Cycle" to Reveal Socio-Environmental Inequalities in Turkey`s Hydroelectric Power Plant (HPP) Policies

Ramazan Caner Sayan

Water has been conventionally regarded as "H_2O" circulating within the hydrologic cycle, which connotes water merely as a natural resource to be managed efficiently through engineering-based water policies. However, water is a part of a more complex system, in which water is simultaneously a subject and object, material and discursive, natural and social that refers to its hybridity circulating within the hydrosocial cycle. Widely applied management practices such as dam constructions are built on the conventional technological paradigm that marginalizes water`s hybridity, i.e. its significance for society and nature, leading to contested issues of allocation and access to water. This paper demonstrates the clash between these two perceptions by investigating Turkey`s recent HPPs as empirical outcomes of a process in which hydrosocial relations are embedded in.

The first part introduces the conceptual framework by discussing nature/society dichotomy, in the conventional understanding of water, hybridity and hydrosocial cycle. The second part gives an overview of Turkey`s contested HPP policies which according to the locals threaten their social, cultural and economic activities, environmental integrity and access to water. The third part investigates these policies within the conceptual framework, which points that water circulates within the hydrosocial cycle, consisting of water`s biochemical and physical properties, socio-economic and ecological transformations, materiality, discursive mediation and representation within broader ideological contexts, which shapes/are shaped by HPPs. Using a mixed methods approach of qualitative, desktop and primary sources this paper argues that the complexity of water as a hybrid entity circulating within the hydrosocial cycle should essentially be the basis of water policies in order to avoid gross socio-environmental inequalities demonstrated in the Turkish case.

Drivers of Global Groundwater Use: Consequences for Access, Allocation and Availability

Kirstin Conti, Joyeeta Gupta

The Israeli-Palestinian Mountain Aquifer is a well-known example of how contextual drivers can destructively distort groundwater access, allocation, and availability. However, groundwater all over the world is in the midst of a "silent revolution," wherein the integrity of aquifers is increasingly jeopardized due to overexploitation and contamination yet these problems manage to escape public attention. Simultaneously, laws, policies and technologies are shifting patterns of access, allocation, and availability of groundwater. Existing research has made various presuppositions about what is driving changes in groundwater availability including but not limited to population growth; economic development; increased scarcity of surface water resources; anthropogenic contamination; and agricultural expansion. However, the relationship between these types of contextual issues, legal/policy processes, and actual groundwater change has yet to be explored. Further, potential

impacts to communities reliant upon groundwater for water security are unclear. Consequently, this paper explores these relationships. It responds to the question, how do legal/policy principles and instruments for groundwater at the global, transboundary, national and local levels affect groundwater access, allocation, and availability? An overview and categorization of legal/policy principles and instruments for groundwater management at each geographic level is presented. Then using examples from the Americas, Europe, East Asia and the Middle East, the paper explores how drivers of groundwater use result in shifts in access and allocation regimes. It also articulates how these uses affect the availability of the resource itself. Our framework examines the effect of principles and institutions on human behavior with respect to groundwater, given contextual driving forces, and how these impact access and allocation (IDGEC 2005, ESG 2009, Gupta and Lebel 2010, Gupta et al. 2013). This research is a new exploration of how different drivers of groundwater use and legal/policy processes affect allocation and access to groundwater resources by various, often competing user groups.

1.3   Access and Allocation in Forest Governance and REDD+
Chair: Anni Arial, Room: JSC 2.02

Navigating the Jungle: A Discursive Mapping of Forest Monitoring Approaches and their Implications for Access and Allocation

<u>Fariborz Zelli</u>, Tobias Dan Nielsen, Wilhelm Dubber, Anna Nordén

The choice of monitoring systems that allow for the credible measurement, reporting and verification (MRV) of forests and forest protection policies is a highly sensitive issue. This goes in particular for the emerging instrument of 'reducing emissions from deforestation and forest degradation' (REDD). There are ongoing debates about appropriate toolkits to measure the natural effects of REDD policies (for carbon stocks and biodiversity), but also their social and economic impacts. The latter directly relate to aspects of access and allocation, e.g. sovereignty rights, participation in monitoring processes, and monitoring of distributive effects.

A patchwork of institutions have come to discuss and apply many different monitoring approaches - ranging from international climate negotiations and multilateral development institutions (World Bank, UNDP) to public and private forestry institutions (International Tropical Timber Organization, Forest Stewardship Council), REDD funding initiatives (UN-REDD, FCPF) and numerous bilateral agreements.

The paper establishes an innovative mapping of this complexity, based on findings from an inter-disciplinary research project (BECC). We first sketch the institutional complexity and map which institutions allow or promote which types of MRV approaches. Second, we discuss different types of remote sensing, field measurement and computer modelling in terms of their assumptions, accuracy, and monitored carbon pools - but also with respect to costs and behavioural effects. Third, we assign these approaches to overarching storylines that shape the academic and policy debates on REDD.

The result of these three steps is a visualization of different discourse coalitions - each consisting of certain MRV approaches, institutions, country practices and storylines. We show that the REDD monitoring architecture is dominated by ecological modernization and neoliberal environmentalism: cost-efficient MRV approaches are promoted where considerable gains from the value chain are transferred outside of forest areas. However, a counter-discourse of civic environmentalism is gaining ground that favours more participatory MRV approaches.

Allocating Benefits, Incentivizing Change? Analyzing the (Missing) Link between Drivers of Deforestation and REDD+ Benefit-Sharing

<u>Janice Weatherley</u>, Aarti Gupta

REDD+ (reducing emissions from deforestation and forest degradation and related forest activities) is a climate change mitigation mechanism being negotiated within the United Nations Framework Convention on Climate Change. It calls for developed countries to financially support developing countries for their actions to reduce forest-sector carbon emissions. REDD+ has led to contentious debates in international climate negotiations, as well as in policy practice and scholarly analyses. Even as the scholarly literature on REDD+ is growing exponentially, certain sub-topics remain segregated by discipline. Thus, natural scientists are now intensively examining the crucial issue of drivers of deforestation, while REDD+ benefit-sharing mechanisms (i.e. mechanisms through which to share financial and non-financial benefits deriving from REDD+, including with local communities), remain the domain of the social sciences. In this paper, we bring these literatures together to undertake a broad interdisciplinary meta-analysis of the links, if any, that are assumed to exist between the multiple and diverse drivers of deforestation and varied REDD+ benefit sharing mechanisms. Deforestation and

forest degradation drivers can be direct and indirect, as well as proximate or distant. Yet whether and how these varied types of drivers are linked to REDD+ benefit sharing mechanisms, and what kinds of links are or should be feasible, remains unclear. In this paper, we conceptualize the link between deforestation drivers and benefit sharing as a central access and allocation issue. Our paper assesses how the potential linkages between these two issues are being framed in (a) scholarly analysis (through an in-depth meta-analysis of existing studies on drivers and benefit sharing); and in policy practice (through analyzing REDD+ project design documents). We conclude by assessing the implications of our analysis for developing appropriate theories of change that can promote more equitable REDD+, in both conceptual and practical terms.

Access and agency at the national-level in emerging forms of global environmental governance: The case of REDD+ in Papua New Guinea

Andrea Babon

Global environmental governance is increasingly characterised by multi-level, multi-actor, networked governance. At the same time, markets for environmental services, such as reduced emissions from deforestation and forest degradation and enhancement of forest carbon stocks (REDD+), are being promoted as effective and efficient mechanisms for addressing global environmental problems. However, these phenomena raise potential justice and equity concerns, including the ability of local communities in developing countries to participate in and benefit from new forms of environmental governance. This paper presents key findings from a study analysing how processes to formulate national REDD+ policies in Papua New Guinea (PNG) reflect diverse interests at multiple scales. Using a mixed-methods approach, combining discourse analysis, policy network analysis and the advocacy coalition framework, the study sought to identify whose 'voice' was being heard in national policy processes and whose 'vision' of REDD+ was being realised. The study found that the national REDD+ policy domain in PNG has evolved to include a diverse range of actors with influence spread among actor groups. State actors and a network of national NGOs are perceived as especially influential on domestic REDD+ policies, and are central in information exchange and collaboration networks. An equity discourse focussing on the rights of local communities and equitable benefit sharing arrangements dominates both public and policy discourse. However, a powerful coalition of actors with an interest in maintaining business-as-usual deforestation and forest degradation is constraining the agency of those actors advocating for transformational change that could lead to effective, efficient and equitable REDD+ in PNG. These findings have implications beyond REDD+ and PNG by highlighting the potential blockages to transformations in global environmental governance that exist at the level of national policy domains.

Institutional Capacity for REDD+ MRV: Ensuring forest and carbon rights through participation, accountability and transparency

Robert Ochieng, Ingrid Visseren-Hamakers, Bas Arts, Martin Herold, Maria Brockhaus

Forest monitoring is an established forestry practice. However, REDD+ (Reducing Emissions from Deforestation and forest Degradation in developing countries) has brought new demands on forest monitoring. REDD+ countries are required to Monitor, Report and Verify (MRV) REDD+ impacts and establish National Forest Monitoring Systems (NFMS) to perform MRV. The new NFMS are required to use a combination of remote sensing and ground-based methods, and provide transparent and accountable carbon estimates. Several scholars who have examined the capacity of REDD+ countries to monitor REDD+ impacts concluded that most REDD+ countries have low technical and weak institutional capacity for MRV. Subsequent research has however mainly focused on technological issues, leaving institutional capacity - i.e. the ability of existing forest monitoring to meet the institutional demands imposed by REDD+, namely accountability, transparency and participation, under-explored. This article aims to fill this knowledge gap by investigating the institutional capacity of existing forest monitoring systems. In particular, the paper aims to examine the extent to which existing forest monitoring systems are transparent, participatory and accountable. The research is part of the CIFOR-led Global Comparative Study on REDD+ (GCS REDD+), which aims to provide policy and technical guidance to REDD+ stakeholders. The paper will provide a cross-section survey of the 13 countries across Africa, Asia and Latin America under study within the GCS REDD+. Document analysis and in-depth interviews with purposefully selected interviewees will form the primary methods of data collection. With the research outcomes, REDD+ stakeholders can, where necessary, work towards improving the participatory character of forest monitoring, a prerequisite for ensuring forest and carbon rights and an equitable REDD+.

1.4 Access and Allocation of Carbon Rights and Offsetting

Who took my Carbon? Mapping spatial disparities in carbon access and allocation - A paradigm shift from global 'North-South' to local 'Urban-Rural'

Mahendra Sethi

Earth systems are increasingly becoming vulnerable to rampant use, misuse and abuse of natural resources by the anthropos, Carbon being the most critical. Across the globe, there is an unprecedented demand of fossil-carbon to fuel national economies, while it is their urban centres that act as the guzzling engines of energy and carbon rich fuels. As the world takes a rural-urban population tilt, the 21st century poses a challenge in further tinkering the internationally evident disparities in access and allocation of carbon. Traditionally, inequalities have been evaluated and negotiated from purely economic or 'state of development' perspective. This paper presents a first of its kind research to plot energy access and carbon emission allocations of over 220 nations/ territories against a spatial framework, which is more pertinent to localized earth systems governance and action.

The research builds on a strong hypothesis that the existing dualities in the international environmental policy, evident in the so called global 'North-South' economic divide, is actually an 'Urban-Rural' spatial disparity in the making. It is likely to further precipitate into a much local but complex dynamic, particularly relevant to the developing world, that faces the double challenge of rapid urbanization and environmental sustainability.

This paper is based on (i) literature study of the prevailing debate on global 'North-South', its implication and criticisms (ii) formulation of an alternative analytical framework with empirical evidence from various international datasets (for over 220 countries/ territories) supported by scientific reporting on energy access and carbon emissions (ii) discussion of issues that influence fair allocation of emissions at the local level. The research appreciates the varying spatial patterns of carbon inequity; and concludes with future pathways to achieve earth system governance, that steers the anthropocene in ensuring fair and just carbon access and allocation.

Public Opinion on Regulated Carbon Offsetting in the United States

Brilé Anderson, Thomas Bernauer

Carbon offsetting is a fervently debated policy that is being increasingly implemented by countries, subnational regions and interregional groups as a flexibility mechanism to entities' mitigation obligations. Despite the necessity of public support for the sustainability of environmental policies, little is known about how the public perceives the normative queries of carbon offsetting or their preferences for policy design. Using data collected from Amazon Mechanical Turk, this study conducted a framing experiment and a discrete choice survey to understand Americans' opinions of a nationally regulated carbon offset policy. In the former, participants were exposed to one of six frames of a national carbon offset policy that presented elitist views of offsetting: the ethicality (i.e. paying for the right to pollute), decreased incentives in industrialized countries, implementation problems, advantage of low cost, global benefit of technology transfer, or a control frame. In the latter, the survey focused on a five policy dimensions: where the offsets take place, which sectors can offset, the amount that can be offset, who monitors the policy, and the types of projects that American entities can invest in. Results illustrated that the framing of the carbon offset policy has a significant influence on the amount of supported offsetting while the latter demonstrated Americans have distinct preferences for policy design. These findings suggest that the public does have clear preferences and these should be taken into account to enhance the political legitimacy of carbon offset policies as well as foster sustainable environmental governance.

Taking stock of carbon rights in REDD+ candidate countries: An assessment of rights and obligations

Lasse Loft, Krister Andersson, Esther Mwangi

The proposed international governance structure for REDD+ will ultimately take the form of a performance-based mechanism that will provide financial compensation to developing countries. The question of how this compensation will be used and who will benefit at the national and subnational levels remains largely unanswered. As property rights represent the entitlement to benefit streams, one approach to benefit sharing is linking benefits to the rights to carbon sequestered and stored in trees. However, in most REDD+ pilot countries, forest users lack secure legal rights to access, use and manage forest resources. Clarity over tenure and resource rights in tandem with the carbon asset is critical to prevent disruptive conflicts between competing stakeholders within REDD+ countries. There is a need for regulatory systems to define the ownership of carbon in light of national or local

conditions. It is not 'a simple task to identify what amounts to property in forest carbon', and what kind of rights and obligations are attached to it. Therefore, we firstly clarify the economic nature of carbon ecosystem services as common pool resources and distinguish between the right to carbon as a property, the right to benefit, and the right to offset credits. Since the definition of property rights over natural resources is subject to national sovereignty, we then analyze how carbon rights have been conceptualized under domestic carbon legislation in six potential REDD+ countries: Cameroon, Tanzania, Brazil, Peru, Vietnam and Indonesia. We find that none of these countries have passed an explicit carbon rights legislation to date. Most of them treat carbon as a natural resource or ecosystem service under existing law. State ownership with the authority to grant use rights over these resources tend to reinforce existing inequities in access to these resources, especially affecting indigenous and local communities with customary rights.

Carbon rights and benefit sharing in a context of legal pluralism in land, forest and tree tenure: Implications for implement REDD+ in Uganda

Charlotte Nakakaawa Jjunju, Pål Vedeld

The international mechanism to reduce emissions from deforestation and forest degradation (REDD+) will require well defined property rights. However, countries with the greatest potential to host REDD+ projects are often characterized by legal pluralism, unclear and contested land and forest tenure rights. Therefore, most countries will need to clarify land, forest and carbon rights in order to participate in the REDD+ mechanism. Some have passed explicit legislation while others have opted to operate within the existing legal framework. In a context of legal pluralism, it may be easy to identify who holds rights over land, forest, trees and implicitly carbon rights in statutory terms, but it may be difficult to identify who holds full ownership or access rights as legitimized by customary institutions. Conceptualizing rights as bundles of rights and drawing on three pilot carbon sequestration projects implemented under different forest governance regimes in Uganda, we investigate the processes and challenges in allocating carbon rights and benefits in a context of legal pluralism. We show that although clear and well-defined property rights are important for securing rights and equitable benefit sharing, they are insufficient in a context of legal pluralism and weak institutional arrangements governing resource access and use. Powerful actors with access to resources (financial and human) and information tend to take advantage of contradictions in existing policies and laws to further their own interests. Carbon rights remain weak and contested; allocated on an adhoc basis, mainly to those that invest in the sequestration process rather than registered landowners. Less powerful - though legitimate rights holders tend to be marginalized, reinforcing pre-existing inequalities and alienating resource users that have traditionally accessed resources through local informal arrangements. For forest carbon not to exacerbate pre-existing conflicts, the multiple, overlapping and often conflicting claims will need to be considered and reconciled.

1.5   The Institutions and Governance of Adaptation
Chair: Harriet Bulkeley, Room: JSC 3.02

Transformations in climate change adaptation governance: The creation of adaptation as a new field of public policy

Eric Massey, Dave Huitema

Over the past decade, efforts to address the growing impacts of climate change (aka adaptation) have emerged as a cornerstone of domestic and international climate policy agendas. Amid this policy activity, especially within EU countries, researchers are questioning what concrete changes in polices are occurring at the national level and what dynamics can explain these changes? While new laws, policies and institutions have been created to deliver adaptation, supported through processes of cross-national policy innovation and learning, another interesting observation researchers have made is that adaptation is steadily emerging into a new separate and distinct policy field in a handful of European countries. Given that the emergence of new policy fields represent a large-scale shift or transformation in governance coupled with the fact that policy fields can be seen as the highest form of a state's regulatory and governing capacity over a particular policy topic, the study of their emergence strikes at the heart of how we understand the evolution of governance systems. Based upon a survey of adaptation policy in 27 European countries, this paper explores how, where and why adaptation has coalesced into a policy field. What were the forces and dynamics that shaped it? Can its emergence be theoretically and empirically mapped? To answer these questions this paper looks at policy field development through four state-centered political science theoretical frameworks (Pluralism, Elitism, Historical Institutionalism, Public Choice).The rationale is twofold. (1) Policy fields are state sponsored sets of institutional arrangements to deal with substantive societal issues. (2) Dominant

theories of policy change (Punctuated Equilibrium, Multiple Streams, Advocacy Coalition Framework)focus on explaining change within existing fields and not on their creation.

Transnational Adaptation Governance: Scope, institutionalisation and function

Johannes Stripple, Adis Dzebo

At a time when the negotiations on a future climate change agreement have lost momentum, scholars have turned their attention to the multiple ways through which transnational actors and networks contribute to public rule-making and steering. Rather than approaching the state as the only actor with purpose and authority, global climate governance can now be understood to comprise mechanisms and measures aimed at steering social systems towards abating and mitigating the risks posed by climate change. However, in contrast to an increasing focus on the role of transnational actors in mitigation governance, the transnational dimensions of adaptation have received scant attention. Despite a plethora of institutions, hundreds of adaptation projects and billions of dollars of project finance, transnational adaptation governance (TAG) is not well understood. The aim of this paper is to give an account of transnational adaptation governance in terms of its scope, its institutionalisation and its main functions. Drawing on 18 regional and global projects, this paper analyses the emergence of transnational adaptation governance, in terms of initiating actors, its development over time and the focus of the projects. Compared to transnational mitigation governance, TAG is more firmly anchored within the United Nations Framework Convention on Climate Change. It is predominantly organised as projects and typically managed under a shadow of hierarchy of the climate regime. Notwithstanding, this paper indicates an emergence of other actors in adaptation governance, including NGOs, the business sector as well as local and regional governments. As a consequence of the scaling up of climate finance - as signalled by the developed countries' pledge to raise $US 100 billion annually by 2020 - there is reason to believe that this new form of adaptation governance will increase significantly and, possibly, lead towards new and more effective paths to a successful climate change adaptation.

Access to natural resources and institutional conditions for adaptation to increasing climate risk in upland communities in Thailand and Vietnam.

Malin Beckman

It is common to blame floods and disaster risk on land use changes in the mountains, with reforestation prescribed as the solution. Our research explores the dynamics of disaster risk from the perspective of upland communities, and aspects of their exposure, vulnerability, and resilience. We focus on the changing land use, natural resources management and livelihoods in the uplands, aiming to understand how socio-political and economic factors interact with climate factors to influence disaster risk and adaptation. Theoretically the study draws on literature on political ecology, social-ecological vulnerability and resilience, in a context of disaster risk reduction and climate change adaptation.

Qualitative fieldwork was conducted in two provinces in Thailand (Chiang Mai and Nan) and two provinces in Vietnam (Cao Bang and Thua Thien Hue). In each province two-four villages were selected. The villages were selected as examples of different socio-economic contexts, with different types of commercialization, different relation to the forests, different institutional infrastructure, and different governance structures. Climate related hazards have also been affecting them differently.

The study identifies a series of institutional factors constraining the possibilities for upland farmers to enter development paths involving less risk and possibilities of managing losses. Extension and credit systems are insufficiently adapted to upland conditions and climate risks. Forest protection policies together with policies of increased production for the market are resulting in a lack of land for food production and increased vulnerability for the poorest households. Farmers are increasingly maneuvered into production structures that increase loss and damage in floods and storms. Access and control over forest resources is playing an increasing role in determining livelihood resilience.

A new modelling approach for political (in)stability as a result of resource scarcity

Aled Jones, Irene Monasterolo, Davide Natalini, Victor Anderson

In 1972, the Club of Rome published The limits to growth (Meadows et al 1972), using system dynamics theory to analyse the long-term causes and consequences of growth in the world's population and economy. The report's overall message was that a business-as-usual scenario would lead to global economic collapse around the middle of this century.

Moving from a system dynamics analysis, a new modelling framework has been developed - the Global Resource Observatory (GRO). GRO will contribute understanding to the multidimensionality and non-linearity of global resources insecurity, while highlighting the resources/human activity nexus. GRO consists of a world-scale system dynamics model to investigate the current interaction

between resources and the economy (updating World3 to include price dynamics) and an agent-based model to investigate possible future economic growth pathways. The agents in the model are the countries.

GRO's main objective is to investigate the effect of resource constraints on short-term GDP growth and to explore country level interactions. The outputs from GRO will provide policymakers with clear information on a range of scenarios that will explore the impact of possible (likely) events.

By exploring the links between countries (including the trade of scarce resources), GRO will be able to bring together social indicators with resource data to model potential political instability that may arise. Embedded within a systems dynamic model the various feedback loops between resources and the economy will be modelled.

This paper presents initial results of the global systems dynamic model and an early pilot of the agent based model. In addition the following will be made available:

a new global database of national demand, supply and flow figures relevant to global resource security

a global 'debt map' for resource availability, specifying for each UN country the current supply of resources that can be found within its borders compared to current consumption.

The Optimization of Water Instruments for events of Drought and Flood

Margot Hurlbert, Joyeeta Gupta

It is anticipated that climate change will increase the variability of climate resulting in a higher frequency of droughts, floods, and extreme climate events. These changes in climate will impact people's access to and allocation of water. At times there will be excess moisture and flooding; longer and more intense water shortages and droughts will occur. Can policy instruments correct problems of access and allocation during these extreme events, or do they exacerbate water shortages and events of flooding? Using the Drivers-Pressures-State-Impacts-Responses (DPSIR) method and linking this to the institutional analysis model of O. Young, this paper analyzes water instruments in the context of extreme events of drought and flood in the study areas of Alberta and Saskatchewan, Canada, Mendoza, Argentina, and the Elqui River Basin in Chile.

Water instruments include regulatory, market, suasive, and management tools, policies, and programs including such things as insurance, disaster assistance, and local watershed management. The effectiveness of these instruments in relation to events of drought and flood are assessed in the context of drivers. Social, environmental, and economic drivers inform this analysis including the increasing liberalization of trade and reduction in size and function of government. Particular attention in this assessment is paid to issues of equity defined in terms of how basic needs/rights are affected (access) and the distribution of resources (allocation). Events of flood and drought impact all people, however, poor people are inordinately impacted by drought rather than flood; conversely, rich people experience events of flood in a much more direct manner than drought. Based on this analysis, proposals for redesign of policy instruments are made.

1.6   Global Environmental Justice I
Chair: Peter Newell, Room: JSC LT

Private sustainability governance and global justice: assessing the distributive outcomes of private institutions from the perspective of human capabilities

Agni Kalfagianni

Contemporary global politics is characterised by an increasing trend towards experimental forms of governance, with an emphasis on private governance. A plurality of private standards, codes of conduct and quality assurance schemes replace traditional intergovernmental regimes in addressing profound global environmental and socio-economic challenges ranging from forest deforestation, fisheries depletion, climate change, to labour and human rights concerns. While this trend has produced a heated debate in science and politics, surprisingly little attention has been paid on the effects of private governance on questions of distribution and justice. This is highly problematic. At the beginning of the twenty-first century global inequalities are greater than ever before, while rapid economic, social, political and environmental changes threaten to further derail sustainable development and humanitarian objectives. If private governance creates or intensifies some of the pressing global inequalities (e.g. food security), and alleviates others (e.g. environmental degradation), we need to know which aspects need to be strengthened and where appropriate state interventions are necessary and desirable for a sustainable and just earth system. This paper proposes a framework to examine and classify the distributive outcomes of private governance institutions for sustainability through the lenses of one particular approach to distributive justice, the capability approach (CA). The capability approach is a normative framework that evaluates institutions according to their impact on

peoples' effective opportunities to lead a valuable and dignified life, i.e. their capabilities. The paper identifies four broad types of capabilities shaped by private governance institutions globally, namely, material (e.g. market access), social/cultural (e.g. preservation of cultural identity), environmental (e.g. access to sustainably managed resources), and political (e.g. freedom to make and appeal decisions). Empirically, the paper focuses on agrifood one area of the earth system where the controversy regarding the distributive concerns of private governance is particularly pronounced.

International Biodiversity Conservation Policies and Global (In)Justice: The Upsides and Downsides of the Global Environment Facility

Ina Lehmann

The Convention on Biological Diversity (CBD) attempts to curtail the overexploitation of biological resources through various conservation requirements for its parties. However, while global ecological interdependencies turn conservation into a universal benefit, the costs of restricting the use of natural resources mostly accrue locally. Since most of the world's biodiversity is concentrated in developing countries the world's poorest bear the greatest burden of conservation and at least partly so for the sake of all humankind. This asymmetry has significant global justice implications and any attempt to deal with them has to address the question how and by whom biodiversity conservation is implemented and financed. One of the most important global institutions in this regard is the Global Environment Facility (GEF) as the financial mechanism of the CBD. Therefore this paper asks in how far the GEF's policies in the framework of the CBD promote globally just solutions for biodiversity conservation.

In order to answer this question the paper proceeds in two consecutive steps. First, it develops a normative-theoretical framework for assessing global justice in the biodiversity issue area. A review of the global environmental justice literature yields three core dimensions of justice that will guide the empirical analysis: recognition, participation and distribution. The paper discusses what each of them requires in the case of biodiversity policies so that empirical analysis can assess in how far they are realized in practice. The paper's second step applies this analytical framework to the GEF's biodiversity portfolio. More particularly, it looks at selected cases of GEF biodiversity conservation projects in India. By analyzing to what extent the projects live up to the requirements of the different theoretical justice dimensions, the paper shows that there is a huge variation among the different projects but that on average GEF projects do not foster just biodiversity conservation.

Local Justice, International Norms, and Large Dams: the effect of the Merowe Dam on the Manaseer people

Mark Zeitoun, Asim al Moghraby, Azza Dirar

The presentation tests the influence of international norms upon communal-level justice related to large dams. Dominant water norms such as the Dublin Principles and Integrated Water Resources Management have attracted significant criticism for many reasons, including the relegation of social issues and emphasis of economy, under a pretense of seeking their harmonisation. The construction of large dams puts these issues into sharp focus, with their ability to sustain massive agro-industry and produce renewable electricity (hydropower) – along with the inevitable displacement of people and change in the river's flow. The social impact of large dams has been most directly addressed through the 2000 World Commission on Dams report, which emphasised the importance of considering local people in the process of planning and compensation. Such norms apparently matter little to the thousands of Sudanese families displaced in 2008 by the Merowe Dam on the Nile, however. Local conceptions of justice are based upon traditional hierarchies and other social structures further ignored by the national government. The compensation offered to such families is a pragmatic solution for some, but dishonourable and unjust for the many others that continue to protest the treatment of the local people. Based on an ongoing project with a joint Sudanese-UK research team, the presentation will expose initial findings of local perceptions of justice, and the (limited) indirect influence of international norms.

A Climate Injustice Model for India

Kavya Michael, Vamsi Vakulabaranam

Debates on emission reductions are mostly dominated by claims of differentiated responsibilities among countries in the process ignoring the inequalities among different groups within countries, their by ruling out non-marginal emission reductions from their agendas. This paper makes an analysis of how the impressive growth rates in India have failed to translate into well being for majority of the masses by studying the household emission structure of the country. Our results expose the high end consumerist life-style of the elite classes encroaching the carbon space and wellbeing of an impoverished mass, plagued by significant energy poverty. Our analysis strongly establishes the lack

of accountability in an unequal system which can refrain 'a polluter from polluting' as the major hurdle in non marginal mitigation. The paper rightly identifies the need to confront the primary capitalist motive of growth and examines the possibility of an alternative strategy "sustained de-growth".

We arrive at a Climate Injustice Parameter for different classes by taking into account their respective shares of emissions for different household activities such as cooking, electricity consumption and transport.

We find that there is a spectacular jump in the inter class component of emissions inequality from a mere 2.5% of the aggregate inequality in 1994 to about 20.0% in 2010.Based on the decomposed analysis of the emission structure the study identifies the possibility of shift in consumption choices at household level which can deliver effective degrowth strategies for the country as well as increased well being for the masses.

Climate Change, Adaptation and Aid in Small Island Developing States

Carola Betzold

Small island developing states (sids) are disproportionately affected by climate change. As they already feel the negative impacts of a changing climate, adaptation has become unavoidable. Adaptation, however, is costly, and with limited capacity, sids depend on external assistance to deal with the negative consequences of climate change. The international community has repeatedly promised sids to financially support adaptation activities; accordingly, aid for adaptation to sids is expected to increase considerably.

But do all island nations have access to financial assistance for dealing with climate change? Data from the oecd for some 40 independent small island states suggest that the level of aid earmarked for climate change adaptation varies substantially, in terms of both, aid per capita, and aid for adaptation as percent of all aid-and it is not necessarily the most vulnerable and needy island nations that receive most funding.

How, then, is climate aid distributed, and why? Applying insights from the literature on aid allocation to funding for climate change in island countries, the paper argues that vulnerability is only one factor to explain the distribution of adaptation aid. Other factors, such as good governance or donors' economic interest also come into play. Empirically, the paper uses a newly compiled dataset containing oecd data on aid; physical exposure to environmental risks; and other variables, including level of democracy, socio-economic situation, and globalisation, from 2002 to 2012. The statistical analysis suggests first, that adaptation aid is volatile; and second, that vulnerability is not a robust predictor of the level of environmental aid.

The paper thus brings together research on aid allocation with work on vulnerability and climate change adaptation, using the example of small island states-which are not only disproportionately affected by climate change, but also tend to rely heavily on financial support from the outside.

Tuesday, 1 July, 16:00-17:30

2.1   Knowledge, Governance and Institutions
Chair: Leslie King, Room: JSC 1.02

Blocking Change: the Drag of Status Quo Fisheries Institutions

Mark Axelrod (GOOGLE HANGOUT)

Under what conditions can international environmental institutions survive changing power alignments? This paper argues that relatively declining powers and private domestic actors play an important role in preserving the status quo because they are eager to retain advantages that existing institutions afford them. This effort to block change affects fisheries negotiations, in particular, by allowing powerful actors to avoid new rules once an institution is in place.

I hypothesize, first, that relatively declining fishing powers attempt to retain past institutional successes, while emerging fishing powers seek to alter the status quo. Second, negotiating positions reflect not only a country's position in the world, but also the incentives faced by domestic fisheries actors who wish to gain, or fear losses, from new agreements. Therefore, I hypothesize that powerful beneficiaries in domestic politics push relatively declining powers to support the status quo when those private actors benefit from highly legalized past agreements and participate in foreign policy decisions.

I test these hypotheses by exploring US and EU approaches to fisheries treaty negotiations through archival research and interviews with fisheries negotiators. The evidence supports hypotheses that superpowers seek to protect earlier deals more intensely when they negotiate with rising fishing powers, and when private parties are most influential. As expected, both governments are particularly

protective of the most complex, and most legalized, earlier agreements.

Who is navigating the transition to community-based marine resource management in Solomon Islands communities?

Kirsten Abernethy, Per Olsson, Orjan Bodin

In Solomon Islands, community-based arrangements for marine resource management are promoted by government, are advocated for by non-government actors, and are seen by both as the best option to achieve sustainable and secure inshore fisheries and aquatic resources. We use a process-based methodology to empirically examine the initiation and implementation of community-based marine resource management (CBRM) in multiple case study sites over time across Solomon Islands. We use insights from the literatures on diffusion of innovation, adaptive cycles and social networks to first uncover key factors and processes that facilitate or hinder (the non-linear) movement through the CBRM innovation process. Second we investigate who and how key actors influence these factors and the transitions required to build active support for CBRM.

We show that key factors for movement through phases of CBRM innovation include: the matching of CBRM to a problem in the community, development of legitimate institutions and decision-making processes, consistency of community communication and learning, access to legitimate forms of information, and witnessing of benefits, alongside community leadership, trust and cohesion. We show that key actors within and outside the community have a vital influence on these factors and processes. We examine key actors characteristics, their aspirations, risk-taking behaviour, communication skills, innovativeness, influence and problem solving capacity. We find that the number and combination of key actor types as well as their networks play a significant role in a community's transition towards community-based marine resource management.

Knowledge as a resource: enhancing the democratisation of knowledge production in transdisciplinary research partnerships for sustainable development

Cordula Ott

Better access to knowledge and knowledge production has to be reconsidered as key to successful individual and social mitigation and adaptation strategies for global change. Indeed, concepts of sustainable development imply a transformation of science (Lubchenco 1998; WBGU 2011 and 2012) towards fostering democratisation of knowledge production as a contribution to the development of knowledge societies as a strategic goal (UNESCO 2005). This means to open the process of scientific knowledge production while simultaneously empowering people to implement their own visions for sustainable development. Advocates of sustainability science support this transformation. In transdisciplinary practice, they advance equity and accountability in the access to and production of knowledge at the science-society interface (Hirsch Hadorn et al 2006; Hirsch Hadorn et al 2008; Jäger 2009; Adger and Jordan 2009; KFPE 2012). UNESCO (2010) points to advancements, yet Northern dominance persists in knowledge production as well as in technology design and transfer (Standing and Taylor 2007; Zingerli 2010). Further, transdisciplinary practice remains experimental and hampered by inadequate and asymmetrically equipped institutions in the North and South and related epistemological and operational obscurity (Wiesmann et al 2011).

To help identify clear, practicable transdisciplinary approaches, I recommend examining the institutional route (Mukhopadhyay et al 2006) - i.e., the learning and adaptation process - followed in concrete cases. The transdisciplinary Eastern and Southern Africa Partnership Programme (1998-2013) is a case ripe for such examination. Understanding transdisciplinarity as an integrative approach (Pohl et al 2008; Stock and Burton 2011), I highlight ESAPP's three key principles for a more democratised knowledge production for sustainable development: (1) integration of scientific and "non-scientific" knowledge systems; (2) integration of social actors and institutions; and (3) integrative learning processes. The analysis reveals ESAPP's achievements in contributing to more democratic knowledge production and South ownership in the realm of sustainable development.

Delivering environmental and societal benefits through knowledge integration: the case of water management

Carly Maynard

Approaches to river management have changed in recent decades from hard engineering based methodologies which involved only 'certified experts', to soft-engineering approaches which have acknowledged the benefits of participation by external stakeholders. More recently, the democratic rights of individual members of the public and 'concerned groups' have been championed as important goals, and supported by calls from water management legislation (most notably the EU Water Framework Directive). In this new approach, it is suggested that high-level participation of 'non-

certified experts' is not only beneficial, but necessary in order to deliver effective water governance. However, while consultation is widespread within river management, as is the claim of the utilisation of high-level participation, true integration of 'expert' and 'non-expert' knowledge is still rare. In order to address these issues, a study of the role of experiential and scientific knowledge integration for a management problem on the River Derwent, Northumberland, UK, was combined with a broader scoping assessment of practitioners' approaches to knowledge integration in river management. The latter project draws on case studies from the UK and Europe, while the Derwent study focuses on one detailed case, in order to consider the problem at a range of scales. The research aimed to assess the value of fully integrating a range of knowledge types for decision-making in order to improve access to the process, for those who are affected by it, and to deliver effective resource management and water governance proposals. Furthermore, the findings address the questions of why less in-depth approaches to knowledge integration in river management persist, and the implications this has for access by 'non-experts'. The study is concluded by offering a number of recommendations for high-level knowledge integration in environmental governance.

Finance Ministries in Global Climate Governance - Lessons from the Climate Finance Negotiations

Jakob Skovgaard

The international climate negotiators predominantly come from environment ministries, but other ministries are generally also involved, both as participants in the negotiations and in defining government negotition positions. These ministries include ministries of energy, foreign affairs, development, finance and economics. Their involvement raises the question of how these ministries influence global climate governance. As global climate governance is increasingly influenced by economic concerns, the role of finance ministries is particularly important. Finance ministries are simultaneously important veto actors when it comes to defining the national negotiation position (being able to veto positions which increase expenditure) and essential for the transformation to low-carbon societies, nationally as well as globally.

Using the case of the climate finance negotiations, the paper argues that finance ministries have influenced the positions of developed countries in different ways: in some developed countries, finance ministries have defined climate change as an important policy problem and have – when it comes to the definition of the country position in the negotiations – been willing to accept significant contributions to climate finance. Some of these finance ministries – notably the UK Treasury – have also played a proactive role in global climate governance, attempting to influence other finance ministries and economic institutions such as the OECD and the IMF. In other developed countries, finance ministries have defined climate change more as an expenditure to be limited, leading to limit their country's contribution to climate finance. Importantly, the difference in finance ministerial attitude cannot be explained by exposure to the economic crisis or austerity policies, but rather in terms of organizational culture of the finance ministry. The findings of the paper have repercussions for the global climate governance literature particularly as the involvement of finance ministries add another dimension to the fragmentation of the global climate change institutional complex.

2.2 Local and Rural Adaptation
Chair: Andy Newsham, Room: JSC 1.03

Adapting to climate change through citizen oriented adaptation governance: a framework and examples from The Netherlands

Dries Hegger

The governance of climate change adaptation is a hot topic both in literature and in practice. An emerging literature discusses roles and responsibilities of - public and private - actors in this still relatively new policy domain. However, this literature often treats citizens as 'black boxes' rather than making their potential roles explicit. This can be considered a pitfall, since in several adjacent domains of environmental governance their role has often turned out to be crucial - both positively and negatively - in terms of reaching policy goals of governments, business and civil society actors. To address this knowledge gap, the current article develops a framework for conceptualising the potential role of citizens in the governance of climate change adaptation. Based on a literature review, the paper identifies five ideal-typical ways for approaching citizens in the field of climate change adaptation: i) the passive recipient; ii) the adaptive citizen; iii) the political consumer; iv) the conspicuous consumer; and v) the mainstreaming consumer. The paper subsequently discusses the potential scope for each of these roles in three Dutch adaptation domains: flood risk management; fresh water supply and urban heat stress and subsequently makes a preliminary assessment of the extent to which this potential is

actually used. The paper concludes that at least in The Netherlands there would be scope for new forms of more citizen oriented adaptation governance. These new forms of governance can be expected to be conducive to reaching adaptation goals of both public authorities and private actors.

Who governs climate adaptation? A meta-case study exploration of public and private responsibilities for urban adaptation to heavy rainfall, sea level rise and heat events

Heleen Mees, Peter Driessen, Hens Runhaar

The allocation of responsibilities between the public and private sectors has become a key urban governance issue in dealing with the impacts of climate change. While this issue has been explored conceptually to some extent, empirical studies are scarce and have not yet been performed in a systematic manner. This paper addresses the research question of who governs urban climate adaptation, how and with which outcomes, by offering a synthesis of three empirical studies in which governance arrangements between public and private sectors are analyzed and compared. Each study contained an in-depth comparative case- study analysis of arrangements for adaptation measures in frontrunner cities in Europe and North America: 1) green roofs for water retention purposes, 2) adaptive flood risk measures for water safety purposes, and 3) a selection of measures for reducing heat stress. In total, 10 cases were analyzed based on data derived from numerous policy documents; from 94 stakeholder interviews; and from two multi-stakeholder workshops. The meta-analysis offers insights into emerging patterns of urban climate adaptation governance arrangements. Furthermore, it offers a first evaluation of the performance of identified types of governance arrangements (hierarchical, market and interactive) in terms of effectiveness, legitimacy and fairness. Finally, conclusions related to the types of responsibilities of local public authorities are drawn, showing how indispensable they are for both adaptation planning and action. The paper also pays attention to the responsibilities of various commercial and non-commercial private actors and their specific contributions in urban climate adaptation. In the end some practical guidance is provided for the design of local urban governance arrangements in terms of responsibility divisions and supporting policy instrument mixes.

Floods, droughts and the human response: valuing access in understanding the differentiated impact of environmental change

Mark Tebboth

Interest in the impact of anthropogenic climate change on population distributions and migration has grown steadily amongst policy makers and academics over the past quarter of a century. Underpinning this interest is a concern that increased environmental stress (brought about by anthropogenic climate change) will dramatically increase the number of people migrating, potentially threatening regional and global security. Using two villages in Anhui Province, China as a comparative case study, this paper investigates the social impact of two types of climatically driven environmental change (floods and droughts) with a specific focus on the role of mobility. The study employs an adapted version of Leach et al's (1999)'Environment Entitlements Framework' to understand the processes, characteristics and outputs that contribute to resilience. Specifically the research examines how social actors gain mobility endowments and deploy mobility entitlements (in the form of migration) to alter capabilities and improve wellbeing in the context of climatically driven environmental change thus influencing resilience.

The results highlight the importance of migration in mediating the impact of the environmental change on affected individuals, households and the wider community. Crucially, the research shows that significant intra-community variation exists: different households and social groups experienced the climatically driven environmental change differently. This within community heterogeneity can be attributed to the differentiated abilities of households to gain and maintain access to a multi-faceted basket of rights and resources. These rights and resources are used as a buffer in times of hardship and mediate a households' ability to manage and respond to shocks. The paper concludes by arguing that a focus on the ability to gain and maintain access to a range of rights and benefits is vital to understand the differentiated impacts of environmental change and the human response.

Adaptive capacity and water governance in the Eastern Cape Province, South Africa

Kevin Grecksch

Successful adaptation to climate change requires flexible adaptation strategies which consider regional ecologic, economic and social circumstances. South Africa, being a semi-arid country faces water resource constraints. The projected impacts of climate change in the Keiskamma River Catchment, Eastern Cape Province, South Africa, are, for example, changes in rainfall with effects to the streamflow, salt water intrusion, decreasing water quality due to run-off and erosion and droughts. This paper uses an existing framework, the Adaptive Capacity Wheel (ACW), complemented by two

additional dimensions: adaptation motivation and adaptation belief. The objectives were first to assess the adaptive capacity of water governance in the study region, and second, to show how the ACW can be used as an approach and a communication tool with stakeholders to identify strengths and weaknesses. Based on this, a further objective was to discover what lessons and recommendations can be drawn that could help water experts and stakeholders in the future. The results show a low adaptive capacity and that the addition of the psychological dimensions was valuable. However, it is important to look closely at each dimension assessed by the ACW. The key recommendations are: to ensure better coordination across and within governmental levels; to raise awareness, capacity and skills among decision makers and the public; and to reduce the lack of political will to overcome adaptation barriers.

2.3 Legitimacy, Accountability and Fragmentation in Environmental Governance
Chair: Carola Betzold, Room: JSC 2.02

Institutionalism Revisited: Explaining Fragmentation in Global Environmental Governance and the Consequences for Legitimacy and Participation

Fariborz Zelli

In recent years, significant progress has been made in scrutinizing an emerging phenomenon of global environmental governance: the institutional complexity or fragmentation of different issue areas. This complexity matters, also for questions of access and allocation. The influx of clubs, hybrid and transnational regimes alters the institutional centres of gravity in different environmental domains. It thereby shifts aspects of authority, legitimacy and participation across the overlapping governance processes.

Still, beyond conceptual contributions under different headings (regime complexes, polycentricity, fragmentation), institutionalist scholars only took modest steps to advance this sprawling debate towards theory-driven analyses, be it from a traditional or from an interpretivist angle. The paper argues that such theoretical approaches would not need to reinvent the wheel. It introduces a framework that builds institutional fragmentation into neoliberal, sociological and discursive strands of new institutionalism.

On the one hand, the degree of institutional fragmentation may be explained or understood by key categories of these theories: constellations of power, situation structures, competing knowledge claims and (contested) hegemonic discourses. On the other hand, institutional fragmentation qualifies some of the effects these theories ascribe to institutions: their capacity to lower transaction costs, to enhance social inclusion and legitimacy, to alter actor's preferences, or to spread new norms.

The potential of each of these re-framed institutionalist assumptions is illustrated with findings from different research initiatives within the Earth System governance project. These examples include: the effects of new energy and technology clubs on the authority and legitimacy of the UN climate regime; the evolution of rivalling discourse coalitions in the global governance on the access to genetic resources; the widening of participatory and capacity gaps through the arrival of new funding institutions in global forestry governance.

Legitimacy in fragmented global environmental governance: Experience from the global South

Marija Isailovic

Research and the practice of negotiations and agenda setting in global environmental governance have shown that differences in opinions, interests and norms as well as access to resources between the global North and global South are still apparent and take a central position in shaping future sustainable governance in many issue areas of world politics. However, the concept of North-South dichotomy primarily focuses on nation-states and ignores intra-states variations, transfer of power to micro levels as well as networked or hybrid forms of governance that cannot fit in any of the two categories. Within this transforming and more fragmented political landscape in global environmental governance the new legitimacy concerns have been raised. However, much of the research stays confined on exploring the legitimacy of fragmented global environmental governance from the North-South divide perspective and its representations in politics, while there is a little critical engagement with the role of emerging forms of governance in the southern hemisphere as both the subjects and objects of governance and their interaction with the states in the global South.

Accordingly, using interpretative methods and in-depth study cases, this paper focuses on interaction between the states in the global South with hybrid forms of governance in order to see how legitimacy is performed, on what basis it rests and by which procedures it is made thinkable by different forms of governance in the global South. The study is based on comparative analysis of biodiversity and ocean governance as two representative cases of different degrees of governance fragmentation and focuses

furthermore on India and its interaction with emerging forms of governance in the Asia-Pacific region as an in-depth case study. This research will shed light on legitimacy of environmental governance and provide highly relevant knowledge for future sustainable governance from the global South perspective.

Conceptualising "Accountability" in Global Environmental Governance: Can there be a Single Definition?

Teresa Kramarz, Susan Park **(GOOGLE HANGOUT)**

The system of global environmental governance (GEG) has been characterized by fragmentation and duplication of efforts, dispersed political authority and weak regulatory influence. A widening gap between capacities and needs has created rising demands for accountability from institutions, principals and constituencies on the ground. Yet, as Najim and Halle (2010) have argued, GEG has been characterized by a culture of unaccountability. This paper undertakes a conceptual brush clearing exercise to identify how accountability has been understood in global environmental governance. It maps the forms and uses of accountability across the various regimes and actors in global environmental governance to address in-put and out-put, horizontal and vertical, and supply and demand types of accountability. In doing so the paper examines whether there is a definition of accountability that can be applied to global environmental governance based on multiple stakeholders, multiple levels of governing and multiple problems that have different temporal and spatial trajectories. In short, we seek to provide an overarching concept of accountability in global environmental governance.

Fragmented discourse and marginalized public in the mediatized politics: How the media construct legitimacy of climate change governance?

Shinichiro Asayama, Atushi Ishii

Climate change is one of the most pressing global environmental issues that modern democracies face with. It is by nature – both physically and politically – a "global" phenomenon, but it is also "local" phenomena because of different climate impacts in each region and of different political, social and cultural contexts in societies. Therefore, it requires "multi-level governance" in global, national and local scales. Governance of climate change calls for the globally harmonized but locally differentiated responses at same time, encompassing international negotiations, national policy strategies, and individual behavior changes. As a consequence, the tension between global and local context is raised. Considering the linkages of global and national arenas, the media play a significant role to translate the global nature of climate change into a discourse that suits the national context of media and society. In this paper, we argue policy implications of the role of media both in global and national climate governance.

In light of "mediatization of politics", the media has become part of the fundamental nature of contemporary politics, and thereby change the meaning of legitimacy and/or authority of governance. In this view, the media is to be the discursive place to construct how and who should govern what. Since the media entail "domestication" processes to translate global to local, legitimacy of climate governance is transformed between global and national politics. It might function to disrupt international cooperation and fragment discourses among nations. And besides, the media have a power to socially construct the "expert", that is, who has a legitimate voice to speak for the climate. As the media have the tendency to follow the "authority-order", the media might marginalize the role of civil societies, in turn, reconstruct the hierarchy of political-order in classical-modernist government.

A network perspective on fragmentation in the global climate governance architecture

Oscar Widerberg

This study applies a network perspective to map and measure the degree of fragmentation in the architecture of global climate governance. While several observers note the increasingly complex web of institutions and actors active in global climate governance, few have gone beyond exploring dyadic relationships between institutions or listing organizations on the basis of expert opinion. To enable a more holistic view of the global climate governance architecture, this study uses a web-crawler to create a Virtual Policy Network (VPN) with organizations as nodes and hyperlinks as edges. It then describes the network by measures such as: most central actors, the presence of groups or cliques, and types of organizations that are more likely connect. The preliminary results show more than a 1000 organizations active on a global level in a network with relatively low density and modularity. International Organizations appear to have central roles but also a few NGOs and countries are highly connected. The article also discusses what the structural properties could mean in terms of governance function and power. Finally, the degree of fragmentation is established and offers a framework for

other scholars to compare degree of fragmentation across different policy domains.

2.4 Whose Water Security? Examining the Justice Dimensions of Water Governance
Chair: Marisa Goulden, Room: JSC 2.03

The paracommons of yet-to-be conserved natural resource losses, wastes and wastages; access, allocation and liminality

Bruce Lankford

The efficient use of natural resources is key to a sustainable economy, and yet the complexities of the physical aspects of resource efficiency are poorly understood. In a recent Earthscan book, the author analyses resource efficiency and efficiency gains from the perspective of common pool resources, applying this idea particularly to water resources and its use in irrigated agriculture. Forest resources are also discussed.

In a world of increasing scarcity, the tracking, amount and ownership of 'saved' resources while controlling for rebound (where savings lead to consumption elsewhere) will be of increasing importance as exemplified by Norris (2011) "... the United States Supreme Court's recent decision in Montana v Wyoming brings to the forefront one of the most complicated and contested facets of irrigation efficiency: who owns the rights to the conserved water?"

The paper proposes the concept of "the paracommons", through which the savings of increased resource efficiency can be viewed. In effect this asks; "who gets the gain of an efficiency gain and what determines these allocations?" By reusing, economising and avoiding losses, wastes and wastages, freed up resources are available for further use by four 'destinations'; the proprietor, parties directly connected to that user, the wider economy or returned to the common pool. The paracommons is thus a commons of - and competition for - resources salvaged by changes to the efficiency of natural resource systems. Ideas of complexity and 'liminality' will also be explored signalling the in-betweenness of systems caught between overly optimistic prefigurations of future efficiencies and somewhat disappointing outcomes.

Water Security in Greater Maputo: Infrastructural Ideals and the Role of Informal Service Providers

Maria Rusca, Klaas Schwartz, Mireia Tutusaus

The provision of water services in Greater Maputo is at a crossroads. At current, water supply is provided by a formal utility (38% coverage) and is augmented by other service modalities (small-scale independent providers, re-sale of water, etc.). Over the past decades these small-scale water supply modalities have developed into relatively professional and reliable service providers. Recently, however, formal water organizations in Maputo have initiated ambitious service provision expansion plans for the city. These expansion plans involve approximately 250 million euro of investment in infrastructure financed by the World Bank, Dutch Government and French Government. If these plans come into effect, it will largely push out the small-scale providers and other service arrangements that currently provide water to 62% of the population.

The development of this expansion project is largely argued by emphasizing the achievement of water security. Water security is thus to be cemented through large scale infrastructure and formal water providers. In this paper, we critically assess this strategy to ensure water security in Greater Maputo. First of all, the ideal propelled by the formal water organizations may not be realistically implementable in Greater Maputo. How will a utility that is already struggling to provide 38% of the population with potable water manage to do so for the entire city? Moreover, under this strategy, alternative suppliers lack a mandate to provide services where the formal utility fails to do so. The approach appears to neglect the role that small-scale and informal water providers have played and can play in ensuring water security. The paper concludes by discussing the role of small-scale and informal service delivery mechanisms in ensuring water security as a complement to formal service delivery.

Transboundary Water Justice: Towards fair access to and allocation of international transboundary waters.

Mark Zeitoun, Jeroen Warner, Naho Mirumachi, Nathanial Matthews, Karis McLaughlin, Melvin Woodhouse, Ana Cascao, Tony Allan

This presentation explores fundamental allocation and access issues between states sharing transboundary water resources. It does this through a combined reading of two main bodies of

research: critical transboundary water interaction analysis (including hydro-hegemony, and the co-existing conflict and cooperation of the Transboundary Water Interaction NexuS), and various aspects of social justice (including the different strands (e.g. utilitarian or egalitarian) of justice, procedural and representational justice, and 'water justice' at the sub-national level). The implications for transboundary analysis and diplomacy efforts are grouped together under the themes of process, outcomes (distributive justice, or allocation), and structural concerns (which partly determine access and ability to influence diplomatic initiatives). These include the shortcomings of analysis and policy based on unfounded assumptions of equality between actors, and the excluding effect of the legitimisation of particular concepts of justice over others. As power asymmetry is seen to enable or disable justice claims and conflict resolution efforts, the analysis asserts the importance of ensuring equitable outcomes as a pre-condition for inter-state transboundary water cooperation. Similarly, water conflict resolution is found to be a more fair process than conflict management, and is found to be supported only to a limited extent by International Water Law. A number of analytical tasks are suggested for future research and policy, including a call to scrutinize the source of legitimacy of strands of justice invoked, and the relevance of clarifying the actual audience targeted by water diplomacy efforts, i.e. water security for who? Given the very many perspectives on justice that are taken, the analysis also suggests that potential bias in research and diplomacy would be reduced if all involved openly stated the morals underpinning their understanding of 'justice'. Evidence is provided from the Nile, Jordan, Tigris and Ganges rivers.

Virtual Allocations: Expanding the Framework of Hydro-Hegemony to Inform Virtual Water Trade

Rebecca Farnum

This paper investigates the relationship between access to water resources, global trade patterns, and power through the lens of virtual water and hydro-hegemony. "Virtual water" has been defined by Tony Allan as "the water needed to produce agricultural commodities," with recognition that the term could be expanded to include other commodities as well (2003). Virtual water trade refers to the ability of countries to trade "water" by importing and exporting goods requiring water for production, rather than actual water.

Proponents of virtual water trade argue that food trades from water-rich, arable land to arid land can help to enhance the arid area's food and water securities, freeing up local water resources for other uses. Critics of the virtual water discourse are concerned that highlighting markets and trade as the saviours of water-poor countries may be yet another component of the neoliberal economic prescription. This paper will seek to shed light on this debate, considering the power relations at play in how virtual water is accessed and allocated by expanding the Framework of Hydro-Hegemony.

In 2006, Zeitoun and Warner introduced the Framework of Hydro-Hegemony, an analytical tool for analysing transboundary water conflicts. This paper will expand that Framework to be relevant for analysis of virtual water trade patterns. Applying this expanded Framework of Virtual Hydro-Hegemony to three case studies (Peruvian asparagus exported to the United Kingdom, American cereals imported by Egypt, and Israeli agricultural produce consumed in the European Union) indicates that virtual water flows are highly subject to hydro-hegemony, shaped by material, bargaining, and ideational powers. The paper will conclude with suggestions for how scholars and practitioners concerned with access to resources might engage with virtual water allocations.

2.5   Governing Consumption and Lifestyle Choices
Chair: Michel Scobie, *Room: JSC 3.02*

Political legitimacy and procedural justice of governance systems for implementation of consumption-based carbon accounting

Marco Grasso

Consumption-based carbon accounting measures emissions associated with the final consumption of goods and services, and is calculated by subtracting from production-based emissions those associated with exports and adding those generated for imports. According to the relevant literature consumption-based emissions inventory represents a promising accounting method for more effective collective action against carbon emissions. However, neither there are established institutions for implementing consumption-based accounting nor the current scientific debate has proposed normative analyses related to the governance systems that it would entail. Hence a most useful line of investigation focuses on the features of normative standards that should shape institutions for operationalization of consumption-based accounting. In particular two such crucial standards are those of political legitimacy and procedural justice. The first – political legitimacy – refers to the justification of the

source of power and authority of governance systems. The second – procedural justice – consists in the fair involvement of all interested parties in the schemes of social cooperation proposed by the governance systems. I argue that both these desiderata are fundamental for gaining support and eventually fostering the development of widely acceptable, stable and effective governance systems for enacting consumption-based accounting. The specific point that the article addresses is then the following: how should politically legitimate and procedurally just governance systems for consumption-based accounting be forged? In particular, the article first investigates the notion of political legitimacy and points out its most important attributes for the development and implementation of normatively-consistent institutions for governing consumption-based accounting. Then the article, in the same vein, scrutinizes the elements of procedural justice that should characterize such institutions. Finally, based on the normative analyses carried out, the article puts forward the basic elements of legitimate and fair, and therefore more feasible and effective, governance systems for operationalizing consumption-based accounting.

Making Energy Efficiency Affordable: Insights from Behavioural Economics for Policy Design

Babette Never

Energy efficiency is central for energy security, the mitigation of greenhouse gas emissions and technological catching-up of developing countries. In spite of decades of efforts to increase the energy efficiency of economies and to diffuse energy efficient technologies worldwide, results still lag behind, especially in developing countries. While much has been written about the so called energy efficiency gap and the factors responsible for its existence, there is still no satisfying answer to the question how to close it. Market failures, a lack of information and awareness as well as badly targeted incentives and tariffs belong to the most common barriers to energy efficiency.

Recent research on energy consumption in industrialized countries has shown that behavioural factors such as choice overload, loss aversion or the status quo bias provide explanations for the failure of respective policy and market incentives. It is still unclear, however, to what extent these factors apply to developing countries. What does behavioural economics have to offer for energy efficiency diffusion in developing countries? To what extent can policies that take behavioural economics into account better balance the political goals of affordability, energy access and clean energy? What effects do they have on the poor? This paper discusses these questions. Its goals are to, first, review the behavioural economics literature from the perspective of energy efficiency in developing countries and, second, develop a conceptual framework that also takes insights from political science and the Area Studies into account. Finally, this paper aims to show the methodological and empirical merits of the concept, taking energy efficient lighting in developing countries as an example. The empirical test of the concept is exploratory, but sufficient to uncover those areas for which a behavioural economics-based approach may help energy efficiency policy and for which ones it may be not so relevant.

Allocation of Consumption: Insights from the case study of Brisbane and South-East Queensland, Australia

Lavinia Poruschi, Peter Daniels

Australian energy generation is mostly based on fossil fuels, thus electricity, gas, water services or food, construction materials and all other goods and services have energy footprints that translate into considerable amounts of fossil fuel use. Over half of the energy used by households comes from indirect uses of energy associated with goods and services they consume. City dwellers can have different consumption patterns from outer city dwellers and local conditions contribute to distinct total energy footprints and allocation of natural resources use such as food, water or access to health services.

In the early 2000s it was observed in Australia that as households become more affluent, their total consumption in terms of energy use did not decrease (reach a steady-state consumption level). With new information to show there is a levelling off direct energy use (electricity) in either private or industrial demand since 2006, research showing preferences of Australian consumers are changing away from durable goods, but at the same time that households have been able to obtain more credit based on mortgage equity withdrawal, there is a gap in understanding how these push and pull factors are impacting and reflected in household expenditure and/or their energy footprints. This paper analyses socio-economic factors potential impact based on consumption data over a period of five years in search of understanding how differences in local conditions in parts of Australia are reflected in expenditure (e.g. the inner-outer city divide) and in turn to how the energy footprint of households changed across specific areas of Australia.

How to get grandfather moving? An analysis into the potential of non-coercive governance in achieving full urban sustainability

Jeroen van der Heijden

Around the globe governments seek to make a transition to a more sustainable built environment. A dominant approach for doing so is by introducing new construction codes or ratcheting up existing building regulation. However, existing property rights normally exempt existing buildings from such regulatory changes, a process known as grandfathering. With existing buildings making up the large majority of the urban fabric, and with a very slow replacement rate of existing buildings (about 1% per year) grandfathering provides for a considerable weak-link urban sustainability problem in the transition towards fully sustainable cities. This paper seeks to understand whether a global trend of non-coercive governance arrangements is able to overcome this weak-link urban sustainability problem. Such arrangements built on collaboration between governments, market players and civil society representatives, and seek voluntary commitment from their participants to achieve outcomes that move beyond existing (environmental) legislation. On normative and ideological grounds current scholarship is very positive about the potential of such non-coercive governance arrangements in overcoming complex governance problems such as grandfathering, but it lacks systematic and broad reaching empirical studies to understand whether and how they live up to these normative expectations (Jordan, Wurzel, Zito, 2013; Holley, Gunningham, Clifford, 2012). Seeking to add to the knowledge base on non-coercive governance this paper analyses a series of more than 20 non-coercive governance arrangements in Australia, the Netherlands and the United States. It builds on a unique data-set of interviews with approximately 150 experts involved in these arrangements, complemented with secondary data from existing sources. By applying Qualitative Comparative Analysis (QCA) methodology the arrangements are systematically explored on the factors that add to their success or failure in overcoming the weak-link urban sustainability problem caused by grandfathering. This paper may be among the first that seeks practical solutions to grandfathering.

The Correlates of Best Practice in Transnational Eco-Labeling

Hamish van der Ven

Eco-labels provide information to encourage the demand for and supply of products and services that cause less stress on the environment. They do so by establishing rules about proper environmental conduct intended to guide and constrain companies that voluntarily agree to be bound by these rules. From humble origins in 1970s Germany, there are now 444 eco-labels operating in 197 countries worldwide and covering 25 industry sectors. While the explosion of environmental labeling and certification systems is remarkable, the prospects of eco-labeling schemes achieving their stated environmental objectives remains uneven. Whereas some eco-labeling organizations demonstrate a remarkable commitment to internationally-accepted best practices like consulting stakeholders during standard design and employing independent third-party auditors to monitor compliance, others are less rigorous. Using an original data-set of 156 transnational eco-labeling organizations, this paper tests a range of hypotheses about the role of public versus private ownership, interest group influence, geopolitical context and temporal conditions in explaining variation in adherence to best practices amongst transnational eco-labeling systems. In doing so, it seeks to lend broad insight into the conditions under which transnational governance is most likely to achieve environmental objectives. It also seeks to contribute empirical substance to contemporary debates around the prospects and perils of private authority in global environmental governance.

2.6 Global Environmental Justice II
Chair: Andy Jordan, Room: JSC LT

Deconstructing the Cornish rural idyll through an environmental justice lens

Lucy Szaboova, Katrina Brown, Caitlin DeSilvey, Janet Fisher

Cornwall is well known for its abundant nature and picturesque coastline, yet it is the only English county in receipt of social and economic development-related financial assistance from the European Union. Around 10% of areas in Cornwall are among the 20% most deprived in England. Meanwhile, the county features in second place on the Happiness Index within England. Therefore, is Cornwall poor, but happy?

We explore the scope of ecosystem services in mitigating the effects of economic deprivation. Drawing on Sen's capability approach and insights from the literatures on access theory, human well-being, ecosystem services and environmental justice, we investigate how do aspects of the political-economic and socio-cultural environment interact and influence people's constructs of well-being, as well as mediate - through mechanisms of access - their ability to benefit from ecosystem services.

While traditionally the environmental justice movement linked poor people to degraded or polluted environments, we posit that poor people living in desirable environments can, too, experience

environmental injustices. By this we question the plausibility of a simple linear relationship between the aggregate availability of ecosystem services and well-being, and thus recognize that inequality in terms of access may be present between various groups of people in idyllized rural contexts.

We use a context-specific disaggregated analysis to empirically explore the well-being paradox at multiple case study sites across Cornwall. Through focus group discussions and semi-structured interviews we develop an inductive understanding of well-being. We employ participatory photography to elicit the role of ecosystem services in well-being experiences within communities. Participatory mapping workshops and interviewing then explore the existing mechanisms of access which mediate people's ability to benefit from ecosystem services. Our approach recognizes that context matters for people's constructs of well-being, their ability to access ecosystem services and convert these into benefits.

From local to global: filling the gap between Northern open economies and global environmental change.

Eneko Garmendia, Leire Urkidi, Iñaki Arto

Globalization of the world economy has increased the material and energy flows around the planet, raising the pressure over natural resources and the communities that depend on them. Climate change, biodiversity loss, natural resource depletion and related poverty traps are just some consequences of this increasing pressure on the global environment. All countries and societies do not share the same responsibility, as they have impacted in an unequal manner over the environment. Historically, Northern industrialized countries have been responsible for major pressures and resource consumption while developing countries have suffered to a great extent the consequences of these environmental impacts. In the context of globalization and environmental degradation, it becomes critical to better understand the links between consumption and production patterns and associated social-ecological impacts at multiple scales. In this research we analyze the Ecological Debt of the Basque Country (Southern Europe), to illustrate the responsibility of Northern open economies towards the global environment, by looking at (i) its social metabolism, i.e. the energy and material flows linked to the production and consumption activities of the region, (ii) the social and environmental impacts that these physical flows generate worldwide, and (iii) three illustrative case-studies in Latin-America, West Africa and Southeast Asia related to the Basque imports. Through the combination of quantitative (e.g. material flow accounting) and qualitative methods (e.g. in-depth interviews with affected communities) we show how to connect production and consumption patterns to extraction impacts for global commodity chains, in order to highlight current environmental injustices and their roots. Furthermore, we illustrate how this narrative can bridge the gap between the local and the global, creating a useful approach for both policy making and education.

Linking global norms to place-specific environmental struggles: the significance of mobilisations for justice in Nepal

Thomas Sikor, Hari Dhungana

Mobilisations for justice challenge global environmental governance in several ways. First, they call for attention to justice as a critical concern in global agreements, successfully demanding consideration of issues of distribution, participation and recognition. Second, they challenge the traditional dominance of state actors in transnational, national and local arenas, creating new pathways of influence and relations of accountability between global norms and local struggles over natural resources and environments. Third, they overcome the common divide between local and global by connecting some place-specific struggles to global norms, and by failing to offer such connections to other struggles. Mobilisations by indigenous peoples and their supporters around highly visible experiences of injustice and demands for justice as well as recent global agreement on indigenous peoples' rights offer good illustrations of the above.

 This paper explores these propositions through a case study of place-specific struggles over forests and water in Nepal. The cases originate from Lamjung district in western Nepal, where an indigenous group has successfully opposed construction of a proposed hydropower dam and achieved control over a demonstration project under the global initiative of Reducing Emissions from Deforestation and Forest Degradation (REDD+). Due to support received by the Nepalese Federation of Indigenous Nationalities and international activists the group has even challenged the central government's authority of eminent domain over water and forests. Drawing on ongoing fieldwork, the presentation will examine the relationship between the place-specific struggles in Lamjung and indigenous peoples' (inter)national mobilisations in order to understand how mobilisations may or may not achieve to link local problems to global norms.

Understanding why people do not mobilize for environmental justice: carbon forestry initiatives

in Uganda

Janet Fisher

Uganda has served as a testing ground in sub-Saharan Africa for carbon forestry initiatives. This paper reports research on a smallholder carbon forestry project in western Uganda, which pays farmers to plant trees for the global carbon markets. This intervention encompasses various forms of apparent environmental injustice. There are strong inequalities in benefit distribution, but beyond these, procedural injustices characterise the means by which the project engages people: little effort is made to explain the global nature of the transaction, or the transfer of responsibility for emissions. Furthermore, very little scope exists for participants to shape the model of tree-planting, leading to a relatively inflexible model conferring significant timescales of obligations upon participants. Yet despite these apparent injustices, the intervention goes largely uncontested. Within a comparative research project which seeks to understand why and how place-specific environmental struggles are uptaken in mobilizations for global environmental justice, this paper examines various propositions to explain the lack of contestation of this model of global climate governance in Uganda. The first proposition explored is that the lack of mobilization stems from local perceptions of justice. For instance, the few participants who understand the global transfer of responsibility for emissions do not contest the premise of this, but rather the amount they are paid for tree planting. A second proposition relates to property rights: this case has relatively uncontested property rights, whereas examples such as Mount Elgon have overlain carbon forestry initiatives on disputed property rights. The politicization of property rights in Uganda means the Elgon case acts as a lightning rod for contestation, diverting attention from other schemes. A third proposition is that mobilization has been limited because there do not exist appropriate channels, including national-level organisations, through which remote rural people can contest such an intervention on the basis of environmental justice.

2.7 Access and Allocation in Ecosystem Services and Land Use Policy and Practice
Chair: Corinne Le Quéré, *Room: JSC 2.01*

For a fairer distribution of ecosystem services: A typology for governing ecosystem functioning

Lennart Olsson, Torsten Krause, Christian Hirschi, Anne Jerneck

The concept of ecosystem services appeared as a metaphor in the early 1990s to increase the awareness of how society depends on myriad goods and services produced and delivered by a multitude of ecosystems. In particular, the widely accepted concept was launched to facilitate communication with lay people about the complexity of ecosystem functioning and the value of resulting ecosystem services. In times of increasing market fundamentalism and with the publication of the Millennium Ecosystem Assessment in 2005 the popularity of the concept increased dramatically. Hence, it became an important driver in the commodification of nature and soon it represented a simplification of the ecosystem functioning that the services ultimately depend on.

Proceeding from the idea that the understanding of ecosystem services must not be cut off from the ecosystem functioning responsible for delivering and maintaining these services, we focus on three issues in this paper. First we discuss how governance arrangement of ecosystem functioning relates to governance arrangements of ecosystem services. Second, and based on that, we critically analyse three questions: ecosystem services for whom, for what purpose, and at what cost? Third, and emerging from that analysis, we present a typology (ideal types) of governance arrangements for promoting just and fair ecosystem services based on ecosystem functioning. We illustrate our typology with examples ranging from the global (tropical forest conservation) to the local (pollination services in European cultural landscapes).

Accounting for ecosystems: designing innovative accounting frameworks for the trans-organizational governance of ecosystem services

Clément Feger, Laurent Mermet

In times of the Anthropocene, securing the provision and access to key ecosystem services(water quality, carbon storage, biodiversity habitat etc.) and taking into account the associatedbenefits, risks and responsibilities is a challenge that requires the design of innovativeconceptual and practical frameworks able to connect multiple organizations and institutionswith each other.
We suggest that this challenge can be framed as an accounting issue. We argue that importantinsights can be drawn from accounting research, which is traditionally focused on themanagement of firms, and applied to the field of environmental governance. From atheoretical standpoint, accounting research typically addresses questions such as: who isaccountable to whom in the context of an organized collective action, what information(economic, biophysical etc.) should be provided to which

decision-maker, when, to supportwhat type of action and to contribute to the effective resolution of what specific problems?Furthermore, from a practical standpoint, accounting provides a diversity of concepts andtechniques useful to gather, treat and modelize information, actions and resources within andacross organizations (credit/debit, manageables, allocation keys, balance sheets, costs etc.).

In this paper, we will present results of our work on a French water services company –Lyonnaise des Eaux – involved with various stakeholders (farmers, municipalities, NGOsetc.) in the shared governance of ecosystem services and biodiversity in several locations inFrance. In our case studies, there is never a single supervising institution that has the overallauthority to solve the corresponding agency and accountability issues, which thus calls for theemergence of a trans-organizational governance. We will address this challenge by usinginsights from accounting research to suggest an original accounting framework useful for thecompany and other stakeholders, and specifically designed to contribute to the organization ofcollective responsibilities over the management of ecosystem services in these locations.

Vulnerability, adaptation and mitigation in the forests of the Congo Basin: a critical investigation

Roger Few, Nicole Gross-Camp, Adrian Martin

Recent discussions on forests and climate change have highlighted the potential for conservation of tropical forests to contribute synergistically to both mitigation and adaptation. Key mechanisms through which adaptive advantages might be gained include the potential for forest resources to act as 'safety nets' in the context of climatic strains on agricultural livelihoods and the protection that intact forest ecosystems might provide against landslides, flash floods and other hazards related to extreme weather. This paper presents findings from field research with forest communities in three areas of the Congo Basin in Central Africa, in which the current adaptive role of forests in these respects is critically analyzed.

 The investigation was carried out through a combination of structured and semi-structured qualitative techniques within six villages in Cameroon, Equatorial Guinea and Rwanda, as part of a wider collaborative research project, COBAM, funded by the African Development Bank. The methodology was designed to help describe how forest communities are experiencing and adapting to environmental change, and the role that forest resources and environmental management policies play in terms of people's livelihoods. The findings of the research highlight the need to understand both the limits of synergy, and the constraints and trade-offs for rural livelihoods that may be associated with a forest conservation agenda driven by the additional impetus of carbon sequestration. The search for synergy may be conceptually laudable, but if forest management actions do not take account of on-the-ground contexts of constraints and social trade-offs then the result of those actions risks undermining wider livelihood resilience.

Eroding Lands, Eroding Lives: Addressing Riverine Induced Erosion In The Brahmaputra Valley

Arpita Das

Riverine floods and erosion have emerged as major challenges for the flood prone areas of the Brahmaputra valley. In the aftermath of the 1950 earthquake in Assam in the north eastern part of India, the geomorphology of the river basin changed. This resulted in changes in the fluvial nature of rivers. The newly independent Indian nation did not take these changes into consideration while designing their flood management strategies. As a result of top down technological interventions such as embankments, the riverine flow was further curbed. Sixty years of such programmes aggravated the problem of riverine floods leading to erosion. Unlike flood waters which recede, riverine erosion washes away land. The resultant landlessness has severe consequences for agricultural communities. Communities in the Brahmaputra valley associate land with income and identity. Ethnic communities derive pride and a sense of belonging from the lands they have occupied for centuries. Erosion induced landlessness thus leads to social, economic and political deprivation. This paper draws from ethnographic work carried out in Dhemaji with members of the Mising community who are a riverine community. The Misings are the second largest indigenous community in Assam. A majority of the population is settled on the northern banks of the Brahmaputra though there are significant pockets on the southern bank as well. The continued non addressal of flood related grievances such as unending landlessness by the governments in Delhi and the state capital of Guwahati, has led to despair and unrest in the community. The State controlled flood management strategies fail to consider the unique needs of the geography and the polity. This paper looks at dialectics in the relationship between communities and the State in the background of riverine floods and erosion. It underscores the importance between social justice, environmental governance and social application of scientific knowledge.

Transforming access to nature through the rescaling of environmental governance: The case of biodiversity conservation in four EU countries

Evangelia Apostolopoulou, Dimitrios Bormpoudakis, Joanna Cent, Riikka Paloniemi

By drawing on political ecology and geography literatures, we investigate how specific processes of rescaling biodiversity governance downwards, upwards and outwards are interlinked with the increased global and European trends towards the neoliberalization of conservation fundamentally transforming access to nature. We focus on the European context and specifically on England, Finland, Greece and Poland starting our analysis from the early 90's decision to establish the EU-wide Natura 2000 network, with particular attention to the effects of the on-going financial crisis. Our methods include an extensive analysis of relevant legal and policy documents as well as focus groups and interviews involving 118 participants.

Our analysis revealed that during the (always uneven) expansion and intensification of nature neoliberalization over the last two decades, EU member states mobilized a range of rescaling strategies intended to promote the alignment of conservation with capitalist interests within a distinctively neoliberal framework. This rescaling, even though it is often framed as «participatory» or «bottom up», has transformed access to nature by, inter alia, favoring biodiversity governance by experts committees, giving an increased role to non-elected and unaccountable supranational institutions as well as privileged access to specific actors to shape the aims of conservation while marginalizing others. However, the variation in governmental strategies in the four case study countries showed that mechanistic mappings from rescaling to political goals do not suffice, as variegated neoliberalizations are intertwined with variegated rescaling processes. Based on the results, we argue that unraveling the different roles of the rescaling of biodiversity governance is crucial, especially in the post-financial crisis era, in (a) exposing the mounting contradictions inherent in the relationship between conservation and capitalism, and (b) showing how scale shifts, such as localism, can lead to a contradictory coexistence of consensus-driven rhetoric and autocratic governance with profound implications for access to nature.

Wednesday, 2 July, 9:00-10:30

3.1	**Exploring Pathways to Decarbonization I** *Chair:* Matthew Hoffmann, *Room:* JSC 1.02

Conceptualizing Policy Pathways to Decarbonization

Steven Bernstein and Matthew Hoffmann

Scaling-up and Entrenching Carbon Labeling: Tracing the Direct and Indirect Effects of the Carbon Footprint Label for Decarbonization

Graeme Auld, Hamish van der Ven

Climate change governance is increasingly polycentric. In light of the stagnation of UNFCCC negotiations, an array of experimental initiatives -- sometimes referred to as "interventions" -- have arisen to fill the governance void. These interventions are orchestrated by states and international organizations, but are also frequently initiated by non-state actors. While some interventions have successfully expanded to reach across state boundaries and achieve substantial emissions reductions, others have withered and faded away. We examine the case of carbon labeling as one set of interventions with potential to scale-up and entrench as viable tools contributing to decarbonization. We trace the evolution of a specific intervention, The Carbon Trust's Carbon Footprint, from its inception to its current status as one of the most widely recognized eco-labels in the world. Situating the Carbon Footprint within the array of carbon-labeling interventions, we explore both the direct effects of the Carbon Footprint alone and through interactions with these other initiatives. Our hypothesis is that the greatest potential decarbonization effects will be those that occur not from the direct emissions reductions from labeling activities, but through indirect and interactive effects labeling interventions create. As such, the paper will pay particular attention to the role of new and novel political coalitions in catalyzing support for the nascent Carbon Footprint label and helping it expand and stabilize. In doing so, we seek to lend broad insight into the causal mechanisms through which interventions expand and entrench themselves to address a narrow facet of climate change governance, and what such entrenchment might create in the way of ripple effects that more broadly advance system transforming effects for decarbonization.

Policy Pathways to Decarbonization: An analysis of Colorado's New Energy Economy

Michele Betsill

Between 2007 and 2011, the State of Colorado (USA) pursued an ambitious and comprehensive agenda to build a "new energy economy" (NEE) organized around clean technology. This effort involved a series of legislative, regulatory and administrative policies and programs. The NEE frequently is heralded as a success in terms of linking environmental concerns with economic development and job creation, and efforts are underway to replicate this governance model in other US states and countries. This paper analyzes the NEE as a potential policy pathway to decarbonization. I assume that addressing climate change will require moving to a low-carbon future by destabilizing carbon lock-in and building new path dependencies. Given that the current carbon system is an emergent property of multiple and interlinked technologies, institutions and social practices operating at multiple scales, decarbonization will involve multiple pathways operating simultaneously. Using public documents, media reports, and interviews with key participants, I will present a narrative history of the NEE, focusing on what the NEE tells us about the obstacles to decarbonization and the conditions under which policy pathways to decarbonization can be constructed. I will also explore how the trajectory of the NEE evolved overtime and consider the implications of the NEE for the broader carbon system. I argue that in the short-term, the NEE can be seen as "system improving" in that it has led to a significant reduction in GHG emissions in the state. However, because this has been achieved by switching from coal to natural gas, the NEE reinforces the current carbon system in the long-term.

Decarbonization Pathways Using Information and Communication Technology: The Climate Group's Smart 2020 Initiative

Laura Tozer

Smart 2020 is a network of cities, regions, and companies seeking to reduce greenhouse gas emissions by applying information and communication technologies (ICT) to improve energy efficiency in sectors like energy, transportation, buildings and industry. The Climate Group, a not-for-profit organization that organizes Smart 2020, contends that ICT improvements could lead to a 15% reduction in global greenhouse gas emissions by 2020. This paper analyzes The Climate Group's Smart 2020 initiative for its potential to address climate change by acting as a pathway to decarbonization. Addressing climate change by shifting to a low-carbon future will require destabilizing carbon lock-in. Given the entrenchment of carbon in current systems, multiple pathways will need to be developed at multiple scales simultaneously to achieve decarbonization. In this paper, I analyze one case that has to potential to act as such a pathway. Using public documents, media reports, and interviews with key participants in the program, I will examine how the Climate Group's Smart 2020 initiative emerged and the ways in which it has scaled up or enabled entrenchment of new technologies, policies, institutions and behaviours. The analysis of the history and trajectory of Smart 2020 uncovers the barriers to decarbonization as well as the possible pathways to systemic change that Smart 2020 may catalyze.

3.2   Markets, Green Growth and the Green Economy
Chair: Aarti Gupta, Room: JSC 1.03

Barriers to the green economy transformation: an institutional architecture perspective

David Benson, Duncan Russel

Building green economies that integrate social, economic and environmental objectives together will be a critical component in shaping the paradigmatic shift towards long term sustainability. But while normative demands for greener economies have been expressed by policy makers at multiple institutional scales, their impacts to date have proved limited, raising questions over the barriers to integration and hence the wider sustainability transformation. Building on earlier research that examined factors inhibiting the integration of environmental concerns into government fiscal cycles or 'green budgeting' (Russel and Benson 2013) this article focuses on the specific institutional architecture of national political budgeting processes as a potential barrier to wider economic greening. Using the case study of UK low carbon energy production between 2010 and 2013, it employs a veto players theoretical perspective (Tsebelis 2002) to identify critical inhibitors to their prioritisation vis-a-vis fossil fuel based alternatives in national fiscal decision-making. Results suggest that the rational self-interest of certain ministerial actors, who by virtue of their architectural context, possess both 'institutional' and 'partisan' veto powers that reduce the scope for policy change despite strong counter pressures. However, other, more exogenous, factors such as the global recession, the countervailing power of corporate actors and political ideologies were also evidential barriers. From these findings, we then discuss the potential of the research to both analyse the green economy transition on a global scale and provide normative recommendations for institutional architecture

change.

How do we know a "Green Economy" when we see it? An analytical framework for transformative change

Steffen Bauer, Dirk Messner

"Green Economy" has evolved into a public policy buzzword that challenges the established paradigm of sustainable development in global environmental governance as well as in multilateral development cooperation. Yet, it remains ambivalent what the notion of a green economy stands for and, consequently, whether and how it should be pursued. This paper seeks to make a twofold contribution to the corresponding discourse. For the sake of analytical clarity it resorts to a working definition of "green economy" as a proxy for the broader objective of a global transformation towards inclusive and sustainable development. As a first and explicitly normative contribution the paper postulates a need to supersede the engrained model of fossil-driven economic growth in favour of a new contrat social that facilitates inclusive and sustainable development for present and future generations. To this end the paper builds on a synthesis of global trends to argue that a global transformation towards low-carbon development is imperative to maintain long-term prospects for equitable human development within ecologically given planetary boundaries. Against this background any realization of a "green economy" that stops short of transformative change would amount to window-dressing an unsustainable status quo. As a second, analytical contribution the paper develops a conceptual framework to assess the quality of transformative pathways towards sustainable modes of socio-economic development across countries. Drawing on institutionalist theories it focuses on co-evolutionary dynamics that affect power and interest structures, cognitive frameworks as well as norms and values to identify changes in actor constellations that either preserve or erode the prevalent high-carbon regime ("business as usual") versus a counterfactual transformative regime ("green economy"). It puts forth a set of key variables to assess the state and prospective dynamics of transformative pathways in different institutional contexts, including actor constellation, cognitive paradigms, social values, policy regime, innovation and international context.

The Green Power of Korea: Framing Green Growth as Global Climate Governance Practice

Lau Blaxekjær

This paper poses the research question of why and how the Republic of Korea has become a major actor in global climate governance. Global climate governance is very diverse, poly-centric, and fragmented, and partly as a reaction to the seemingly failure of the UN climate negotiations, the concept of green growth is now permeating fast across this diverse and fragmented field as a new form of climate governance practice. Korea has since 2008 indeed become a major actor in global climate governance and instrumental in the emergence and spread of green growth as policy paradigm. The paper demonstrates that Korea has done this through a range of practices, framing green growth through story-telling, organisation-building, financing and policy-making. Korea's timing and framing of green growth is noteworthy in this regard, and most likely the key to understanding why and how Korea has become a major actor. On one side Korea is actively strategizing and putting green growth on the global map. On the other side the world is ready for green growth. This paper seeks to understand Korea's green growth strategy of becoming a global green power both materially and ideationally. To answer the research question, this paper suggests turning to framing theory, and to move framing in a different direction by adding both sides of the material-ideational dichotomy. There are many other material forms of framing beyond the news text and the speech act, as will be demonstrated in this paper. The paper concludes that Korea is framing a polished, official version of Korea and green growth; that Korea as a major actor in global climate governance should also be understood as Korea seeking to rewrite its own history or its national grand narrative omitting certain domestic and avoiding certain global criticisms of green growth.

Grand Transformation or Old Wine in a New Bottle? China's Experiment on GHG ETS and its Implications on Climate Governance

Wei Shen

As the largest annual emitter nation, China's strategy to tackle climate change would produce a profound impact not only on the domestic development path but the overall sustainability at global scale. In the recent years, China has embarked on designing and constructing its domestic carbon emission trading scheme (ETS) to combat its soaring GHG emission. According to Chinese official announcement, a nationwide 'cap and trade' scheme will start to function in 2015 and at initial stage seven piloting regional ETS schemes are launched by 2013 (NDRC, 2011). China's enthusiasm in market mechanisms for climate governance deserve academic attentions because the country has a distinctive authoritarian tradition and hence the introduction and harnessing any large scale market

instrument to the existing political culture and institutions would almost certainly face tremendous challenges (Lo, 2012).

Based on extensive interviews with business practitioners and state officers during several field trips in the piloting ETS sites, this paper examines the dynamics of on-going construction of piloting ETS at local level. It intends to reveal the major impact of carbon market on China's present climate governance system, as well as the obstacles or barriers that the participating entities may encounter during the implementation stage. It is argued in the paper that it would be at least simplistic to view China's effort of building domestic ETS as a mere 'top-down' process backed by strong political support from Beijing. On the contrary, a variety of networks and coalitions have been established among non-state actors, and a range of bottom-up initiatives were introduced and institutionalized at the local level. These transformations have a profound impact both on how the carbon trading schemes are to be implemented on the ground, and to what extent it can eventually contribute to curb the GHG emission in China.

Pass the Salt: A Case Study on Allocation in the Hunter River Salinity Trading Scheme
<u>Eleni Dellas</u>

Tackling low water quality is rarely simply a question of implementing technologies and policies. Allocation concerns, i.e. who gets what and why, must also be considered as failure to do so may jeopardize the overall effectiveness of water governance. Water quality trading schemes, in particular, are becoming increasingly popular tools for addressing water quality problems. Such schemes define a limit for a nutrient, sediment or other pollutant that is discharged into a river, and allocate this to participants in the form of transferable credits. One of the most contentious issues policymakers designing such schemes must address is the allocation of credits. However, research on why specific credit allocation principles are implemented in water quality trading schemes is thus far lacking.

This paper examines the choice of allocation principles in a prominent water quality trading scheme: the Hunter River Salinity Trading Scheme (New South Wales, Australia), which regulates salinity discharges from coalmining and power generation industries. The development of this scheme occurred in the context of conflicting interests among the industries regulated by the scheme, and others affected by the operation of the scheme (e.g. farmers, vineyards). While the scheme effectively meets its environmental targets, industry contests the credit allocation. Moreover, proposed mine expansions may put the scheme under pressure, and revive conflicts with environmental and agricultural interests.

Specifically, the paper examines how resource characteristics (such as resource availability and type of resource), actor-centered factors (such as self-interest) and/or norms (such as norms associated with neoliberalism) have affected the choice of allocation principles in the case of the Hunter River Salinity Trading Scheme. The analysis includes twelve in-depth interviews with policymakers, stakeholders and industry representatives, extensive document analysis and meeting observation, and provides new theoretical and empirical insights on a relatively unexplored issue of water governance.

3.3 Theorising Transformation Processes
Chair: Oran Young, Room: JSC 2.02

An interdisciplinary approach to Earth System Governance
<u>Victor Anderson</u>, Aled Jones

In this paper we argue that the work of the Earth System Governance (ESG) project so far can be criticised as exemplifying "technocratic utopianism". The proposals it has produced are rational design responses to scientifically-defined problems. In some respects, they are excellent proposals - but there are key relevant factors they do not take into account. They lack a sense of how to transition to the proposed future, what could drive that transition, what obstacles of self-interest or ideology might stand in its way, and how those obstacles might be responded to.

ESG's work appears at first sight to ignore the fact that there is a great deal of already existing history of constitution-making (which is what earth system governance design is a form of), and a great deal of political philosophy reflection on that constitution-making - most famously, the 'Federalist Papers' which debated the principles of the US Constitution.

The paper explores whether there are references to past examples of institutional structures being created, or principles which have informed them and might inform future institutional design (such as federalism) within the current structure and documentation of ESG.

It seeks to ascertain to what extent ESG has a gap (based on its desired outcomes) and whether this threatens both the practical usefulness of its output, and its credibility in the eyes of decision-makers.

The paper proposes key areas for further development of ESG work, including: defining the gap more

precisely; explaining its significance to stakeholders; linking this work to developments in Future Earth; producing a plan whereby the ESG project could make changes in order to fill the gap; and devising some specific research proposals which would help to fill the gap.

Up, down, round and round: connecting innovations in regimes and practices for transformative pathways to sustainability

Gill Seyfang, Tom Hargreaves, Noel Longhurst

Pathways to sustainability demand transformative innovation in both the systems that uphold contemporary ways of living (e.g. the energy, water or food system etc.) and in the social practices that make up normal everyday life (e.g. shopping, cooking or driving practices etc.). To date, however, dominant theories of innovation have tended to focus on either systems or practices. For example, whilst both the Multi-Level Perspective of sociotechnical change and theories of Strategic Niche Management do much to examine the co-evolutionary nature of innovation in systems, they say next to nothing about how these changes impact on people's daily lives. Similarly, whilst emerging theories of Social Practice have much to say about everyday life, they have so far said less about the systemic and infrastructural changes necessary for transformative change.

The multilevel perspective and social practice theory have thus emerged as competing approaches for understanding the complexity of sociotechnical change. The relationship between these two different camps has, on occasions, been antagonistic, but we argue that they are not mutually exclusive. Indeed, through empirical analysis of two different case studies of sustainability innovation, we show that analyses that adopt only one of these theoretical lenses risk blindness to critical innovation dynamics.

We present a novel conceptual approach that has the potential to radically transform discussions in this area by connecting these theories together. It recognises that innovation in systems and innovation in practices are fundamentally intertwined. We identify various points of intersection between regimes and practices that can serve to prevent (or potentially facilitate) sustainability transitions.

We identify directions for further research that place these crossovers and intersections at the centre of analyses. This approach seeks to overcome the limitations of previous understandings of sustainability innovation, and offer radically different, potentially more effective, transformative solutions to practitioners and policymakers.

From climate conflict to climate resilience in UK discourse: a shift towards a post-interventionist paradigm in Earth System Governance?

Ingrid Boas, Delf Rothe

In this paper we trace a shift from climate conflict to climate resilience in the UK discourse on climate security, and ask what that implies in terms of the allocation of responsibilities in the preparation for the harmful impacts of climate change. In the mid-2000s climate security has mainly been discussed through an alarmist lens. It presented climate change as a factor that could tip fragile states into civil war, produce waves of mass migration and set whole regions on fire. But the tide is changing. Policy-makers are increasingly drawing on a more subtle and illusive terminology in the debate on climate security. Climate change is discussed in terms of resilience, to highlight people's own adaptive capacity to cope with risks posed by environmental change.

We analyse the driving forces behind the discursive change over the past eight years and discuss what these changes mean for actual UK policies in the fields of climate change, development and security policy. Our main argument is that the recent shift in the UK climate security discourse is indicative of, and promoting, a post-interventionist paradigm in UK policy-making. Techniques and measures to produce resilience against future climate related risks take the form of an advanced liberal government. Tasks and responsibilities in preparing for the harmful impacts of climate change are transferred from the state to individuals. Policies on conflict prevention, disaster management, climate change mitigation and adaptation, become reframed as practices of empowerment and investment into the capabilities and the self-help potential of the vulnerable.

Moving the masses: Comparing three transformative practice pathways for agents of social change

Chris Riedy

Transformation towards a sustainable human civilisation requires sweeping changes not only to technological and economic infrastructure but also to behaviours and practices, and potentially to values and worldviews. Agents of social change that are working to motivate transformation of behaviours, practices, values and worldviews can choose from multiple theories of change to guide their actions. Three theoretical frameworks in active use by change agents are: Common Cause (drawing on research into values and frames), Values Modes (drawing on Maslow's hierarchy of

needs) and developmental psychology. Proponents of Common Cause argue that change agents should seek to engage and activate values that are inherently rewarding to pursue and avoid activating those that are centred on external approval or rewards. This, it is argued, is more likely to support lasting change towards pro-environmental behaviours. In contrast, the Values Modes approach seeks to connect desirable actions to whatever values are prevalent in society, regardless of the type of value. Both of these approaches take the pattern of values in society largely as a given, whereas developmental psychology argues that individual values can develop over time to become more inclusive and more ecological. It therefore points to transformative strategies that facilitate the development of more inclusive values. These three frameworks clearly encourage adoption of very different practice pathways for designing transformative social change initiatives. I use social practice theory to tease out the elements of these three distinct practices – their meanings, materials and competences. I identify shared elements and explore the possibility of an integrated practice that synthesises the key insights from each framework.

Governing transformative change in response to climate change

Catrien Termeer, Art Dewulf, Robbert Biesbroek

Transformation or transformational change is an emerging concept in climate change literature. Its popularity stems from the growing recognition that traditional, "business-as-usual" approaches are insufficient to address the comprehensiveness, scale and complexity of challenges associated with climate change. When transformational change is a rather new topic in the climate change literature, it has been intensively debated in the field of organisational and policy theory for over 30 years. This paper attempts to bridge the existing literature on transformational change in organizations and policies with the emerging literature of transformative change in response to climate change. It addresses three topics. 1) How to conceptualize the processes of transformational change in response to long term climate change? 2) To what extent and through which strategies can processes of transformational change be influenced? 3) What are the implications of these insights for the role of governance actors who aim to enhance transformational change? The paper concludes that the different ambitions associated with transformational change, namely a deep level of change, large-scale and intentional do not fit together. Therefore it proposes an approach of redirecting small-scale in-depth changes, that involves three groups of strategies. The first group consists of activities to encourage continuous self-organizing adjustments, that result in in-depth transformations at a local scale. The second focuses on recognizing these small adjustments and making them more salient in order to enhance transformation at a larger scale through sensemaking, translating and upscaling. The third group consists of interventions, that are aimed at unblocking stagnations in order to revitalize processes of learning. Along the lines of thought, described in this paper, there is no actor who can steer or control transformational change. The role of governance actors is that of enabler, sensemaker and sparsely that of interventionist.

3.4   Sustainable Transitions in the Transport and Energy Sectors
Chair: Tom Measham, Room: JSC 2.03

Regulatory Convergence of Environmental Policy: Case of Fuel Economy Standards for Passenger Cars in Europe, Japan and the US.

Masahiko Iguchi

The comparative analysis on regulatory convergence on environmental policy is drawing scholarly attentions. In recent years, we are witnessing converging trends of stringent car fuel economy regulations to reduce CO_2 emissions between Europe, Japan and the US.
Which societal actors are crucial to promote such interests, and why? Who governs (Dahl 2005), who gets, what when and how (Lasswell 1990) in the process of regulatory convergence? More importantly, how automobile industry could transform from the position of 'dragger' to 'pusher' towards solution of climate change issue?
In order to answer these questions, this paper hypothesize the emergence of regulatory convergence is the result of following three reasons: first, governments harmonize national policies through negotiations (Simmons 2001; Singer 2004); second, global competitive pressures that drive regulatory competition to adjust their national policies (Vogel 1997); and third, voluntary adjustments by political actors through policy diffusion and learning(Busch & Jorgens 2005; Levi-Faur 2005), which may brought by concerned transnational coalitions and networks (Keck & Sikkink 1998).
The result of analysis shows that the second hypothesis well sketches the process of the regulatory convergence. It was born out from regulatory competition among the countries with the rationale to enhance its competitiveness of the auto industry. Business competitions are motivated to create a

global or regional level playing field in order to have competitive advantage over competitor firms. This, in turn, leads each government to promote higher fuel economy regulations.

This study has following two implications. First, business competitions over sustainability could be the key determining factor to encourage business actors (Agency) to be driving forces for further sustainability transformation in the Earth System Governance. Second, the convergence of environmental standards among major emitting countries could function as the 'de-facto standard' (Architecture) in a market that emerging economies would follow.

Changing Youth Mobility Practices: Transitioning Towards a Sustainable Transport System?

Debbie Hopkins

In developed countries, transport is reliant on private car ownership. Due to its dependence on fossil fuels, road transport is a significant contributor to greenhouse gas emissions and one of few industrial sectors where emissions are increasing. By transport subsector, road transportation is the largest contributor to climate forcing and accounts for 81% of total energy use by the transport sector, with severe consequences for global climate change, resource consumption and energy security.

Challenging the current auto-dominance is a transition in youth mobility practices. In many developed countries, young people are less likely to learn to drive than older populations, and those with a driver's license are driving less than older populations. The pattern of decreasing youth licensing, and increasing older person licensing has been reported in Sweden, Norway, Great Britain, Canada, Japan, South Korea and Germany, however little is known about the drivers of this change, and what it could mean for future transport demands.

This paper will critically examine changing youth mobility practices using a range of quantitative and qualitative empirical data from a study of New Zealand adolescent and youth (13-35 years). The paper will explore drivers and rationales using the Energy Cultures framework which is comprised of material culture, norms, and practices. Each of these aspects (material culture, norms and practices) are impacted by external context, including governance structures which are aiding or impeding change. This research investigates the youth mobility transformation process, and conceptualise the long term implications.

Themes of autonomy, freedom and prestige will be examined, as they relate to youth mobility demands, and significantly, how sources of autonomy, freedom and prestige might be changing amongst younger generations. The paper will conclude with a discussion on youth mobility practices as a potential transformative pathway towards sustainable transport systems.

Transformation is possible! Comparing Norwegian and UK experiences of delivering electric vehicles

Karen Anderton, Merethe Dotterud Leiren

This paper addresses the Transformative Pathways to Sustainability theme. It explores the introduction of electric vehicles in Oslo and London respectively. Whilst there are many acknowledged means through which the decarbonisation of transport can be delivered, EU, national and city policymakers alike have invested significant financial and political attention to transforming the sector through the electrification of private vehicles. The approaches taken and the outcomes delivered have been mixed.

This paper investigates and compares the governance structures, processes and policy levers - the architectures - that have been utilised in these two cases to promote the purchase and use of electric vehicles and the infrastructure developments to support switching away from internal combustion engines. In doing so it explores the complex interactions between agents across scales - from EU to national and local - and between sectors, primarily energy and transport. It also highlights some of the barriers and shortcomings to the chosen approaches, as well as the significant role that context plays in the success or failure of a given approach. Through using a comparative case study approach to examine these two cities and national contexts, we have a unique opportunity to understand: how transformation can take place; where similarities and differences of approach affect inputs and outcomes; as well as the role different emerging technologies, new actors and business models have in this transformation. Drawing on Kingdon's multiple streams, this paper explains the windows of opportunity that developed and were utilised through the electrification paradigm across contexts.

Active learning, reflective and participatory governance arrangements can be seen in different ways through both cases. The paper therefore offers insight into how and whether systemic barriers and blockages can be overcome through using such approaches in the move towards a more sustainable, low carbon future for auto-mobility.

Governance Dilemmas, Split Estates, and Contentious Issues: Some Examples from Colorado

Stacia Sydoriak, Peter Hall

The United States is the only country with private ownership of mineral rights, a division of rights called split estates. The courts privileged those rights over surface rights, creating spatial inequality of access and allocation for valuable resources. In places like Colorado where natural gas development has exploded, energy companies are guaranteed access to the resources below the surface and receive most of the profits, with virtually no obligation to land owners. Split estates have numerous unintended consequences such as environmental, health and welfare, and property problems, which cause intense conflicts. Regulators and legislators have been challenged to offer policies of safe, equitable access and allocation related to natural gas development. However, the definitions of those terms are socially constructed and politically accomplished. In Colorado, the current situation is muddled and complex.

The policy process is socially organized across space and time. To illustrate Colorado's complexity, dilemmas, and contradictions, we analyze the history of split estates, natural gas development, extraction processes and effects, concerned citizenry actions, and interventions by the State. We employ a qualitative, multi-level, temporal framework (Hall, 1987) to explore the historical and structural contexts conditioning future collective actions; actions that influence future conditions; and network linkages between sites shaping overall governance applications. Drawing on legislative, regulatory, electoral, and legal efforts to govern energy development in Colorado, we illustrate the dynamic nature of the policy process where policies are constructed, modified, and/or subverted moving through phases and contexts. Meta-power and power (Burns and Hall, 2013) processes explain structuring conditions and intra-situational actions respectively.

Burns, T.R. and Hall, P. M., eds.,The Meta-Power Paradigm. 2013, Peter Lang Publishers.

Hall, P. M.," Interactionism and the Study of Social Organization." The Sociological Quarterly, 1987(28) 1-22.

Will the shale gas 'revolution' change the likelihood of US participation in international climate negotiations?

Guri Bang

The growing demand for energy and, at the same time, for lower carbon emissions has fuelled the development of new types of energy resources. Following recent debates over the benefits and disadvantages of wind power, rising interest in 'unconventional' gas has emerged since the beginning of the 21st century, posing new governance challenges for managing the nexus between food, water, carbon and energy. Different forms of unconventional energy such as shale gas and coal seam gas are already in substantial production in USA, Australia and Canada, with potential for development across Europe and Asia. This distribution constitutes a key component in the politics of energy self-sufficiency and emissions reductions, due to the relatively low carbon burden compared to other fossil fuels. Like windfarms, governance challenges arise due to the distinct spatial footprint of unconventional gas, with large numbers of wells spread out across existing land uses such as cropping and ranching. Rural communities have expressed concern over the potential for social and environmental impacts, contamination of water and equitable distribution of compensation to rural residents. This session welcomes papers on all governance implications of unconventional energy, including policy frameworks for competing access to land and water, principles for equitable distribution of economic benefits, case studies analysing policy decisions, and ways of managing trade-offs e.g. between food production and energy supply.

3.5 Sustainability Transformations: The Role of Knowledge and Learning
Chair: Tim O'Riordan, Room: JSC 3.02

Learning as a facilitating factor towards transformative pathways to sustainability?

Katharina Rietig, Richard Perkins

Entering transformative pathways to sustainable development requires the economy and with it political decision making to turn away from business as usual economic growth policies. Instead, they need to integrate environmental and climate objectives into all sectors of the economy via policy instruments channeling innovation and financial resources. Governance dynamics play a key facilitating or hindering role for arriving at a policy outcome that supports progress on transformative sustainability pathways. Learning is frequently regarded as facilitating factor for policy outcomes across multiple levels of governance. Learning however competes with alternative explanations such as bargaining, actor's interests and organisational objectives.

 This paper examines the link between individual learning of policy makers and learning among governmental institutions and analyses to what extent learning matters for the policy outcome. It finds that policy entrepreneurs play a key role in transferring learning to the organisational level and in

achieving policy outcomes, which can contribute to entering more sustainable paths of economic development. The empirical focus is on learning in climate policy integration, which carries increasing importance for effective environmental governance as it can help create synergies for economic development and climate mitigation. The European Union is a frontrunner in integrating climate objectives into energy, transport and agriculture policy via regulatory instruments setting overall targets and conditioning financial resources upon compliance. This paper uses qualitative methods to examine learning in the policy-making aspects of climate policy integration at the example of greening measures in the Common Agricultural Policy as a mean of attaching climate mitigation and adaptation conditionalties to the provision of financial resources. Thus, this contribution clarifies the link between the learning individual, changes in beliefs and the factors hindering learning from being transferred to the organisational level where policy decisions are made.

Engaging the emotions - transformative learning approaches to support University students' confidence and motivation to act as agents of change.

Marisa Goulden, Kirsti Norris

Learners, in particular those studying courses related to global environmental challenges, have the potential to act as agents of transformative change in society through their personal and professional lives. However, little is known about the effectiveness of mainstream academic approaches to environmental education in building the resources and skills that students need to act as agents of change. By focusing on the severity of global environmental problems and theoretical critiques do we risk overwhelming students and triggering a loss of motivation and reducing their sense of efficacy? Are there ways of teaching that allow emotional engagement as well as intellectual? In this paper we examine some of the limitations of academic approaches that emphasise cognitive aspects of learning and rarely explore the emotional or existential responses that learners may have. We draw on the concept of transformative learning to explore new ways of working with students. In addition to literature review, this study uses interviews and focus groups to draw on the experiences of learners and teachers on programmes related to Environment and Development. We also draw on observations from working with Sustainability Champions in Higher Education Institutions. Preliminary observations are presented in this paper and suggestions made for new approaches to engaging students with the aim of building student motivation and confidence to act as agents of transformative change.

Going green locally - Individual motivations for investing in renewables at community level

Gabriella Doci, Eleftheria Vasileiadou

Transformative pathways to sustainability cannot be realized without new forms of localism and self-reliance, for instance in energy and food production. From a sustainability transitions perspective, renewable energy production at the community level is very promising. For instance in Germany, citizens have set up more than 650 renewable energy cooperatives, while in the Netherlands there are an estimated 150-300 such communities (2012 data). Yet, it has not been fully studied, why and how local groups invest jointly in renewable energy production. However, gaining insight about the main motivations of citizens to realize community based energy investment is vital in order to support such communities with specific policy instruments, and help increase self-reliance and the market share of renewables.

In our paper, we identify the main personal motivations for investing in renewable energy technologies and for realizing the investment jointly. We conducted 41 interviews and took almost 100 surveys with members of renewable energy communities in the Netherlands and Germany. Our preliminary results show that there are three main types of motivations involved in joint investments: (a) gain motivations, relating to expected financial gain from such investments; (b) normative motivations, such as contributing to a better environment, or improving the neighborhood; and (c) hedonic motivations, such as having fun and getting to know neighbors. All three types of motivations are present behind the decision to invest jointly in renewable energy technologies. Since renewable energy generation has the perspective of only a low profit in the long run, only gain motivations are not enough for making the investment decision. At the same time, exclusively environmental motivations are also not sufficient for realizing such a project. We discuss governance strategies at the local and national level that can support such motivations, and help increase renewable energy communities.

Normative or Transformative? Re-evaluating the paradoxes of localism and reliance in community-based adaptation thinking

Karsten Schulz, Rapti Siriwardane

Given the call for transformative approaches to climate change adaptation, questions around local

community-based capacities for change have been garnering renewed interest. Within adaptation scholarship, the re-situating of local communities as catalysts for change has often proved problematic. Traditionally, communities, how nefarious the term may be, have often been perceived as hotspots of vulnerability and as sites for technical intervention. On the other hand, communities have frequently been recast as a panacea facilitating change and transformation, provided they possess and sustain local capacities for appropriate adaptation in the first place. This presentation firstly attempts to re-evaluate the normative meanings of the twin concepts of localism and community reliance against three existing heuristic categories and inter-related strands of adaptation thinking   adjustment, reformist and transformative adaptation.

 By locating human agency and power within adaptive processes, the study seeks to unpack the institutional limits and possibilities of re-situating notions of community reliance and localism at the heart of the transformative debate. Secondly, the presentation seeks to advance a more nuanced approach towards re-assembling the promises of localism and community-based reliance in the context of structural marginalization and the everyday politics of local adaptation, which have often proved to have an inhibiting effect on the internal capacities of communities to cope and adjust to change. It specifically asks what kind of questions concerning community reliance and localism have been problematized by discourses on transformative adaptation, while at the same time pointing towards particular frames of normativity that are equally challenging, and may at times remain less discernable in debates on socio-ecological transformation and its concomitant paradigm shifts.

An Indigenous-Canadian Framework for Transforming Earth Systems

Dawn Marsden

Indigenous systems of governance, allocation, access and sustainability are based on fierce independence, a fostered awareness of collective responsibility, and a deep orientation to place. These systems have endured for tens of thousands of years, and weathered major climatic and environmental changes, yet have been overlooked as viable options for transforming our world. If we evaluated the sustainability of colonization and empire building over the last 500-1000 years, regardless of political systems, we could conclude that they have failed economically, environmentally and socially; it has been self destructive at all levels of inquiry for both the colonizers and the colonized. The root of this failure is in the psychosocial disconnection of human civilizations from the environment. Despite colonization, Indigenous systems have endured; this is a testimony to the social resilience generated by these systems. It's time to revisit Indigenous principles beyond romanticization, with a critical eye for new applications of time-tested principles. This presentation is based on one Indigenous-Canadian's reflection upon a lifetime of experience listening to Indigenous Elders, training in environmental issues, public health and education, and work with Indigenous communities, agencies and policy makers. The author will present 15 mutually reinforcing Indigenous principles for enviro-cultural sustainability, and propose strategies and promising practices for re-embedding contemporary social systems within changing bioregions, towards Earth system transformation.

3.6   Socio-Technical Innovations and Low-Carbon Transitions
Chair: Sebastian Sewerin, Room: JSC LT

Transformation processes in socio-technical transitions: Research Findings from Nigeria Field Studies

Olufolahan Osunmuyiwa, Frank Biermann, Agni Kalfagianni

Numerous studies have tried to identify transformation processes and strategies to further transitions towards a stronger reliance on renewable energy. Most of these studies have analysed only transition processes in advanced industrialized countries with their particular socio-technical systems. This paper makes an important contribution to the literature by analysing the transformation processes for renewable energy transition in an African oil-rich, resource-dependent state, i.e. Nigeria. Very few studies have examined so far energy transitions in developing countries in general, and in oil-rich, resource-dependent states more specifically. In industrialized countries, transformation processes have been predominately explained by multi-level socio-technical perspective (MLP) that emphasise the role of technology being developed and adopted by niches (i.e. networks of emerging renewable energy technologies), regimes (i.e. existing energy institutions and actors) and pressure from landscapes (i.e. exogenous factors beyond the direct influence of niche and regime actors, such as population growth) as the basis for transition. This paper questions, the explanatory power of the MLP in oil-rich, resource-dependent states, such as Nigeria, as it fails to take into account the fundamental politics of transition processes in the African context. Specifically, the paper argues that the limited functionality of the Nigerian energy socio-technical system is dictated by the dominance of a politico-

economic rentier regime that creates a client-patron relationship in the society that affects the discourse towards transition. Political responses are hence shaped to maintain the existing energy system and not to alter it. In a process that is described as 'politics of renewal', the Nigerian government has systematically enforced an all-encompassing fossil dominance with regime members who resist pressure from small renewable energy niches. Accordingly, the paper calls for a modification of the MLP to accommodate political elements such as patronage and clientelism that are indigenous to developing countries, especially oil-rich, resource-dependent countries like Nigeria.

Socio-Technical Innovation and Symbolic Power - Hidden Forms of Power and Local Renewable Energy Projects.

Angela Pohlmann

The conferences theme "Transformative Pathways to Sustainability" fits the topic of my PhD-project. Herein I compare three local renewable energy projects regarding the question how these projects as both objects and subjects of governance processes interact with "hidden forms of power" (Bourdieu, 1979, 1980, 2012).

 The case study consists of two German bunkers from WW II and a Scottish Prisoner of War camp. These projects are being developed into either solely renewable heat production places or into combined energy and social/cultural/ecological/economical projects. The latter approach is being adopted by the Scottish camp and one of the German bunker projects. These are both bottom-up organised, charity run projects. The second German bunker is a top-down project, whose energy production and distribution is run by a municipal utility company.

 All three projects are both actors within as well as objects of local governance processes. Power and inequality in governance have so far mainly been analysed in terms of economic or political advantages or disadvantages. Bourdieu's concept of symbolic power, however, makes visible how social norms and ideas influence both the realisation of these projects as well as the way they are perceived by other actors within governance processes.

 Using participant observation, grand-tour interviews and grey literature, I examined how on the one hand the projects perceive ideas and norms of (among others) "success", "professionalism" and "participation" and how they position themselves towards these ideas and norms. On the other hand I analysed how this positioning influences both the way these projects' are being perceived by other actors. Both levels influence the projects as subjects and objects of governance processes.

 Employing Bourdieu thus allows shedding light on the question how ideas and norms, seemingly unrelated to issues of sustainability and governance, nevertheless are able to significantly affect transformative pathways to sustainability.

Transformative pathways, emergence and sustainable energy transitions: a relational reflexive governance approach

Jason Chilvers, Noel Longhurst

In the face of seemingly intractable ecological, economic, and social dilemmas facing the world, a multitude of actions and initiatives are underway that seek to build transformative pathways to sustainability from global to local scales. A key matter of concern in this regard is energy, a basic human need where pressing issues of environmental impact, economic wellbeing, security, and resilience converge. Global energy systems have reached a critical juncture and a growing body of research and practice seeks to understand how best to govern and steer energy systems onto more sustainable paths. Existing approaches to sustainability transitions in energy and other domains are often driven by an instrumental imperative that we need to move as quickly as possible to a desired future state that is already known and widely agreed upon. Yet, the reality is one of complex actor dynamics and politics where a diversity of desired future states, ways of knowing, and transformative commitments coexist. In this paper we present a relational approach that seeks to better account for difference, diversity, uncertainty and emergence in sociotechnical transitions, both in terms of understanding system change and governing it in more reflexive ways. We illustrate this approach through the case of low carbon energy transitions and the work of a large UK interdisciplinary research consortium which is developing and appraising pathways for low carbon energy transitions to 2050. Analytically, our approach shows how the trajectory or pathway of any particular system is the consequence of the coproduced 'ecological' entanglements of multiple energy technologies, issues and techniques of governance. We end by outlining how our approach opens up possibilities for reflexive and adaptive ways of governing energy transitions, through enabling responsiveness to emergence/divergence in technology and society, and through catalyzing self-reflective, relational and distributed reflexive capacities.

Explaining Government Choices for Promoting Renewable Energy

Lena Schaffer, Thomas Bernauer

Many advanced industrialized countries have, in recent years, experienced a significant expansion of energy production from renewables. Yet we know quite little about the dynamics of the underlying policy-choices in this area. Using new data on adoptions and changes in Feed-In Tariff and Green Certificate schemes in 26 advanced industrialized countries over 20 years, we examine both domestic driving forces as well as international determinants. The findings suggest that three factors play a particularly important role in pushing countries towards the adoption of market-based support systems: characteristics of the existing energy supply system, a federalist structure of the political system, and EU membership. Particularly noteworthy is the finding that higher shares of fossil and nuclear energy in the national energy supply as well as higher CO2 intensity of the economy do not, as we had expected, stand in the way of policies for supporting renewables. To the contrary, they increase the likelihood of a country adopting such policies. With regard to changes of existing renewables policies, the existing theoretical and empirical literature does not provide much guidance on whether, and to what extent, such policy changes are influenced by the same factors that also influence the initial adoption of the policy. Our preliminary results suggest that higher economic growth and higher growth in solar and wind energy capacity tend to reduce the political appetite for reforms of existing schemes.

Wednesday, 2 July, 16:00-17:30

4.1	Exploring Pathways to Decarbonization II *Chair: Steven Bernstein, Room: JSC 1.02*

(Re)conceptualising Energy Transitions in Southern Africa: the role of the 'Rising Powers'

Peter Newell, Marcus Power, Harriet Bulkeley, Lucy Baker, Josh Kirshner

A growing literature on the rise of China, India and Brazil as 'shapers' of development in Southern Africa has tended to focus on their exploitative acquisition of natural resources such as coal, oil and gas, with less regard for their potential significance in reconfiguring energy systems within the region. The depth, drivers, and outcomes of their activities are complex and contested. Currently, however, the conceptual tools available to analyse these processes are drawn from a growing literature on energy transitions. While this work usefully points to the ways in which stable 'regimes' can be brought under pressure through innovation 'niches' and broader systemic pressure, it has largely been focused on Europe and North America. In this paper we argue that some of the assumptions made in this literature are being increasingly challenged and unsettled by the (re)emergence of China, India and Brazil as key development actors in Africa and by the complex transnational dynamics that shape energy systems in a 'South-South' context. The paper therefore examines whether transitions approaches can help us to understand this emerging 'South-South' context or whether alternative thinking is required and reflects upon what theories of transition could learn from experiences drawn from the global South.

Policy Pathways to Decarbonization: An analysis of the Global Subsidies Initiative's Fossil Fuel Subsidy Reform Program

Nathan Lemphers

The Global Subsidies Initiative (GSI), a Geneva-based initiative of the International Institute of Sustainable Development (IISD), began in 2005 and conducts policy research on subsidies that undermine sustainable development, notably fossil fuel subsidies. By working with governments, civil society and the private sector, GSI encourages the global reduction of fossil fuel subsidies-. The GSI tracks the progress of the G-20 countries 2009 commitment to phase-out inefficient fossil-fuel subsidies over the medium term, publishes case studies and policy briefs on specific countries, and communicates their research to individual governments, civil society organizations and international organizations like the World Trade Organization. This paper examines the role of the GSI's fossil fuel subsidies work as a potential policy pathway to decarbonization. While multiple pathways exist to reduce greenhouse gas emissions at multiple scales, the public policy analysis and advocacy of the GSI serves as one model of a civil society organization engaging both the public and private sector to see a global reduction in fossil fuel subsidies. By analyzing GSI/IISD documents, media reports and stakeholder interviews, I will provide an analysis that examines how the GSI has been instrumental in mapping the global impact of fossil fuel subsidies from an economic and environmental perspective and its attempts to reframe previously isolated and environmentally harmful national and sub-national fossil fuel subsidies as a global concern This analysis will allow for an evaluation of whether and how the GSI has aided in the development of another policy pathway to decarbonization.

One Network, Multiple Pathways: Assessing Decarbonization Potential in the C40 Electric

Vehicle Network and Joint Procurement Initiative

David Gordon

Much ink has been spilled of late in praise of cities as global climate governors, based on the notion that cities, responding to local needs and free from the strictures of national sovereignty, are more apt to cooperate, share information, and learn from each other. The propensity of cities to join transnational networks such as the C40 Climate Leadership Group further underscores this assertion. But while networks like C40 may facilitate the flow of information, little is known about why some ideas flow while others do not, nor why diffusion sometimes produces convergence and sometimes does not. I argue that addressing these questions requires thinking about networks as spaces of political interaction, and specifying how power dynamics impact which (and whose) ideas enter networks, move through them, are taken up, and run into barriers along the way - in other words, how agency and architecture interact within the C40. In this paper I propose three conceptual moves that can facilitate this task. First, the paper disaggregates city-networks like C40 into multiple, functionally differentiated networks-within-the-network. This analytic distinction creates space to identify and account for differential patterns of diffusion and convergence. Second, the paper proposes a multidimensional account of network centrality to identify which cities have the power to upload ideas and drive diffusion across the network. Third, the paper suggests that diffusion flows remain, to varying degrees, constrained by the continued embedding of cities in sovereign systems of authority. The paper then assesses the viability of the framework by presenting empirical evidence of convergence within the C40 around a "measure to manage" approach to local climate governance, arguing that the conceptual tools provide a useful means of accounting for convergence patterns and can offer a means of assessing the potential of city-networks like C40 as pathways of transformation.

Smart transitions? Emerging urban logics for climate governance

Harriet Bulkeley, Johannes Stripple

After two decades of policy and practice, the critical importance of urban responses to the challenge of decarbonisation has been recognised by public and private authorities. In response, multiple pathways of decarbonisation have emerged, each regarding the urban climate change problematic in different ways and proposing different tactics and techniques through which to intervene, with concomitant implications for how decarbonisation should be achieved, by and for whom. In this paper, we seek to examine one particular pathway to decarbonisation that has emerged in the urban sphere - that of smart low carbon urbanism. We examine how notions of 'smart urbanism' and low carbon transitions have been fused, their commonalities and differences, and the ways in which the smart low carbon city has come to be imagined, practiced and resisted. We draw on the initial analysis of field research undertaken in Sweden and Denmark to explore the emergence of smart low carbon projects, the ways in which they seek to enact new logics of energy provision and use within the city, and the forms of low carbon subjectivity that are being created and contested as a result of such interventions. We examine who is included and excluded from such pathways to decarbonisation, and what the implications are for how and by whom low carbon transitions might be governed.

4.2   Approaches to Flood Risk Governance and Management
Chair: Marisa Goulden, Room: JSC 1.03

Postnational Discourse, Deliberation and Participation toward Global Risk Governance

Andreas Klinke

Contemporary modern societies are increasingly confronted with the task in world politics of coping with human-induced, globally relevant risks that threaten ecological, socio-political and economic systems throughout the world. To address the scopes and impacts of these global risks, which often transcend political units, societal realms and natural systems, global risk governance institutions and public policy beyond the state need to break new ground. However, current global governance structures seem to be largely lacking the institutional and procedural capacity to deal with these global risks effectively, which is why new modes of interaction have become essential in global risk governance. The central argument of this article is that institutional arrangements of global risk governance require a discursive turn in order to tackle key peculiarities of global risks, namely complexity, scientific uncertainty and socio-political ambiguity and the resulting challenges, problems and conflicts. To this end, distinctively discursive and pragmatic learning processes can be developed. Different forms of deliberation and participation help develop processes that meet the challenges, problems and conflicts that result from the key peculiarities of global risks. Hence, the article establishes a causal link between key peculiarities of global risks and postnational discourses. I discuss the varying forms of deliberation and participation (epistemic institutions, associational policy making,

transnational public deliberation and participation) of three discourses that produce institutional problem solving capacity in global risk governance. This presupposes the emergence of transnational public spheres in which a new interplay between the state, economy and civil society is possible and in which deliberative and participatory transnational procedures of global governance institutions aggregate postnational discourses in the formation of public opinion and will. To this end, the paper links theory and practice as well as normative conceptualization and institutional feasibility.

Towards a diversification of Flood Risk Management in Europe: an exploration of governance challenges

Carel Dieperink, <u>Dries Hegger</u>, Peter Driessen

Because of climate change, extreme weather events and urban sprawl urban areas have to deal with increasing flood risks. It is argued, both in literature and in practice that these risks can no longer be dealt with by focusing solely on flood defences (building dikes, dams, embankments etc.). Actors at various levels (international, European, national as well as regional) wish for and make efforts at a diversification of Flood Risk Management Strategies (FRMSs). The role of pro-active spatial planning (building permits), flood mitigation (e.g. urban green infrastructures, adaptive buildings), flood preparation and flood recovery must grow. Aim of this paper is to identify the major governance challenges related to the ambition to diversify FRMSs. The paper provides a framework for classifying the challenges by zooming in on five dominant topics which are the subject of policy and societal discourses. The five dominant topics - identified after a review of existing literature - are: the division of responsibilities between actors (the public private divide), the way risks and uncertainties must be communicated, the interpretation and specification of different normative principles, priority setting and the preferred technological options for dealing with risks. For each topic we will identify the contents of the debate and the implications of a shift for actor involvement, the development of rules and the availability of resources. The paper leads to the conclusion that existing governance structures are highly fragmented. So, the overall governance challenge related to a shift in FRMS is the necessity to organise joint working between relevant actors in an effective and legitimate way. This asks for inspiring bridging concepts like climate proofing that can steer societal decision making. We will argue that future empirical research should make clear whether and under which conditions these concepts really contribute to a shift in FRMSs.

From flood prevention to multi-layer safety in the Dutch Delta - Governance implications of implementing an integrated flood risk approach.

<u>Mathijs van Vliet</u>, Arwin van Buuren, Katrien Termeer

The Netherlands has a long tradition of flood management, which mainly focussed on flood prevention via embankments. Spurred by near floods in 1993 and 1995 and the EU Flood Directive, the Dutch flood management is slowly moving towards a flood risk governance approach, called Multi-Layer Safety (MLS). The policy consists of three layers 1) prevention, 2) damage reduction through sustainable spatial planning and building codes, and 3) crisis control and evacuation.

MLS is currently been worked out in more detail, but faces considerable opposition especially from the traditional water agencies. As an integrated and area-specific flood risk approach, MLS will have large impacts on current governance arrangements. It implies a reallocation of responsibilities, costs and benefits from water authorities towards parties that currently have no, or a limited, role in flood management -- parties for who flood management is not the first priority.

In order to successfully implement MLS connectivity between the involved governance levels, sectors and private parties need to be organised, in order to make sure that measures from each layer reinforce each other. Connectivity is hindered by differences in frames on flood safety (flood prevention or flood risk management), which include normative aspects such as solidarity and fairness (which might shift due to increasing differences in flood probability between regions). Water agencies -- who have invested so much (economically and emotionally) in flood prevention -- are concerned that other priorities might overrule flood prevention in spatial planning, thus increasing flood risks. They want to solely invest in embankments, which are seen as the most cost-effective measure.

This paper will describe the impacts of MLS on current governance arrangements on basis of a conceptual framework (reallocation of responsibilities, connectivity, frames, normative principles) and the recent policy discourse, and sketch possible future governance arrangements for MLS.

When are boundary organizations effective? An exploration of the connections between roles and effectiveness - the case of flood management

<u>Dave Huitema</u>, Stefania Munaretto

Science-policy interactions are often problematic, e.g. in the realm of climate governance. An often advocated solution is the "boundary organization" that is dedicated to connecting or bridging the two

spheres. But our understanding of how boundary organizations function is still limited, let alone that we understand their effectiveness. We argue that Roger Pielke's (2007) typology of scientist's role in relation to policymaking, namely pure scientist, arbiter, advocate, and broker is useful for understanding boundary organization behavior. Pielke subsequently argues that currently most authors would agree that the broker role is most likely to produce an effective interaction between science and policy. But what does an effective interaction mean? This paper takes a limited view and suggests that science-policy interactions can be called effective when policy makers deem the advice they receive as legitimate, credible and salient (the criteria developed by Cash et al., 2003). Our core hypothesis is that boundary organizations that operate according to the broker role will thus score better on these criteria. This hypothesis is then tested for various instances in which scientific committees were asked to advice on flood safety measures. The paper concludes that effectiveness is not as strongly associated with the broker role as the literature would suggest and operating in a different role conception can be equally effective.

4.3   Transformations in Community Actions and Governance
Chair: Bruce Lankford, Room: JSC 2.02

Grassroots Innovations for Sustainable Development: Lessons from community energy in the UK

Gill Seyfang, Tom Hargreaves, Sabine Hielscher, Adrian Smith

System-changing innovations for sustainability transitions are proposed to emerge in radical innovative niches. 'Strategic Niche Management' theory predicts that niche-level actors and networks will aggregate learning from local projects, distilling and disseminating best practice. Within this literature, grassroots innovations emerging from civil society are an under-researched site of sociotechnical innovation for sustainable energy transitions.

We consider the emerging community energy sector in the UK, in order to empirically test this model. Community energy is a diverse grassroots-led sector including both demand- and supply-side initiatives for sustainable energy such as community-owned renewable energy generation, village hall refurbishments, behaviour change initiatives and energy efficiency projects. The UK government is consulting on a new strategy for community energy, and our research identifies some of the policy challenges ahead.

Our analysis draws on in-depth qualitative case study research with twelve local projects, a study of how intermediary organisations aim to support local proejcts and encourage replication, and a national survey of community energy ptojects. We present a series of headline findings about the emerging community energy niche, and its potential to diffuse and influence wider energy systems. Critical to this is a recognition of the ways in which grassroots innovations are distinct to conventionally-studied market-based innovations. This brings specific benefits and opportunities, but also new challenges requiring tailored support. In particular, we identify the policy changes required to successfully govern and nurture this emerging sector, to help meet policy objectives for climate change.

We draw out the implications of our findings for niche theory, for community energy and other grassroots practitioners aiming to build robust influential niches, and for policymakers eager to harness civil society's innovative potential for sustainability.

Governance of Environment Induced Conflicts: Traditional Architecture and Resource Management in Local Communities of Oyo State, Nigeria

Usman Raheem, Gbenga Paul Awotayo

Land resources are major assets in Africa for farming activities and livestock grazing; exploitation of which constitutes a source of conflict when stakeholders operate at cross purposes. Occurrence of conflicts between herdsmen and local farmers is therefore on the increase in Oriire Local Government Area (LGA) of Oyo state. Records show that 70.5% of all violent clashes were recorded in 5 out of the 10 wards of the LGA while the remaining wards were relatively free despite the fact that herdsmen were found in all wards in the LGA. This paper examines, through a contextual-comparative analysis, the roles of traditional institutions as environmental governance architecture in local communities of Africa. Reported cases of conflicts involving local people and herdsmen were obtained for the period 2001-2012 to identify the hotspots of conflicts in the area. Focus group discussion sessions were held separately for stakeholders in both the hotspot and the relatively free wards. Context analysis of the discussions was carried out to examine the variation in the occurrence of conflicts. Findings show that the herdsmen were migratory and maintained transient habitation during dry seasons. Conflicts result from cattle grazing on farm lands or animals drinking from community water sources. Police station served as the first destination of environmental violation reporting whereas community leaders were

used as the first destination in the conflict free wards. Herdsmen were isolated by avoiding their dairy products as a measure of systematic starvation whereas in the conflict free areas, the herdsmen were assimilated into the community with Sherikin Fulani as the head. They also attend community meetings and social functions and stakeholders' committees were empowered to resolve conflict between local people and herdsmen. Traditional institutions are peculiar strengths in Africa because of the organized systems of administration and should be rediscovered for environmental governance in Africa.

Facilitating a transition in community infrastructure governance

Katy Roelich, Christof Knoeri, Julia Steinberger, Jonathan Busch

Infrastructure represents a crucial interface between social and ecological systems influencing the level and composition of society's resource demand and the institutional and social organisation of society. Despite this, it is rarely addressed in most analyses of socio-ecological systems. A socio-metabolic transformation is unlikely to occur without a radical transformation of the infrastructure systems that underpin our systems of production and consumption. Therefore, in this paper we focus on the facilitation of infrastructure transitions as a means to initiate a wider sustainability transition.

It is argued that an effective connection between resource users and infrastructure providers is an essential precursor of robust socio-ecological systems; a condition which is clearly absent when infrastructure is operated by large, international firms. There has been a great deal of work of the role of communities in governing simple natural resources but less on community governance of infrastructure, which is more likely to fulfil this condition. In this paper we build on the work of Ostrom and colleagues and explore the benefits of community infrastructure governance for society (including the infrastructure users) and ecological systems (including preservation of energy resources). Using the UK as a case study we analyse the barriers to a more prominent role for communities in infrastructure provision and management. We find that there is a series of institutional barriers which limit the potential of community infrastructure to contribute to an infrastructure transition. We conclude with a discussion of actions and policies that might enable communities to overcome these barriers and facilitate the scaling up of community infrastructure governance.

Is small beautiful? Understanding the role of community energy within wider energy systems

Iain Soutar, Catherine Mitchell

The scale and immediacy of the energy challenge necessitates decisive policy action, and support from society at large. In the UK and beyond, the energy system suffers from technological and institutional lock-in to privately owned, large-scale, centralised energy production. This is at odds with the need for a whole-systems approach, which considers demand alongside supply and engages meaningfully with society and societal objectives. The decisions that shape our collective energy futures are likely to be expensive, both financially and politically, and there is an urgent need to build a more robust understanding of the long-term economic, social and environmental implications of the options.

One such decision relates to scale, and to what extent small-scale community-led approaches could play a role within wider energy systems? There are ever-increasing opportunities for civil society to become more involved in energy issues. Environmentalism, energy prices, and dissatisfaction with incumbent industries, combined with the potential to generate revenue, has stimulated considerable growth in community energy initiatives. In the UK however, community energy efforts remain somewhat marginal and face significant barriers to developing further than the niche-level in which they currently reside.

This paper seeks to identify and assess economic, social and environmental impacts and values associated with community energy approaches. These impacts and values, as interpreted by actors in both policy and society more generally, have implications for how the role of community energy can be 'scaled up'. Empirical research on the impact and values associated with a community energy initiative in England is compared with experiences from Germany and the Netherlands. Analysis of variations in governance, culture, and political-economic paradigms provide insights into how community energy might become more central in the UK's energy system.

From Serengeti Wildlife to the World: The Ten Commandments for Fair Living in the Anthropocene

Aliyu Barau

Humans need new strategies and new responsibilities in order to survive the Anthropocene. Thus, human needs, planetary supplies, scarcities, risks and human values would need a redefinition in the Anthropocene. This paper seeks to find which principles or strategies can help humans to secure better access and allocation of resources in the Anthropocene. This study is guided by interdisciplinarity and thus, biomimicry and documentary film analysis form the backbone of the study design and data.

Through watching over 20 different video documentaries filmed between 1977 and 2012, the researcher observed behaviors of at least 10 wildlife animals living in the Serengeti savanna plains in Tanzania. The observation focused on how the wildlife live a dynamic life of resource abundance, scarcities, risks, tragedies, and yet they are able to maintain high-level teamwork, territorial governance, security and defense strategies, and advanced resource management skills. The analysis of the documentary films suggests that humans could survive the Anthropocene and its uncertainties by adapting the robust, resilient and dynamic life that exists in the Serengeti. This paper identifies some ten commandments or principles that define the philosophy of resource access and allocation strategies in the wildlife world. These principles or strategies proposed for human survival in the Anthropocene are: 1) sharing in scarcity 2) make waste into wealth 3) sustainability skills for all 4) high alertness 5) help the weak 6) build inclusive cooperation and collaboration 7) optimise food chains of the poor 8) observe territorialized rights and responsibilities, 9) develop open access for the weak 10) observe selfless and representative leadership. The paper believes that these commandments could help humans to establish a a robust and resilient life where effective resource governance tackles the interests of all stakeholders.

4.4   Energy: Transitions, Politics and Governance
Chair: Agni Kalfagianni, Room: JSC 2.03

Uptake of renewable energy among thirty seven Nigerian states: transformative pathway to sustainability?

Olufolahan Osunmuyiwa, Frank Biermann, Agni Kalfagianni

Several attempts have been made globally to understand transformative processes at the national level as a response towards calls for global environmental sustainability and development. This paper studies transformative processes in the form of energy transitions in Nigeria. Despite Nigeria's large dependence on accrued revenues from fossil production, our preliminary research identifies a small but steady uptake in the employment of renewable energy. However, such uptake is unequally distributed among the thirty-seven states of the Nigerian federation, with some qualifying as pioneers and others as laggards. This paper analyses the reasons behind this variation in the uptake of renewable energy technologies. Drawing on multi-level socio-technical theory, we examine variation along three hypotheses: the niche hypothesis, which explains uptake on the basis of experimentation and development of research institutions; the regime hypothesis, which explains uptake as a product of actors' cooption of technology; and the landscape hypothesis, which explains uptake as a product of factors beyond the direct influence of niche and regime actors, such as population growth. Based on extensive empirical evidence compiled from primary institutional database statistics, interviews with key stakeholders, and secondary sources such as journals and policy papers, the paper gives a detailed explanation of the factors that drive and/or impede renewable energy uptake in different Nigerian states. While all three hypotheses are able to explain variation in uptake to some extent, our research indicates that the regime hypothesis is more powerful. Specifically, we find that regime members - traditionally barriers to transition - were instrumental in the diffusion of renewable energy in the pioneer states as their support created legitimacy for the uptake of renewable technologies. The paper concludes that uptake and diffusion of renewable energy in Nigeria could increase if regime members became more actively involved especially in the promotion of communal uptake.

Pathways to the Energy Transition - The Politics of Policy Innovation in Majoritarian and Consensus Democracies

Sebastian Sewerin

Amidst all discussions of evolving global environmental governance, there are good reasons not to neglect the role of state-led policy making. Decisions on policy change and the allocation of sparse resources have to be negotiated in political processes and need legitimization by and enforcement through state institutions. As the changes necessary for moving societies towards sustainable development are inherently political the question arises what institutional contexts are favourable to negotiate policies breaking existing patterns. The energy transition is a very complex political problem as vested interests have `locked-in´ the energy system on a high carbon path. However, in recent years new innovative energy policy schemes have been introduced in some, mostly European, countries and are beginning to change the overall modes of governance. This article will compare the patterns of energy policy innovation across four cases (UK, New Zealand, Germany, Austria) from 1998 to 2010. The cases were chosen to achieve variation on institutional characteristics (e.g. party system, federalism) while a new approach to measure policy output will assess how innovative the countries' policy portfolios are. The aim of this article is to analyze the effect of institutional characteristics on

patterns of policy innovation and thus shed light on the politics of policy innovation. The article contributes to theoretical discussions in comparative politics regarding the capacity of political systems to deal with different types of complex, long-term policy problems. Therefore, the article will draw on policy innovation studies, policy change literature and broader approaches of comparative politics to explore whether specific institutional setups are more prone to challenge the existing `carbon lock-in´ than others. Being an exploratory study, this article seeks to contribute to establish an encompassing framework of Comparative Transition Politics, leading to further systematic inquiries into the role of political institutions in tackling long-term governance challenges.

Energy co-operatives, 'expanding Davids' for a new energy structure? The potential and scope of energy co-operatives for shaping a wider transition of Germany's energy system

Sarah Debor

A real transition of Germany's energy system requires the stronger alignment of new technological concepts with applicable societal configurations that empower citizens, politicians, institutions and firms to become pro-actively engaged in the elaboration of renewable energy. This raises the attention towards lately emerging energy co-operatives. Their strong growth during the last years (over 700 organisations have been founded since 2006 in Germany), their special focus on renewable energy in regions and their different logic of operation, based on self-help, social responsibility and cooperation, visualises that energy co-operatives may be important organisational actors for a bottom-up governance approach of socio-technical system change. However, little knowledge exist about the scope and potential of energy co-operatives to emerge to dominant institutions in order to factually shape a broader transformation process of Germany`s energy system.

 Therefore, the paper reflects the potential and scope of energy co-operatives based on (1) a full assessment of all officially registered energy co-operatives in Germany (quantitative research) and (2) the accompanied analysis of energy co-operatives selected according to a high operational scope (qualitative research). The aim is to understand their structural change potential, as well as to learn more about their power to grow. It is drawn upon the multi-level perspective on socio-technological transition that explains how societal and technological novelties emerge in protected niches, diffuse once they become robust enough and eventually link up with or even replace established socio-technological regime structures. The governance perspective of strategic niche management introduced networking, visioning and learning as conditions that support innovation projects to leave the pilot stage with a better chance to survive and to become more influential. This paper aims to elaborate a better understanding of robust niche development from an organisational perspective by transferring the niche development factors from the innovation project to the organisational level.

EU-Caspian natural gas relations: climate, energy, rights and freedom

Claire Dupont

The European Union has long promoted three objectives for energy policy: competitiveness, sustainability and security of supply. When it comes to external gas relations, it seems that security of supply is the predominant motivation that pushes for new supplies of natural gas, with little attention given to climate objectives or to overarching objectives of human rights.

 In this paper, I examine the EU's natural gas relations with the Caspian region over time from the perspective of the EU's objectives to decarbonise its energy sector by 2050, and from the viewpoint of overarching European values such as the promotion of human rights. Two countries in the Caspian region are held up as particularly promising future partners for EU natural gas supplies: Azerbaijan and Turkmenistan. Yet these two countries have poor records of freedom, democratic legitimacy and human rights. Additionally, questions can be raised about the EU's push for more sources of natural gas, considering its own political objective to reduce greenhouse gas emissions by between 80 and 95 per cent by 2050.

 I therefore question how the EU is reconciling, or could reconcile, its climate policy objectives and the overarching significance it places on human rights and freedom with its energy relations with the Caspian region. This paper draws, in particular, on literature on climate policy integration to help identify a number of factors that could explain the extent to which other policy objectives are integrated into EU external gas relations with the Caspian. Such factors include: the political will or commitment to integrating climate and rights objectives into the policy sector; the recognition of the functional interaction between climate, rights and energy security objectives; the involvement of climate and rights advocates in external relations; and the general policy context within which such energy relations are formed.

Uptake of Renewable Energy in Oil-rich Countries: Explaining Policy Variation in the Gulf Cooperation Council States

Yasemin Atalay, Frank Biermann, Agni Kalfagianni

While the member states of the Gulf Cooperation Council have long been dominated by the exploitation of fossil fuels, recent years have seen an increasing uptake of renewable energy technologies. The reasons for this transformative development, with its potentially far-reaching consequences for global environmental and climate policies, are not yet sufficiently understood. This paper argues that the recent uptake of renewable energy in the Gulf and its variation can be largely explained by theories of policy transfer. We find only limited support for the alternative hypothesis of endogenous policy development, and no support for the hypothesis of a strong influence of the international climate regime. Based on an extensive study of Arab-language primary and secondary sources and interviews with key policy-makers and business leaders in the Gulf, the paper analyzes how transfers of renewable energy policies and technologies take place in the Gulf; the drivers of such transfers; and their impacts. Specifically, we identify two major channels of policy transfer, (i) international and interregional research collaboration with prestigious institutes, and (ii) business partnerships with the involvement of large corporations. Our findings suggest that any developments towards further renewable energy deployment in the future are more likely to stem from international and intraregional policy and knowledge transfers rather than from internal or external pressures. Accordingly, policy makers wishing to see a change in that region would best focus their attention on enabling such transfers rather than employ other, possibly ineffective, tactics. Hence, we also identify opportunities for a larger uptake of renewable energy policies and technologies among members of the Gulf Cooperation Council and ponder the larger transformative potential of the region.

4.5   Governing Across Issue Areas and Sectors
Chair: Fariborz Zelli, Room: JSC 3.02

Individual Science-Policy Mediators in the Wadden Sea: strategies and goals to enrich decision-making

Wanda van Enst, Peter Driessen, Hens Runhaar

The interactions between environmental science and policy is often contested, due to - amongst others - problems with the strategic production and use of knowledge. Scientific literature presents solutions for these interaction problems in the shape of so-called science-policy interfaces (SPIs): processes, organisations or individuals which aim at enhancing the level of credibility, legitimacy and/or salience (depending on the interaction problem at stake) of the knowledge used to enrich decision-making processes. Concluding a thorough literature review on these interaction problems and SPIs, we argue that three interfaces can be identified: i) boundary organization; ii) individual science-policy mediators; and iii) participating knowledge development processes. Little, however, in known on what interface to use with the occurrence of specific interaction problems, leading us to the question: SPIs, what works where, when and how?

 This paper will discuss the individual science-policy mediator (e.g. Honest Broker, knowledge broker) as being a SPI. Although there is a broad range of literature on these mediators, there appears to be little empirical evidence on the goals and strategies of these individuals. This paper will present an empirical research among 15 to 20 science-policy mediators, who operate in the field of environmental science and policy. A specific focus will lie on their experiences with policy problems occurring in the Wadden Sea area (is a shallow estuarine sea North of the Netherlands, Germany and Denmark) of great ecological but also economic value). Through in-depth desk research and multiple semi-structured interviews among the identified science-policy mediators we aim to present the strategies these individuals have, in order to enhance the level of credibility, legitimacy and salience of the knowledge used to enrich decision-making processes. The analysis will provide us with further empirical insights in when, where and how these individuals operate, and how they develop strategies for sustainable governance.

Governing Sustainable Development Goals: Lessons from Millennium Developing Goals

Masahiko Iguchi

While the international community is accelerating its efforts to achieve the Millennium Development Goals (MDGs) by 2015, the discussion on the Post-2015 Development Framework and the Sustainable Development Goals (SDGs) is beginning to gather momentum.

Much of the discussions are concerned with what future SDGs should look like, yet, the fundamental challenge posed to the international community is governance mechanisms to make the goals effective. Existing literature on the MDGs point out its "one-size-fits-all" nature (Vandermoortele 2011) and lack of inter-linkages between global to national and local levels (Katsuma 2008) as well as lacked implementation mechanisms (Vandermoortele 2009; Clemens et al. 2007; Saith 2006; Watkins 2008).

Furthermore, many point out MDGs do not include critical issues such as climate change and human rights, or even the question of "good governance" (German Watch 2010; Vandermoortele and Delamonica 2010).

Against this background, this paper considers governance for SDGs by drawing insights from lessons learnt from MDG experiences. Specifically, it attempts to consider future institutional architecture for SDGs by clarifying how the current arrangements of MDGs were formulated and by whom, as well as how previous initiatives of Sustainable Development reflect overall debate over the SDGs and (post-) MDGs (Architecture and Agency); and the strength and limitations of such arrangements as a rationale for proposing a new arrangement (Architecture and Adaptiveness).

As a result of analysis, this paper points out that the future Architecture for the SDGs should support universal goal-setting, while assuring regional, national and local contexts into account. In order to account such governance mechanisms, this paper further considers the possibility of linking fragmented various SDG processes ranging from the formal UN negotiations on to the Sustainable Development Solution Network.

Measuring inclusive sustainable development in South Africa - a barometer for environmental change and social deprivation

Megan Cole, Richard Bailey, Mark New

Nations in the 21st century face a host of environmental and social challenges. Environmental change is occurring at multiple interconnected scales and natural resource limits and critical thresholds are being reached. Developing countries face the additional burden of widespread poverty. These concepts are captured in a new visual framework for inclusive sustainable development (Raworth 2012), which builds on the 'planetary boundaries' framework (Rockström et al 2009), and seeks to influence public policy and global governance. We undertook the first worked case study for applying the framework at the national scale, and created a national barometer for inclusive sustainable development in South Africa. The barometer combines 20 indicators and boundaries for environmental change and social deprivation and identifies three types of environmental boundaries and three types of social indicator sets. We developed a decision tree methodology and a graphics tool, and interviewed 44 South African experts to ensure that the results are robust and credible. The analysis shows that South Africa has exceeded four of its environmental boundaries (biodiversity loss, marine harvesting, arable land use and climate change) and is close to exceeding three others (freshwater use, phosphorous loading and air pollution). This highlights its own vulnerability as well as that of its neighbours, and raises the importance of international and regional cooperation to national security. Results also show that social deprivation occurs in multiple spheres in South Africa but is most severe in the areas of health, safety and livelihoods, with 52% of the population living below the poverty line. These results highlight the extreme inequality in South Africa and the need for inclusive sustainable development.

Post-normal governance: Lessons from the Fukushima triple disaster

Lau Blaxekjær

This paper develops a new theoretical model termed post-normal governance to answer the research questions: What are the broader lessons for governance from the Fukushima triple disaster? And how does a new understanding of governance point to a reinterpretation of Fukushima? It departs from an analysis of the broader lessons for governance from firstly Fukushima and secondly the general global state of crises (governance, economy, and climate). It is argued that the science-policy relationship and ways of knowledge production is at the centre of governance of (and in) crisis. First the paper discusses two theoretical perspectives on the science-policy relationship in times of crises; 'post-normal science' and 'third generation governance'. Both fall short of integrating science and policy, however, insights from both are then combined to develop a model of post-normal governance (PNG). PNG has three zones built on three distinct narratives; Zone 1: a classical narrative of normal science and government as divided entities driven by technical and bureaucratic concerns, where risk and decision stakes result from external functions; Zone 2: a stakeholder narrative of science and governance driven by methodological and interest-based concerns where risk and decision stakes result from complex solutions; Zone 3: a reflexive and inclusive narrative of post-normal science and post-normal governance as overlapping entities driven by epistemological and ethical concerns, where risk and decision stakes result from conflicting purposes and internal functions. The paper reinterprets Fukushima in the PNG perspective and concludes that nuclear energy governance in Japan and responses to Fukushima have not followed the more appropriate PNG approach, but instead a mix of traditional strategies and narratives, which can account for the widespread lack of trust in science and policy as well as ongoing uncertainties. PNG offers a new narrative and a way out of governance in crisis.

Bringing Governance into Global Environmental Scenario Analysis

Marcel Kok, Sylvia Karlsson-Vinkenhyzen, Mans Nilsson, Steven Bernstein, Tom Kram, Tobias Nielsen, Stacy VanderVeer, Joost Vervoort

This paper results from a an initiative taken at the ESG conference in Japan 2013 to bring the global governance and scenario community closer together. This effort starts from the realization that insights from governance research is largely lacking in global scenario analysis, like on climate change and biodiversity. Many policy and governance parameters that are of interest for decision making in the public sphere are lacking in mainstream global scenarios today. This paper aims to contribute to filling that gap and provide directions for further (joint) work by social scientists and the scenario community on governance. First we will briefly introduce different scenario-approaches (quantitative, qualitative; explorative, normative; forecasting, back-casting; context scenario, policy scenarios; scenarios as endpoints vs. pathways). Next we will provide our assessment of how governance is currently reflected in global environmental scenarios, for this we use typology of stylized scenarios ('scenario families').Then we turn to the question what social science can offer for scenario development; this includes both a 'critical' perspective and a 'practical' perspective. From a 'critical' perspective we will consider what role scenarios doe play in decision-making (including aim and audience), the credibility and legitimacy of the process in which scenarios are produced and the role they play on the science-policy interface. From a practical perspective we elaborate the following contributions from 'social science' to scenario development: (a) improving the storylines in stylized scenarios to make them more robust and internally consistent; (b) teasing out the governance challenges that follow from the different scenario families (including how to reach the defined end points and how to deal with those endpoints in governance); (c) help identifying and analyzing possible policy strategies to realize specific objectives and identify the institutional and governance conditions under which these may work in different scenarios.

4.6 Social-Ecological Systems and Interplay
Chair: Norichika Kanie, Room: JSC LT

Adaptive Co-Management of "Tipping Points" in Social Ecological Systems: Governing Alternate Stable States in Lake Champlain Basin

Asim Zia, Christopher Koliba, Arne Bomblies, Andrew Schroth, Brian Beckage

When exposed to exogenous shocks or endogenous surprises, recent complexity science-informed research on social ecological systems (SESs) has demonstrated that these systems do not necessarily go through gradual change. Indeed, rather abrupt shifts between alternate stable states can suddenly take place. It is hypothesized that a loss of resilience usually triggers such critical transitions or "tipping points" in the SES's state variable. Such stochastic fluctuations may often be driven externally; however, they can also result from internal system dynamics. How will SESs undergo abrupt shifts into alternate stable states? Further, if social ecological modeling approaches could be used to generate an early warning or foresight about the tipping points in a complex system, will human actors within the system use the early warning to adapt and adjust their behaviors to avoid the worst case scenarios?

We examine these questions in the light of SES governing water quality in Lake Champlain, affected by nutrient flows from multi-jurisdictional Lake Champlain Basin (LCB) across USA and Canada. Anthropogenic climate change could induce abrupt alternate stable states in the Lake Champlain from more frequent and more intense flooding events in LCB as well as reduced ice cover internally in the lake system. In this study we are modeling a suite of scenarios of human induced climatic change, increasing agricultural land usage and rapid urbanization in the LCB, to determine if and under what conditions the Lake segments could abruptly switch to a eutrophic state. Furthermore, our integrated models will examine the effect of proactive adaptive management strategies on prevention of further eutrophication of portions of the Lake under climate change. We draw broad theoretical implications for adaptive co-management of tipping points in SESs, with an emphasis on generating early-warning for tipping points, adapting social system behavior and (social) learning through policy experimentation.

Towards a transdisciplinary analytical framework for understanding social-ecological transformations

Michele-Lee Moore, Ola Tjornbo, Elin Enfors, Corrie Knapp, Margot Hill Clarvis, Jenny Hodbod, Jacopo Baggio, Per Olsson, Duan Biggs

Interest has been growing about how to intentionally transform linked social-ecological systems (SES)

so that these systems are set in new directions that ensure that wellbeing of both humans and a range of ecosystem services is sustained over time. For humans, such transformations will require a radical shift in values and beliefs, as well as in the patterns of social behavior and in current governance arrangements.Whilst a variety of analytical models have emerged in recent years to analyze deliberate attempts by actors to stimulate transformation, most emphasize either the social or ecological elements of such transformations rather than their coupled nature. To address this, firstly we present a definition of the core elements of a SES that could potentially be altered in a transformation. Secondly, we draw on insights about transformation from three branches of literature focused on radical change – social movements, socio-technical transitions, and social innovation – and give consideration to the similarities and differences with the current studies scholars examining transformation of governance systems. Drawing on these findings, we propose a framework that outlines the process and phases of governance transformations. Future research will be able to utilize the framework as a tool for analyzing the alteration of social-ecological feedbacks, identifying critical barriers and leverage points, and assessing the outcome of governance transformations.

Unpacking cross-level interplay in wicked problem situations: the case of collective action in catchments in Australia

James Patterson

Enabling and enacting purposeful collective action is a key challenge in responding to 'wicked' resource problems in multi-scalar linked human-natural situations. It is a particular challenge confronting the management of water quality, ecosystem health and human wellbeing within catchments and basins, involving many different actors (e.g. science, policy, industry, community), across multiple levels of organisation (e.g. social, institutional, ecological). However, social and institutional dimensions of cross-level interplay important for generating collective action remain relatively poorly understood and under-researched empirically. To address this gap, this paper draws on recently completed PhD research to explore cross-level interplay in multi-level catchment situations, through theory-informed empirical investigation involving a case study in South East Queensland (SEQ), Australia. In SEQ there is an increasingly urgent need to manage nonpoint source pollution that is cumulatively impacting the health of waterways and a sensitive marine environment as well as linked human values. However, understanding how to generate collective action at a local level, embedded within the broader multi-level regional governance system, remains a major challenge in practice. Cross-level interplay was analysed through a novel conceptual framework focused on 'enabling capacities' across multiple levels of organisation (e.g. local, regional) that are important for collective action. Multiple modes of cross-level interplay were identified, including: formal and informal institutional linkages; efforts to generate mutual understanding and collaboratively identify goals and re-frame problems; flows of resourcing and authority; and feedback and learning across levels. Processes of multi-actor interaction and cross-level linking roles of key actors (e.g. individuals, organisations) underpinned these modes. Findings highlight the importance of multiple modes of cross-level interplay, their highly interactional nature, and the importance of concerted effort to generate these linkages within particular situations. This contributes new insights in understanding and analysing social and institutional dimensions of cross-level interplay for generating collective action in wicked problem situations.

Exploring how governance architectures shape resource use and conservation: An assessment of institutional interplay in conservation in Canada and Tanzania and the implications for social and ecological sustainability

Alejandra Orozco, Leslie A. King, Lance W. Robinson

Many, if not most, of the decisions around land and resource use that determine the sustainability of the earth system take place at the household and community level and are shaped by structures and processes of governance at sub-national levels. A key element in the causal pathways of earth system governance, therefore, is how the architecture of governance at higher (global and national) levels shapes governance at lower levels. In particular, the interplay between distinct but interlinked governance frameworks-for instance, frameworks around land tenure and legislation on local government on the one hand, and legislation and policies relating to conservation and protected areas on the other-enable, and constrain, interactions among players within and across-various levels of social organization. It is this kind of complex interplay as much as the explicit details of particular frameworks that determines resource allocation and access, the nature of collective local action for environmental stewardship, the adaptiveness of local governance processes, and the degree of success of national environmental and resource management agendas. It can enable multi-level engagement and collective multi-stakeholder action or can facilitate the precedence of international community

objectives at the expense of local wealth. Drawing on case studies involving protected areas and adjacent communities in Canada and Tanzania, we explore ways in which this kind of interplay affects both the capacity of rural communities to face and adapt to current challenges of sustainable resource management and ecological conservation and the possibility for simultaneously achieving multiple stakeholders' objectives.

Institutional and actor interplay in land based carbon mitigation projects: lessons for implementing REDD+ in Uganda

Charlotte Nakakaawa Jjunju

Forest governance has received renewed attention with the current focus on mitigating climate change through the global mechanism on reducing emissions from deforestation and forest degradation, forest conservation and sustainable forest management (REDD+). Implementing REDD+ entails providing economic incentives to developing countries to foster behavior aimed at reducing deforestation and forest degradation. However, prior to REDD+, several institutional arrangements have been put in place to improve forest governance, reduce deforestation and forest degradation and enhance rural livelihoods. Carbon mitigation projects will therefore be implemented within the existing forest governance framework. The efficacy of any carbon mitigation policies and measures will depend on their interplay with pre-existing institutional arrangements governing resource access and use as well as the broader socio-economic, political and legal context. To date, however, very little is known about this interplay. In this paper, based on a case study of a carbon mitigation project implemented at Mount Elgon National Park (MENP) in Eastern Uganda; where several attempts have been made to implement different forest governance initiatives ranging from strict law enforcement to embracing integrated conservation and development, community participation and market based mechanisms such as forest certification and payments for carbon sequestration services; I investigate the interplay under different forest governance regimes. I show how conflictual actor and institutional interplay under different governance regimes and failure to exploit synergistic interplay and adapt to changing resource governance contexts, not only exacerbated pre-existing conflicts but also generated new conflicts. I argue that implementing forest carbon mitigation projects within this context will not achieve desirable outcomes without deliberate efforts to harness synergies and manage conflicts between pre-existing institutions and those put in place to facilitate carbon trading at different governance levels.

Thursday, 3 July, 11:00-12:30

5.1	Achieving Sustainability: The Role of Democracy
	Chair: Tim Rayner, Room: JSC 1.02

Democratic Adjudication of Concrete Hypothetical Disputes: Restatement as a Transformative Pathway to Sustainability

Walter Baber, Robert Bartlett

We have developed a series of hypothetical disputes between four fictional countries that share a fictional continent. These disputes revolve around various threats to the ecological integrity of a major river, which describes parts of the borders between three of these countries and serves a variety of human needs in each. Jury deliberations have been conducted using this research design in the United States, Germany, Great Britain, the Netherlands, Sweden, Italy, New Zealand, and Russia. These hypothetical adjudications can be used in the same way that actual precedent is used in the common law that has developed a body of fundamental doctrine representing a social consensus on a wide range of human concerns. Often, this process reveals majority and minority views on a particular subject and (in many cases) yields an eventual consensus. Patterns have begun to emerge from our panels that can ultimately be summarized through a procedure similar to the "restatement" process. If restatement can be accomplished in a way that is accurate and reliable, the result would be a body of global environmental proto-regulation that would be presumptively legitimate because of its populist provenance. Just as common law restatements gave rise to the creation of "model codes" that have provided the foundation for statutory enactments, restatements of regulatory adjudications of hypothetical cases can eventually provide a populist foundation for international law formation. We have now reached the point at which we can usefully model the restatement stage of the analytical process through a careful analysis of the reasons given by our participants for their decisions – showing how the discourses of ordinary citizens can become a transformative pathway to sustainability guiding decision makers in their search for policies to prevent, mitigate, and reverse

environmental degradation. That "proof of concept" task is the content of this paper.

Framework for the Future: The Possibility of Majority Voting within the United Nations Framework Convention on Climate Change (UNFCCC)

Luke Kemp

The United Nations Framework Convention on Climate Change (UNFCCC) is struggling in its attempts to create an effective post-Kyoto international climate agreement. One substantial part of the problem is consensus decision-making within the convention, which effectively gives every party a veto over the process. Majority voting provides one potential alternative which is already being discussed within the UNFCCC. A comparative analysis of consensus and majority voting suggests that majority voting is superior in terms of both efficiency and effectiveness since it is a better consensus-builder, speedier decision-making process and provides opportunities for a semi-global approach to international climate policy. The objective of this paper is then to discern how majority voting can be implemented into the UNFCCC and what is the most politically feasible and effective approach to voting arrangements for the convention. Majority voting faces legal, political and institutional obstacles in being implemented in the convention. It also faces opposition from blockers and laggards despite growing support from other states. A type of 'Layered Voting" with higher majorities for financial matters is the optimal approach in balancing political feasibility and effectiveness. A system of weighted voting constructed around distributing votes on the basis of mitigation, population and vulnerability called "Common but Differentiated Voting" is then discussed as an ideal, but politically unfeasible model. Despite these possibilities a change in decision-making away from consensus will likely require a political crisis to catalyse the necessary will and break the current pathological path dependency that has been built around consensus.

Transformative Pathways Toward the Sustainability of New and Emerging Technologies: Steering Technoscience with Deliberative Citizen Panels

Priya Kurian, Debashish Munshi, Robert Bartlett

Most liberal democratic states have sought to institutionalise some form of public engagement in decision making processes, stemming from varying desires to legitimise state action, minimise opposition, and enhance public approval of public policies. Although there is a broad acceptance of the need for public engagement, such engagement has remained limited to only some select publics especially where new technologies such as nanotechnology are concerned.

Limited public engagement goes against the core principles of democratic earth system governance because various publics with a potential stake in the directions these technologies take are left out of the loop—raising issues of access and allocation of immaterial values such as rights, benefits, responsibilities, and risks. Views of scientists and technical experts become entrenched as the default setting for policy-making on new and emerging technologies about which many groups of citizens have little information.

In this paper we analyze the processes and results of citizen panels on nanotechnology comprising people from two traditionally marginalised groups – Maori and youth – that were held in Hamilton, New Zealand, in 2012. The panels included an interface between citizens and experts from a variety of domains, including scientists, sustainability champions, and indigenous thought leaders. The findings reveal how deliberations within marginalised groups bring up issues that can remain silenced in broader democratic platforms.

The paper identifies ways of making emerging technologies policies that are responsive to active, engaged citizens from diverse backgrounds. It makes a contribution to a more nuanced study of democracy, especially with regard to regulation of new technologies, that can contibute to transforming pathways to sustainable earth system governance.

The use of information and communications technology in civil society consultations: A critical assessment of its contribution to earth system governance.

Carole-Anne Senit

Innovative civil society consultation practices, placing Information and Communications Technology (ICT) at the heart of their method, are flourishing in the framework of intergovernmental negotiations on sustainable development. In part due to their methodological creativity and a wide scope of participation, the Sustainable Development Dialogues (SDDs) organized during the Rio+20 Conference have undoubtedly marked the beginning of a new era for civil society participation, with renewed prospects for democratic legitimacy at the international level. Taking the SDDs as the main example, this article aims to analyse the effects of the use of ICT in civil society consultations on the legitimacy of earth system governance. We proceed in three steps. First, we conceptualize legitimacy in earth system governance and delineate its main variables, including inclusiveness, transparency and

accountability, and their respective indicators. Second, we make an empirical assessment of the SDDs' online consultation tools for each of the legitimacy indicators selected. While acknowledging that the use of ICT constitutes an important lever for disseminating information and mobilizing civil society beyond institutionalised networks, we argue that several factors such as scarce financial and time resources introduce biases in participation and hinder the legitimacy-enhancing capacity of ICT. We also argue that the potential of online civil society consultation tools for increasing accountability in earth system governance has not yet been appreciated nor developed, which may pull civil society away from both future consultations and intergovernmental negotiations. Third, we outline recommendations that may help alleviate persisting deficits in online civil society consultations so as to improve their legitimacy-enhancing potential in earth system governance.

5.2 Prosperity: for whom, when and why?
Chair: Heike Schroeder, Room: JSC 1.03

Are Economically "Kinder, Gentler Societies" Also Greener?

Thomas Bernauer, Tobias Boehmelt

Several studies examining implications of the modern welfare state arrive at rather positive conclusions: generally, they find that economically 'kinder, gentler societies,' i.e., countries providing stronger state-sponsored social-safety nets for their people, perform better on various accounts, such as social and political stability, or economic performance. Recent research suggests that benign implications also exist for the environment in the sense that investing more in social policies may contribute to stronger environmental protection and higher environmental quality. We present theoretical arguments in favor, but also against this hypothesis, and evaluate it empirically with cross-sectional data for 68 countries. In contrast to previous studies, the results offer only weak and inconsistent support for the claim that social policies and environmental performance are systematically related. This means that governments of economically 'kinder, gentler societies' would be ill advised to hope for positive 'spill-over effects' of social policies into the environmental realm. The findings also suggest, however, that more disaggregated analyses are necessary, since beneficial effects may exist in some environmental domains, but not in others.

Do Alternative Economic and Well-Being Indicators Make a Difference? The Cases of Canada and Bhutan

Anders Hayden, Jeffrey Wilson

Many critics of conventional approaches to economic growth have highlighted the need for alternatives to Gross Domestic Product as an economic and well-being indicator. The well-known limitations of GDP include its failure to reflect environmental costs and issues of equitable allocation. These and other limitations have recently led to a proliferation of national, international, and sub-national efforts to introduce new indicators. While some advocates of alternative indicators argue that they are of central importance in providing a transformative pathway to sustainability and greater societal well-being, is this actually the case in practice? If so, what are the necessary conditions for this to occur? Drawing on interviews with public officials and others involved in developing and applying new indicators and analysis of relevant documents, this paper will compare the experiences of Canada and Bhutan. Canada has been a leader in academic and NGO work on alternative indicators, resulting in a new Canadian Index of Well-Being. Bhutan has developed a Gross National Happiness Index (GNHI) to assess various domains of well-being and to guide policy. It will be argued that in Canada, where neither the federal or provincial governments have officially adopted the CIW, this new indicator has had minimal transformative impact, if any, to date. In contrast, in Bhutan, the GNHI is not only recognized by the state as a key socio-economic indicator, mechanisms have been implemented to link the Index to policy formulation and resource-allocation decisions. These cases indicate that alternative well-being indicators are unlikely to play an important role in environmentally sustainable and equitable socio-economic development without high-level political support and institutionalized means to translate the statistical measure into alternative policies and priorities.

Certification with Russian characteristics: Implications for social and environmental equity

Maria Tysiachniouk, Constance McDermott

This paper applies theories of equity (McDermott et al 2012) and transnational "governance generating networks" (Tysiachniouk 2012) to assess how forest certification is enacted in Russia. Drawing on seven years of extensive field research, we compare and contrast the engagement of a shifting networks of Russian private sector, NGO, governmental and local community actors in implementing select social and environmental standards and how this impacts the relative effectiveness and

continuity of the FSC in tackling core local community and environmental concerns. In the case of local community concerns, we find that core social challenges lie well outside the scope of the standards, while standards implementation is dominated by a very limited number of influential NGO actors with little continuity in outcomes over time. The implementation of environmental standards, in contrast, is strong for those issues championed by a large and stable governance network and weak where such networks are lacking. These findings highlight the limited reach of global standards in the absence of strong local advocacy coalitions able to ensure effective and sustained implementation.

"Love for Sale": Biodiversity Banking and the struggle to commodify nature in Sabah, Malaysia

Andrea Brock

Market-based biodiversity governance instruments (such as biodiversity banking and offsetting) are being introduced world-wide. They are often promoted as purely technical or financial win-win solutions to counter biodiversity loss, benefit local people and enable sustainable development. I argue that these instruments are inherently political, based on hegemonic ideas and discourses, (non-)material interests and institutional frameworks, and represent the latest step in the neoliberalisation of earth system governance. The underlying political choices and the legal framework within which they are embedded carry significant implications for local people's access to land and resources (e.g. through the prioritisation of individual and state rights over communal rights) and agency in environmental governance. Based on in-depth qualitative interviews with 35 policy-makers, business leaders, civil society representatives, indigenous people and industry representatives, I analyse how this neoliberalisation occurs on the ground, and how biodiversity becomes subject to commodification, competition, reductionism and depoliticisation in the Malua BioBank in Sabah, Malaysia. Subordination to the market logic occurs discursively, through a particular framing of nature and equating "love for nature" with "paying for nature", materially, through pricing, and institutionally, through the creation and sale of Biodiversity Conservation Certificates. The analysis shows that these processes are made possible by the hegemony of a neoliberal market-environmentalist discourse introduced and at times enforced by Gramsci's 'organic intellectuals' (transnational actors and the Sabah government) and adopted by local actors, enabling an oversimplified, apolitical and localised problem (and solution) construction. They are enabled, furthermore, by a favourable configuration of interests which facilitates capital accumulation and protects the status-quo political economy, and, lastly, institutionalised power relationships which allow for illegal resource extraction while fostering a 'green' image both locally and internationally, the strategic marginalisation of radical voices, and the empowerment of mainstream (international) conservation organisations.

5.3	Global Climate Governance
	Chair: Carola Betzold, Room: JSC 2.02

Between the Devil and the Deep Blue Sea: Enhancing Flexibility in Global Climate Governance

Harro van Asselt

The evolving nature of the climate change problem makes it challenging to govern it through a single set of rules fixed in time. Scientific insights into the causes and impacts of climate change are subject to constant changes. Further, the socio-economic conditions prevailing in different countries continue to alter over time. This paper first assesses how the primary international legal response, the regime established by the United Nations Framework Convention on Climate Change, has sought to cope with these temporal challenges, and suggests that while various flexibility mechanisms are in place, the climate regime often finds it hard to adapt. In a second step, the paper examines two alternative models for making global climate governance more adaptive: (i) enhancing flexibility within the United Nations climate regime through a bottom-up, party-driven process of defining international commitments; and (ii) making global climate governance more adaptive through polycentric (or pluralist) approaches, with redundancy in international and transnational institutions allowing for more flexibility across sites of governance. The article critically reviews the arguments for flexibility underpinning these models, and suggests that while the rigidities of the existing climate regime certainly need addressing, considerations of predictability and stability should not be sacrificed at the altar of pragmatism. To conclude, therefore, the article explores the middle ground for enhancing flexibility through incremental changes to the existing climate regime.

Great powers and climate minilateralism: help or hindrance in international climate politics?

Robert Falkner

Why has it proved so difficult to make significant progress in the international climate negotiations? For well over two decades, the international community has worked on a multilateral agreement to

limit greenhouse gas emissions but has failed to create a solution that includes ambitious and binding commitments from all major emitters. While the UNFCCC negotiations are currently focused on agreeing a new, inclusive, treaty by 2015, analysts and negotiators are increasingly pointing to the multilateral process itself as a key reason for the failures of inter-governmental climate governance (Stern and Antholis 2007; Hale 2011; Hoffmann 2011). Some are now calling for enhancing great power cooperation and using minilateralism as a more viable process for reaching an international mitigation agreement. Proposals range from informal 'climate clubs' loosely attached to the UN negotiations to a formal 'climate council' operating as a fully integrated element of the UNFCCC's climate architecture (Victor 2011; Eckersley 2012). This paper investigates the theoretical case for climate minilateralism and assesses its potential contribution to international climate governance. It engages with three International Relations perspectives in that have been engaged to provide a theoretical justification for climate minilateralism: great power politics (Realism), bargaining efficiency (Liberalism) and great power legitimacy and responsibility (English School). The paper examines the validity of these theoretical claims and assesses their practical implications for reforming the international climate negotiation process.

Beyond neoliberal institutionalism: institutionalized orchestration of the implementation of climate governance and the case of the GEF

Azusa Uji

This article compares two types of governance developed in the process of implementing climate change agreements. One is horizontal governance based on multilateral and coexisting institutions (regime complex). The other is mixed governance orchestrated by the Global Environment Facility (GEF). This article asks the question, "Why do networks which assist implementation in developing countries emerge in horizontal governance but not in mixed governance?" The findings support the conclusion that orchestration by the GEF is a critical factor. The analysis also reveals an internal political context and decision-making rules that lead to orchestration to equilibrate the conflicting preferences of the principals (donors and recipients). The GEF, as a result, has reduced the transaction costs of networking, which aids the creation of implementation networks in developing countries. This implies that neoliberal institutionalism, which emphasizes the role of institution in cooperation among states, can be extended to cooperation among non-state actors.

This article gives new insight into two strands of debate surrounding global governance, "new governance," and "the nexus of global-local governance." It demonstrates that horizontal governance cannot be a perfect solution in the climate governance realm, where the transaction costs of networking are relatively high in developing countries. Therefore, while the transformation of global governance to local governance arises naturally via market mechanisms in developed and emerging countries, there is no such transformation in developing countries. Mixed governance offers a solution, allowing developing countries the same transformation through orchestration by the GEF.

Instrumentalizing 'International Cooperative Initiatives' in Global Climate Governance - Lessons from Partnerships for Sustainable Development

Sander Chan

Among the most noticeable outcomes of the UN climate conference in Durban (December 2011) is a pledge by the international community to negotiate a new international climate treaty by 2015. Since then the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP), however, has also been working on a framework to acknowledge 'international cooperative initiatives' that complement multilateral efforts in mitigating and abating the harmful effects of global climate change. While this process has hitherto received scant scholarly attention, international cooperative initiatives could play an important role as a 'practical and results-oriented approach', in particular to raise levels of ambition and to implement existing pledges between 2015 and 2020. International cooperative initiatives do not uniquely feature in climate governance. While current discussions on cooperative initiatives carefully avoid the term 'partnerships', the ADP emphasizes the 'importance of involving non-State actors, such as the private sector, academia and civil society'. These initiatives have been applied before, particularly in the area of sustainable development where the UN has administered 'Partnerships for Sustainable Development'.

 This paper discusses empirical findings from the latter partnerships process while focusing on cautions raised in the discussion of 'international cooperative initiatives' in climate governance, in particular: whether such initiatives replace multilateral and domestic actions, whether such initiatives effectively incentivize engagement of private actors and developing countries, and what role the UN plays as a platform for such initiatives. The paper concludes with suggestions towards the instrumentalization of international cooperative inititatives in global climate governance: how can the

UNFCC acknowledge cooperative initiatives while ensuring their complementarity (instead of competition) and additionality (e.g. increased pre-2020 ambitions and enhanced implementation) vis-à-vis multilateral efforts?

Climate clubs and the United Nations Framework Convention on Climate Change (UNFCCC): Complement, bypass or conflict?

Oscar Widerberg

States increasingly find alternative ways to cooperate internationally on climate issues, outside the United Nations Framework Convention on Climate Change (UNFCCC) negotiations. These arrangements are referred to as "cooperative initiatives" or "climate clubs". This study assesses to what extent climate clubs are conducive to improve global climate governance within the UNFCCC. It also discusses what minimum standards that should apply for climate clubs to be considered beneficial towards addressing climate change. The research has both policy and scholarly relevance since climate clubs could play an important role in paving the way to a global climate agreement in Paris at the 21st Conference of the Parties of the UNFCCC in 2015. While climate clubs are not a new phenomenon, their relationship with the formal negotiations is becoming increasingly institutionalized. Both positive and negative voices have been raised concerning the effectiveness, legitimacy and structure of climate clubs. Some finds climate clubs a progressive way to allow for tailor-made approaches for countries to address climate challenges, whereas others argue that clubs are merely a fig-leaf to hide the absence of ambitious global climate governance. This article zooms in on the relationship between current clubs and the UNFCCC by scrutinizing 17 climate clubs against five criteria including norms, membership, and function. The clubs are then ranked to what extent they have synergistic, neutral or conflictive relations with the UNFCCC. The author finds no concrete evidence of conflictive relations between current clubs and the UNFCCC. Their degree of conduciveness to the negotiations varies greatly, however. Finally, the article proposes a number of minimum standards, or "ground rules", to which the clubs need to adhere to be helpful towards solving global climate problems.

5.4 Toward Good Environmental Governance
Chair: Karen Anderton, Room: JSC 2.03

Transparency in natural resource governance: A goal in itself or a means to an end?

James Van Alstine

The 'transparency turn' in global environmental governance is well documented particularly within the fields of state-led international environmental regimes, private and market-based forms of governance, and targeted national transparency policies. Transparency is an international norm driven by advances in information and communications technologies, the trends of democratization and globalization, and failures of conventional forms of government regulation in the face of emerging risks and public service flaws. Transparency challenges the traditional norms of corporate privacy and state sovereignty and is invoked in a wide variety of issue areas including security, financial policy, economics, corruption, human rights, and the environment.

Assessments of various modes of transparency in natural resource governance often bias procedural over substantive outcomes. Much of this critique is centred on how transparency informs and empowers processes of natural resource governance, rather than how the outcomes of transparency initiatives impact more sustainable human-environment interaction. In order to address the extent to which the transparency in natural resource governance is a goal in itself or a means to an end, I assess the extent to which transparency in natural resource governance can lead to effective poverty alleviation and sustainable development outcomes within two new petro-economies, Ghana and Uganda.

Within Ghana and Uganda I assess both the means and ends of how initiatives such as the Extractive Industries Transparency Initiative (EITI) and donor-funded information-disclosure and environmental governance initiatives inform, empower and improve natural resource governance. 'Means' include the inputs and activities of transparency initiatives, and 'ends' are the outcomes and impacts of these initiatives on poverty reduction and sustainable development. I conclude by exploring how domestic and international actors can achieve better integration between the transparency, poverty reduction and sustainable development agendas.

Strengthening International Community: The Missing Link in the Architecture of Global Environmental Governance?

Jeff McGee, Sylvia I. Karlsson-Vinkhuyzen

Since the 1972 Stockholm Conference on the Human Environment the UN has been the arena for

negotiating a plethora of international regimes to respond to deterioration of the global commons. The rate of development of environmental treaties has been impressive and is considered by many an essential element in treading transformative pathways towards sustainable development. However, there are ongoing doubts about the effectiveness of international regimes in contributing to solving the problems they were designed to address.

 The scholarly analysis of regimes for the governance of global commons has predominantly proceeded from rational choice assumptions regarding the possibility of cooperation amongst self-interested states in the absence of world government. Such assumptions focus on current self-interested position of states. In contrast, English School Theory (Bull 2002, Clark 2005/2007) offers insights into the importance international 'society' and 'community' through legitimate law and institutions. We find an important parallel in this focus on the role of common values and/or a shared sense community in Elinor Ostrom's work on effective management of local scale commons. However, English School Theory and Ostrom's work are less forthcoming on the question of how such sense of community might be strengthened.

 In our paper we will focus on two key issues. First, we explain the intersections between English School Theory and Ostrom's work in regard to the role of values and community in the architecture of (global) environmental governance. Second, by drawing on Dryzek (2010) and other authors, we explain how deliberative democracy might be extended to the global level, through the transnational public sphere, and what this may mean for strengthening the international community. Finally we draw these two analytical strands together by exploring implications of the insights gained for institutional design in the climate change regime which finds itself in a critical period.

Good governance and Coastal conflict management through community participation. Study Case: Golfo De Fonseca (Nicaragua, Honduras, El Salvador)

Hilario Mendoza, Guillermo Rodriguez, Sandra Mejia

Most marine resources that oceans have are part of the human consumption main diet. Nowadays, fishing and shell fishing resources are in demand of nations, cities, surrounded communities and industrial fisheries located on the ocean's shores making very often an unsustainable use of them. International cooperation is driving in coastal-marine areas the promotion of management models that lead to a rational use of fishery and shellfish industry resources. An initiative funded by European Union and implemented by FoE (Friends of the Earth) Spain and its local partners are running in the tri-national ecosystem of the Golfo de Fonseca (Nicaragua, Honduras, El Salvador), the project ECOPESCA which aims to improve good governance, restoration and sustainably management of mangrove ecosystems, fisheries, protected areas and nearby areas to improve the livelihood of coastal communities. However the communities are facing greatest challenges related with coastal conflict caused by shrimps industries which are threatened this protected tri-national ecosystem. In the context of ECOPESCA, communities have moved towards more participatory models (Collaborative Management Committees in Nicaragua, Community Advisory Committees in Honduras and Local Advisory Committees in El Salvador). Furthermore, the project has supported communities in the seven protected areas to extend its leadership in decision-making and dialogue with authorities, besides improving its leadership in updating management plans, which are in each area management instruments. This has been the foundation that has allowed better community participation in actions in favor of the Gulf coastal-marine resources sustainability.

Processes of Legitimization in Private Governance Arrangements: examples from the Roundtables on Sustainable Palm Oil and Responsible Soy

Greetje Schouten

Over the past few decades, non-state actors increasingly gained prominence in global governance. Although state actors and intergovernmental organizations still have a central position in international policymaking, new types of private governance arrangements increasingly shape outcomes in global governance. The proliferation of private actors in governing issues regarding sustainable development has given rise to extensive academic debates on the legitimacy of private governance arrangements. The majority of the literature focuses on democratic legitimacy related to private governance and uses a specific conception of legitimacy which makes the distinction between input and output legitimacy. The scope of such approaches is somewhat limited for three reasons. First, these approaches are normative and implicitly prescriptive as they evaluate the legitimacy of private governance arrangements according to certain pre-determined criteria. As a consequence, they hardly inform us about the different ways legitimacy might come about. Second, these approaches are rather state-oriented, as they are derived from formal democratic requirements attached to governments. Private governance arrangements, however, differ essentially from traditional state regulation and therefore

face different legitimacy challenges. Third, evaluating arrangements on 'rigid' criteria presents a static approach which does not allow for an analysis of the processes through which standards become accepted as an authoritative norm in their issue field. Therefore, this paper suggests an additional approach, which conceptualizes legitimacy as a relational and relative concept, rather than a normative yardstick to assess private governance arrangements. Legitimacy is a relational concept in the sense that it develops through the relationship between a governance arrangement and its relevant audiences. Legitimacy is a relative concept in the sense that the criteria of legitimacy change over different historical and societal contexts. Therefore, in this paper legitimacy is conceptualized as constituted in a social process where phases of legitimization and de-legitimization can occur consecutively or in parallel.

Transformation of Global Climate Governance in the context of Sustainable Development

Maki Koga

Faced with growing environmental crises attributed to the issue of climate change, not only developed countries but also developing countries are required to take concrete measures urgently. Under these circumstances, various initiatives at different levels have emerged both inside and outside the process of the United Nations Framework Convention on Climate Change (UNFCCC). In addition, existing international organizations and forums including non-environmental institutions have come to deal with the issue of climate change. Why have these initiatives beyond the UNFCCC umbrella been created or utilized to address the issue, and what are the contributions of the initiatives to the UNFCCC climate regime? Drawing on implications from the literature and the empirical study, this paper explores the causes and the consequences of the fragmentation of global climate governance. Having reviewed the literature on theories of international relations, this paper first examines the factors that affect the formation and transformation of global governance. It then sheds light on the institutional complexity of global climate governance, and applies theoretical perspectives to the cases of selected international organizations and forums such as G8, G20, Organization for Economic Cooperation and Development (OECD), United Nations Environmental Programme (UNEP). Based on the analysis, the paper demonstrates that emerging and existing initiatives have developed due to the changes in circumstances surrounding environment and economy calling for the shift towards an alternative development paradigm. This paper concludes that the non-UNFCCC initiatives could exert normative influence on global climate governance, which function as a norm entrepreneur or a platform to frame and spread the conceptual ideas in the context of sustainable development that serves actors' interests.

5.5	Thinking Critically about Earth System Governance
	Chair: Andy Jordan, Room: JSC 3.02

Challenges to scenario-guided governance of food systems under climate change

Joost Vervoort, Philip Thornton, Patti Kristjanson, Wiebke Foerch, Polly Ericksen, Kasper Kok, John Ingram, Mario Herrero, Amanda Palazzo, Ariella Helfgott, Angela Wilkinson, Petr Havlik, Daniel Mason-D'Croz, Christine Jost

Ensuring future food security under climate change means moving beyond a technical focus on agricultural production and to inclusive spaces for multi-stakeholder deliberation and action on entire food systems, including socio-economic effects on inequalities in allocation, access and nutritional quality. In the context of the CCAFS scenarios programme in 7 global regions, we examine the combination of explorative scenarios and normative back-casting as an approach to overcome challenges for researchers seeking to guide action in multi-level, multi-actor food system governance under conditions of climate change. Highlighted challenges are: 1. ensuring the appropriate scope for deliberation; 2. moving beyond intervention-based decision guidance; and 3. ensuring feasibility and long-term commitment. We have applied explorative scenarios and normative back-casting with stakeholders from different sectors in East Africa. We then applied lessons about appropriate scope, continuous engagement, and long-term commitment to scenarios processes in 7 global regions. Scenarios were created to have a broad enough scope to be relevant to diverse actors, and then adapted by different actor groups to ensure their salience in specific decision contexts. The initial strategy for using the scenarios by bringing a range of actors together to explore new collaborative proposals had limitations as well as strengths versus the application of scenarios for specific actor groups and existing decision pathways. Scenarios development and use transitioned from an intervention-based process to continuous engagement and an embedded process. Feasibility and long-term sustainability could be ensured by having decision makers own the process as well as ensuring the development of on-going capacity for long-term strategy development in existing governance structures.

Human Rights and Access in Earth System Governance: Case of Sanitation

Pedi Obani, Joyeeta Gupta

Poverty and inequitable human development in recent decades has been linked to lack of access to safe drinking water, adequate sanitation, sufficient food, clean energy, quality healthcare and education by billions of people around the world. While legal scholars focus on human rights, and international relations scholars use the language of access and allocation, this paper aims to bring these two worlds together by showing the links between these two fields. This paper argues that at the international level, the human rights approach has evolved as a way of addressing the challenges of access to natural resources. The paper specifically illustrates this argument using the case of lack of access to adequate sanitation which currently affects a significant proportion of the global human population. Although in 2010, 122 United Nations member states voted in favour of the United Nations General Assembly (UNGA) Resolution on the international human right to water and sanitation, as at November 2013, less than 10% of countries around the world have domesticated the right in their national constitution. Based on a legal and policy analysis, and adopting the Oran Young et al. (2005) framework for multi-level institutional analysis, this paper argues that without the integration of other complementary instruments such as technology, finance, and education, the objectives of the UNGA and other bodies within the international human right system that are committed to improving equitable access to natural resources for over 2.6 billion people who currently lack access to adequate sanitation may remain unattainable in the long term. The paper concludes by speculating that if access to water and sanitation are guaranteed in a sustainable manner, this would inevitably have an impact on the allocation of resources within society and could thus be seen as going beyond guaranteeing a minimum.

A practical utopian proposal for Earth Systems Governance: Exploring the idea of 'Guardians for future generations'

Rupert Read

Plato said we should be ruled by guardians ('philosopher-kings'). Deliberative-democrats abhor such autocracy: rightly so. But what if the guardians were selected democratically, by sortition? And what if their deliberations became a model of what deliberation in a democratic society could be? Still, there seems little case for substituting guardians for normal elected representatives, for decisions which can be made about us, by people representing us. But what about cases where the people who ought to be heard in the decisions have no voice - even over life-or-death matters? Future people are the most obvious case of such people. I will begin my talk by presenting my broadly Habermasian case for powerful guardians for future people. This proposal embodies a radical vision for a particular form of Earth Systems Governance. A democratic (though not electoral) form, which emphasises how essential it is for our descendants to inherit Earth systems that have not been degraded, and that suggests a mode of governance with the powers to act so as to preserve those systems. My proposal for such guardians (http://www.greenhousethinktank.org/files/greenhouse/home/Guardians_inside_final.pdf) has attracted widespread public attention (see e.g. http://www.theguardian.com/environment/damian-carrington-blog/2012/jan/04/climate-politics-future-generation-justice?). In this talk, I explore the proposal further, by (1) outlining how the guardians proposal takes future people to be our equals, but also (2) does not fixate on justice as the means to realise this equality. The guardians represent future people, but also embody our caring for them. I suggest that there is at least as much need for us to create institutions that effectuate such care as to seek justice for our descendants. Thinking through the guardians idea helps throw light on why ESG ought not to place too much emphasis on justice. Rather: Democracy, equality, and care, if realised are enough to secure flourishing earth systems for future people.

5.6 Empowerment and Public Support
Chair: Wei Shen, Room: JSC LT

Investing in Gender Equality in Disaster Risk Reduction: Lessons for the Post-HFA (Hyogo Framework for Action) Agenda

Frank Thomalla, Diane Guerrier, Radhika Behuria, Sanny Jegillos, Bernadette Resurrección

This project aims to analyse progress in addressing gender equality under the Hyogo Framework for Action (HFA) and to identify opportunities to better incorporate gender in post-2015 disaster risk reduction (DRR). Reducing social vulnerability to hazards is crucial in DRR and addressing the underlying factors of vulnerability is a key aim of the HFA. Gender is an important determinant of social vulnerability and there is evidence that women are particularly vulnerable to hazards. The

design, implementation, measurement and evaluation of DRR policies need to improve to better understand how gender affects social vulnerability and to create policies that promote gender equality. The HFA includes 5 Priorities for Action. This project explores the implementation of Priority 1: ("ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation") in three countries vulnerable to a range of hazards and climate change impacts: Myanmar, Indonesia and the Philippines. The project investigates the steps at the global, national and sub-national levels, to translate Priority 1 into measurable actions through policies, investments, and activities. Four research questions will guide the analysis: 1) How are gender aspects of hazard vulnerability considered under the HFA?; 2) What progress has been made to address the gendered dimensions of social vulnerability through the application of HFA Priority 1?; 3) How can social vulnerability to hazards be reduced further by addressing gender aspects?; and 4) How can gender aspects in DRR be better reported, monitored and evaluated? The project includes desk-based research on gender, social vulnerability and DRR and interviews with key informant stakeholders. Expected outcomes will be policy recommendations aimed at enhancing gender considerations in a post-2015 DRR agenda and improved assessment methods and gendered indicators for measuring progress towards the HFA's objective to make DRR a national and local priority.

How Nuclear Risks Should Be Governed: Criteria for Resilient Society against Disasters

Norichika Kanie, Yui Nakagawa

The Fukushima accidents triggered by the Great East Japan Earthquake in 2011 reveald two significant facts. One is that social risks associated with operating nuclear power plants were mismanaged in Japan, which is one of technologically advanced democracies. The other is that Japanese nuclear safety system was vulnerable and as less flexible. At the time of crisis, the emergency response was prone to one step behind and ineffective, due to lack of preparedness, institutional flaws in procedures, and poor communication among key actors.

As many pointed out, the failure of nuclear risk governance was witnessed in the case of Fukushima. Local residents around the plant were most directly impacted and threatened by the disaster. Even though people had been at risk, they were never officially involved in political decision-making processes as an important actor. The local governments and communities also had no decision-making authority. The public participation was not regarded as meaningful in the processess. Authorities and access to information for adequate risk managements were traditionally highly-centralized. As a result, the system had only poor adaptability for the sudden, high-impact event.

Still learning a lot of lessons from Fukushima, increasing more resilience is needed for the society. Adopting five major components of resilience; robustness, redundancy, resourcefulness, response and recovery, from the World Economic Forum Global Risks 2013 Report[1], this study suggests how to build society that is adaptive to govern nuclear risks, including decentralized governance, effective use of local knowledge and experience, ensuring access to adaquate information, and allocation of risk management authority as fundamental aspects.

Findings of this study can be applied to explore nuclear risk governance in other countries. Because of global climate changes, the frequency and intensity of natural disasters is increasing today over the world. From this pespective, developing resilience against unexpected disasters is getting more and more meaningful.

[1] http://reports.weforum.org/global-risks-2013/

How Strong is Public Support for Unilateral Climate Policy?

Thomas Bernauer, Robert Gampfer

Whereas multilateral climate negotiations have been making very little progress in recent years, unilateral climate policy-making is gaining ground. Yet, there is a surprising disconnect between assessments of unilateral climate policies by political and economic elites on the one hand and the wider public on the other. Elites tend to view climate policy in terms of a global public goods (and free-rider) problem and emphasize the need for multilateral collective action and reciprocity. By implication, they tend to be skeptical of very ambitious unilateral climate policies. However, various surveys indicate that the wider public is highly supportive of unilateral climate policies. We engage in a critical reassessment of these survey results in order to address this puzzle, hypothesizing that existing surveys are likely to over-rate public support for unilateralism and under-rate support for reciprocal multilateral collective action. Possible reasons for over-rating include social desirability bias, low levels of knowledge on and interest of respondents in climate issues, lacking information on cost implications of climate policy and on problem-solving effectiveness of unilateral action, and other factors. We use survey embedded experiments and conjoint analysis to study these hypothesized reasons, based on samples from the United States and India, the two largest democracies on Earth.

Preliminary results from pilot tests suggest that public support for unilateral (non-reciprocal) climate policy is considerably weaker than measured by existing survey instruments. Our results will provide a more realistic assessment than other research to date of the extent to which citizens in democratic societies are willing to support unilateral climate policies in the absence of a global agreement.

Could Civil Society Increase Public Support for Global Climate Policy in China?

Robert Gampfer, Thomas Bernauer

Widely expected positive effects of civil society involvement on public support for international environmental protection efforts are commonly predicated on the liberal democratic system model. Civil society participation in such efforts is hypothesized to increase transparency, strengthen representation of marginalized stakeholders, provide knowledge to enhance problem-solving capacity, and thus increase public support for international environmental policy. Recent empirical research supports these claims. Are similar effects observable in other types of political systems? We focus on China's role in global climate governance to find out. China is the world's largest greenhouse gas (GHG) emitter, whose commitment to large-scale mitigation measures is urgently needed. It is governed by a one party system, but has experienced rapid growth of environmental civil society in recent years. We are currently implementing a combination of survey-embedded experiments and focus group research in the Beijing area. The experimental work seeks to identify causal effects of civil society involvement on public support for climate policy. The focus group research seeks to explore in more detail how citizens evaluate the advantages and disadvantages of civil society involvement in global climate policy making. The CfP – Earth System Governance Norwich Conference will be the first major occasion to present the results of this work.

Identifying pathways towards equitable access and allocation: distribution, recognition and participation.

Brendan Coolsaet

Benefits and burdens of global environmental change are not equally allocated throughout the world. Decision-making processes addressing this unequal allocation suffer the same ills: people asserting justice claims rarely function on a level playing field. This duality has traditionally been analyzed by environmental justice scholars through a distinction between distributive and procedural aspects of environmental justice. Recent developments attempting to outline a more empirical and pluralistic account of environmental justice have blurred this distinction. Authors such as David Schlosberg and Gordon Walker now analyze environmental justice using a tridimensional framework encompassing notions of distribution, recognition and participation. This new framework can serve to analyze both the aspects of ex-post allocation of benefits and burdens, and of ex-ante access to resources shaping the context of decision-making.

While providing a useful lens for the analysis of interpersonal and intergroup approaches of environmental and social justice, this empirical approach has received little attention in the context of interstate conflicts about natural resources. This paper attends to this gap by assessing if and how the framework could serve to analyze resource allocation procedures between states. In particular, the paper applies the three dimensions of justice to the participation of states in environmental negotiations. Building on the numerous literature on allocation decisions in international environmental politics, a set of criteria is identified through which decision-making in this context can be considered equitable.

Results stress the importance of global political economy for the ability of states to participate in environmental negotiations. Human and economic resources, the composition and preparation of delegations, the characteristics of the domestic political systems, voting rules, consensus-based decision-making, deliberative capacities, boundary politics, the homogenization and hierarchization of knowledge, cognitive differences and geopolitical status all interact in shaping the context in which some actors are economically, politically and culturally (dis)advantaged.

5.7 Comparing Levels and Scales of Environmental Governance
Chair: Joana Setzer, Room: JSC 2.01

Examining the 'Arctic level': the social construction of scale and Arctic environmental governance

William Davies

A rapidly-warming environment and a rise in natural resource interest have placed the Arctic under the global spotlight. This growing attention has witnessed a plethora of conferences, national strategies, policy initiatives, academic publications, institutions and political campaigns all employing the

'Arctic' label; with the fundamental aim often to contribute towards 'sustainable development' and better environmental governance of the region. However, the region's vastness, its ambiguously-defined boundaries, heterogeneity of stakeholders, regional ecological variation and its association with global climate change ensure that when the Arctic is under discussion the focus is often blurred and unhelpfully broad. What defines something as an 'Arctic issue' is more complicated than it might initially seem and this has implications for environmental governance. Key questions emerge: what are the governance benefits of conflating geographically-wide and culturally-diverse issues under one Arctic banner? Is such conflation necessary or does it hinder policy objectives? What are the political motives in creating and defining an Arctic level of policy? When involved in policy at an Arctic level, what are the different ways in which environmental policymakers 'scale' the Arctic they are discussing? And how does the rise in stakeholder involvement from outside what is conventionally known as the Arctic blur its definitions? Drawing from the human geography literature on scale theorisation and human-environment interactions, this paper explores these questions. This is done using a combination of sources: conference proceedings from numerous Arctic policy conferences attended in 2013; interviews with policymakers involved in various facets of Arctic governance; as well as analysis of policy documentation, media and other relevant sources. By applying the 'social construction of scale' as its critical lens, this paper contributes towards a better understanding of the nebulous concept of Arctic environmental governance.

The regime- complex approach: Merits and shortcomings

Steinar Andresen, Kristin Rosendal

For long the study of effectiveness of international environmental regimes focused on single regimes. Over the last few years there has been an increasing trend to study regime complexes. Analytically this approach is fruitful as it captures the reality, demonstrated in for example the problems of climate change and biodiversity. However it has also been argued that the regime complex approach is more effective than the stand-alone (UNFCCC) regime (Keohane and Victor 2011). In this paper it is argued that it is an empirical question whether this is the case. Studying some of the main supplementary approaches to the UNFCCC we argue that this regime-complex is more hierarchical than Keohane and Victor (2011) argue. Also, there is scant empirical evidence that the main supplementary approaches have so far been more effective that the UNFCCC. Experience from the issue area of biodiversity strengthens this argument. The Access and Benefit (ABS) part of the Convention of Biological Diversity (CBD) was fleshed out in the Nagoya Protocol. However the 'benefit part' of this equation may be diluted in the sectoral approaches currently underway within the framework of the Food and Agricultural Organization (FAO).

Domestic implementation of international environmental conventions: assessment and analysis of treaties' effectiveness

Maria Ivanova, Natalia Escobar-Pemberthy

International conventions constitute an integral part of the system of global environmental governance and are essential instruments for solving global environmental problems. However, their domestic implementation has not been systematically measured and assessed. The extent to which obligations are being implemented varies widely across countries and among conventions. In this paper, we develop a methodology to empirically assess the level of implementation of a set of the main global environmental conventions and analyze the factors that affect it.

We define implementation in a comprehensive manner, referring to the adoption of domestic regulations to facilitate compliance. We offer a detailed analysis of the implementation of all states parties to ten of the global environmental conventions in four thematic clusters: atmosphere, biodiversity, chemicals and waste and land. The conventions included are the UNFCCC, Ramsar Convention, CITES, CMS, CBD, Basel, Rotterdam and Stockholm Conventions and UNCCD. We begin by developing a taxonomy of the obligations included in each environmental treaty. Information, institutional, and operational obligations form the core requirements and expectations across treaties. Through coding of country reports to the convention secretariats, we measure the level of implementation of these obligations across all parties to the conventions. Ultimately, we seek to create an Environmental Conventions Index that would allow countries to track their own performance, compare it with others, and identify strategies for improvement. Furthermore, the index can be overlaid with specific environmental performance indicators over time (such as percentage of change in protected areas, number of endangered species, or number of regulated chemicals) to determine the contribution of multilateral agreements to improving the state of the global environment.

Can we solve effort-sharing problems in multilateral environmental agreements by cutting them down to size?

Jonathan Pickering

Solving global environmental problems requires allocating on equitable terms not only environmental resources ("resource-sharing") but also responsibilities for mobilizing economic resources to address the problem ("effort-sharing" or "burden-sharing") (Baer et al 2009; Gupta and Lebel 2010). As Kanie et al (2010) have observed in the context of climate policy, translating broad effort-sharing principles such as "common but differentiated responsibilities" into concrete quantitative allocations among states represents "one of the biggest methodological challenges in interdisciplinary research on allocation".

The wide variety of quantitative allocations proposed by scholars most commonly address how to share the overall effort required under a particular regime. However, effort-sharing problems may arise within multiple components within a single regime, such as sectoral agreements in climate change negotiations, and funding for developing countries under many multilateral environmental agreements (MEAs). While some authors have articulated ways in which effort-sharing principles could apply to specific components of a regime (e.g. Winkler and Rajamani 2013), there has been little systematic comparative analysis of the appropriateness of different effort-sharing modalities (ranging from formulaic to ad hoc approaches) for specific components of regimes.

This paper will compare effort-sharing modalities adopted at multiple levels across selected MEAs, including the Rio Conventions and the Montreal Protocol. I will investigate factors that may favour the adoption of more stringent or formulaic modalities at different levels, including the robustness of estimates of required effort and the magnitude of the economic costs implied by those estimates. By linking these findings to available evidence on the effectiveness of these regimes, I will assess (a) whether it would be desirable or feasible to expand the use of effort-sharing formulae under the climate regime; and (b) whether crafting effort-sharing arrangements for sub-components of the climate regime could help to overcome or merely entrench roadblocks to sharing overall efforts equitably.

From the regional to the international: governance and representation tensions on climate change

Nicholas Chan

This paper explores two contradictory trends in the multi-level governance of global climate action. The first is the increasing engagement of existing regional institutions in catalysing and implementing regional action on climate change. A growing number of regional organisations have been developing climate-related plans of action that seek to provide a regional response to climate change - whether through scientific cooperation and developing research capacities, or joint projects. This tendency towards the increasing regionalisation of climate activity also manifests itself at the political level, with climate change rising onto the agenda of regional political institutions, with joint declarations frequently being made within these institutions, such as the Central American Integration System (SICA), African Union, and Association of Southeast Asian Nations (ASEAN).

Importantly, this regional political engagement often prompts joint regional positions at the international level of the United Nations Framework Convention on Climate Change. This second trend, however, is at odds with the diversity of costs and vulnerabilities that countries within the same region face. The result, this paper argues, is the formation of regional coalitions and alliances in the UNFCCC process for political reasons, but where they are not able to effectively aggregate common interests. Thus, even as the number of developing country coalitions grows, many of these are not based on shared climate-specific interests, but on their wider regional political identities that result in suboptimal coalitions that struggle to function effectively within the UNFCCC process. Regional governance, thus, exists in tension with regional representation on climate change.

Thursday, 3 July, 14:00-15:30

6.1	Resilience for Sustainability
	Chair: Leslie King, Room: JSC 1.02

Beyond Effectiveness: Comparing Institutional Resilience in Ozone and Invasive Species Regimes

Mark Axelrod, Daniel Kramer, Matthew Zierler **(GOOGLE HANGOUT)**

The concept of resilience is prevalent in ecology and ecosystem management, with a focus on maintaining resilient ecosystems that can survive exogenous shocks. Whereas global governance research has typically focused on regime design and legal compliance, this paper applies a framework

for analyzing the resilience of global environmental institutions themselves. The resilience framework allows scholars to compare and explain regimes' ability to maintain function and adapt to new situations. Our study, therefore, considers how global governance systems - whether effective or weak - become locked into place or adapt to their surroundings.While precise definitions of ecological resilience remain contested, we lay out a version of these concepts that we find most applicable to global governance systems. We first identify how five characteristics of ecosystem resilience - robustness, adaptive capacity, diversity, modularity, and redundancy - map into the realm of global governance. We then hypothesize that: 1) regime resilience is increased by perceived immediacy of the environmental problem in question, and 2) regime resilience is decreased by the diversity of existing institutions staking a claim to manage a particular issue area.Finally, we examine evidence from global governance of ozone and invasive species, demonstrating that both regimes are robust to ecological and political changes. However, the ozone regime has also adapted over time, while global invasive species governance has been locked in place despite claims of governance failure. The ozone regime, driven by extensive public support for reversing atmospheric damage and a clear focal point for action, has retained its function while simultaneously adapting to new scientific evidence by adding chemicals to the list of banned substances. In contrast, the multitude of global institutional actors claiming authority over invasive species governance has limited the regime's capacity to adapt to changing conditions, leading to a weak but embedded global invasive species regime.

Integrated Multi-level Multi-Actor Resilience and Adaptation Planning Panel

Ariella Helfgott, Meghan Bailey, <u>Joost Vervoort</u>, Chase Sova, Jessica Thorn, Abrar Chaudhury

The inherent conceptual and operational pluralism extant in the field of resilience and adaptation is problematic for multi-actor and cross-scale resilience planning and decision-making. However, acknowledging interconnectedness of social, economic, political and environmental systems across scales and levels, taking into account cross-scale and cross-level interactions, and striving towards holism are fundamental aspects of the resilience approach. This session presents systemic frameworks for integrated, multi-actor resilience and adaptation planning, designed to work with and capitalize on this inherent pluralism and accordingly build capacity to cope with uncertainty and change. The frameworks presented have been operationalized and tested over the past three years in Climate Change Agriculture and Food Security (CCAFS) on going Systemic Integrated Adaptation program and linked Regional Scenarios Program. The Systemic Integrated Adaptation program is fundamentally concerned with small-holder farmers and the integrated social, economic, political and environmental systems in which they are embedded. It co-identifies and supports appropriate adaptation actions at multiple levels from national to individual, according to the principle of subsidiarity and adopts a critical dialogical approach to system definition and boundary judgments. The Regional Scenarios program explores diverse plausible futures for CCAFS regions through a process designed to expand decision-makers capacity to cope with uncertainty and complexity and to build strategic capacity. Both programs operate in five regions: East Africa, West Africa, South-Asia, South-East Asia and Latin America. Relevant resilience planning frameworks and the approaches taken to cross-level, cross-scale and cross-research program integration will be described. Presenters will present for 10 minutes each, these presentations are interspersed with focus groups implementing the techniques presented, followed by a final facilitated discussion.

Transnational Climate Resilience Strategies for the Sustainable Landscape Management in the Blue Nile River Basins: linking climate knowledge from Ethiopia and Sudan

<u>Carlos Pascual</u>, Ben Zaitchik, Belay Simane

Adaptation to climate change is a dynamic, coupled process, in which humans use information from past experience and predictions of future conditions to maximize resilience—the ability to withstand and/or recover from climate-induced stress. For subsistence agriculturalists, adaptation is also a highly localized problem, as both impacts and adaptation options can differ significantly between and within agroecosystems of the Blue Nile River Basin (BNRB), covering Ethiopia and Sudan. The guiding principle is that climate impact scenarios generated at the agroecosystem level, developed in collaboration with innovators from the local community in both countries, will advance understanding of the adaptation process and contribute to climate resilience. It combines best-available scientific tools for projecting climate impacts on irrigation for downstream areas of Sudan and hydropower in Ethiopia with an unprecedented community-driven evaluation of adaptation opportunities across the physically and culturally diverse landscape of the BNRB. It will examine the contribution of uncertain climate projections to decision making in climate vulnerable communities, over a range of planning horizons, among both countries. The development of transnational agroecosystem-based climate impacts scenarios represents a novel approach to climate impacts analysis that has broad applicability

to scenario building for environmental issues on food, water and energy security in both countries. It also presents a transnational analysis of climate change impacts and adaptation opportunities and risks on the BNRB for large-scale developments for irrigation and hydropower toward a sustainable landscape management that will interact to influence food, water and energy security covering the headwaters of Ethiopia and downstream areas of Sudan. This requires much greater cooperation between riparian states that maximize the benefits to be obtained from the complementarities of different storage options (e.g., surface water used conjunctively with groundwater). However, planning for climate change requires going beyond water alone to consider other sectors in the food-water-energy nexus.

Developing robust governance strategies for uncertain futures; a combined backcasting and exploratory scenarios methodology.

<u>Mathijs van Vliet</u>

Environmental governance in times of global change needs to be effective within a complex and uncertain environment. Scenarios are often used to deal with uncertainty, but many have little information on governance aspects. By combining two types of scenarios extra attention can be given to governance; exploratory scenarios and backcasting scenarios. Both have their advantages and disadvantages, and there is an added value in combining them.

Exploratory scenarios -- exploring what might happen -- are developed to illustrate the plausible context within which the desired goal (e.g. sustainable water management) needs to be fulfilled. They act as socio-environmental contexts for the backcasting exercise. Subsequently plausible sustainable pathways towards a desired future goal are developed via backcasting; one in the context of each exploratory scenario. Here the focus lies on governance issues; who is going to take action, how can we deal with positive or negative societal drivers? This is often coupled to technical measures; e.g. how can we stimulate drip irrigation?

The main added value of this approach lies in the possibility to study the robustness of (parts of) the pathways to different socio-environmental contexts as depicted in the exploratory scenarios. The need to find solutions for problems presented in the exploratory scenarios also increases creativity.

The methodology was successfully tested in 10 case studies in an EU project (SCENES). Results showed that the exploratory scenarios influenced the content of the backcasts, thus making the identification of robust strategies possible. The list of robust strategies included a mix of technological and governance strategies, highlighting the need for an integrated approach. The approach shows high potential, but as the methodology is in its infancy more research is needed particularly in methods to better facilitate information flow between exploratory scenarios and backcasts and possibilities to include the approach in ongoing governance processes.

6.2 Governance for Sustainability: Resolute or Fragile?
Chair: Harro van Asselt, Room: JSC 1.03

How is environmental policy dismantling affecting transformative pathways to sustainability? A comparison of European and American policies

<u>Viviane Gravey</u>

Since the mid-1960s and the rise of environmental issues on the political agenda, environmental policies have changed the way we produce, consume and more generally live our lives. But are environmental policies today capable of playing their part in putting our societies on a pathway to sustainability?

This paper addresses this question through the rapidly emerging perspective of policy dismantling, i.e. a reduction in scope, intensity, or implementation prospect (Bauer et al, 2013). While Europe is conventionally assumed to have replaced the USA as leader on international environmental issues this paper shows that environmental policies have been under attack in both the USA (since the Reagan era) and in Europe (since the 1990s). Building on own research on EU green policies and on an extensive literature review of the US case, it highlights how the major motivation for these dismantling efforts resides in many politicians' perceived political gains in fuelling the environment/economy divide, and on firmly siding with the economy.

By carefully scrutinising changes in environmental legislation targeted for dismantling (under the Reagan and W Bush administrations in the USA, in the early 1990s, 2000s and 2010s in the EU) this paper shows that these attacks have not achieved significant roll-back of environmental policies. But they have had a serious impact on the capacity of environmental actors to provide transformative solutions to global environmental changes by forcing them to devote an important part of their resources in maintaining the status-quo - effectively running to stand still (Klyza, 2010).

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Integrative governance: Enhancing the architecture for sustainable development in the era of synergies

Ingrid Visseren-Hamakers

A commonly heard statement on the international architecture for sustainable development is that it has become increasingly complex over the past decades, given the hundreds of multilateral environmental agreements (MEAs) and plethora of (public-)private initiatives. This widely recognized issue of fragmentation and complexity of international environmental governance has inspired an increasingly intense and diversified literature. Over the years, social scientific scholars from different disciplines have discussed regime complexity. This debate on regime fragmentation is itself however rather fragmented. This can be explained by the fact that these literatures focus on different governance levels; scholars from different disciplines have contributed to the discussion; and the discussion has been ongoing for over 50 years, with current authors showing little awareness of the earlier debates. The topic of relationships between different policies is also discussed in the policy processes themselves, where the call for synergies is increasingly heard, and several MEAs are working towards enhancing collaboration. One could argue that we have arrived in the era of synergies. This article brings these relatively isolated debates together under the common heading of integrative governance. An overarching integrative governance perspective is necessary so that common insights and lessons learned from the different scientific and practitioner perspectives can become visible, thereby furthering the debate theoretically, conceptually and empirically. Such an integrative governance perspective is urgently needed, given the current calls for synergies, and the knowledge gaps on the best ways to achieve them. The article first provides the highlights of the different debates relevant for integrative governance in chronological order. In this manner it becomes clear how the debate has evolved over time. After this literature review, a common research agenda is proposed.

Manufacturing Governance: Centralized and Decentralized Pathways to Sustainability

Vanessa Timmer, Kira Matus, Dwayne Appleby

The issue of addressing unsustainable consumption and production patterns has been on the international agenda since the United Nations Conference on Environment and Development in 1992; however, the analysis of the governance architecture aimed at transforming global manufacturing systems remains underexplored compared with, for example, the climate regime. Advancing sustainable consumption and production (SCP) is a complex challenge that benefits from diverse actors bringing their resources to bear and engaging in collaborative problem solving. Increasingly, different models of networked governance structures are emerging to tackle these challenges. This paper compares different models of institutional architecture of the SCP system and its multi-stakeholder and multi-level elements, both within and across common structural types. Some governance structures are internationally facilitated but geographically bounded, such as emerging eco-industrial clusters, and others span the globe with engagement and reach. Of particular interest is the emergence of "network administration organizations (NAO's)," and the differences between NAO-type systems, and those that emerge either from loose and spontaneous collaborations, or due to the existence of single powerful actors who are able to direct the actions of the network. Each of these arrangements have different implications for challenges and opportunities on variables that include trust, scalability, coordination and financial viability. This paper compares these centralized and decentralized governance arrangements and explores the implications for access and allocation of natural resources in an SCP framework. Drawing on experience from other global governance regimes such as those focused on climate, water, energy, agriculture and health, this paper identifies key characteristics of governance architectures that could support a transformation in consumption and production systems.

Environmental mainstreaming in contemporary governance: A framework for analysis and design

Sylvia I. Karlsson-Vinkhuyzen, Marcel Kok, Ingrid Visseren-Hamakers, Catrien Termeer

One of the major challenges in treading transformative pathways towards sustainability is how to bring the long-term dimensions of environment, society and economy into governance where it would really matter; that is in the production and consumption sectors of society that exert the strongest pressures

on e.g. ecosystem services. One approach to make this happen has been environmental mainstreaming initiated by governments or intergovermental institutions. In this paper we argue that this concept has to be elaborated and adapted for situations where governance rather than government is the context. On the basis of a review of literature on the mainstreaming of environmental issues into other policy fields we conclude that it: 1) tends to assume that mainstreaming needs to be a top-down hierarchical process; 2) generally departs from the rationale of the theme that should be mainstreamed rather than from the rationalities of the sector or policy arena into which it will be mainstreamed; 3) seldom links to 'newer' theoretical approaches and understandings around how governance works in practice.

The main part of the paper presents a framework aiming to update and strengthen current mainstreaming analysis and practice. It provides an analytical tool to identify opportunities and barriers to mainstream environmental issues into relevant sectors. It is intended to be used for both diagnostic and design purposes and through the latter enable more effective and legitimate mainstreaming in diverse governance contexts.

We concluded the paper with illustrating the application of the framework on five cases linked to biodiversity - e.g. the global value chain of palm oil production and forest certification across the globe - and what has been learned within and across these cases about the 'how to'of mainstreaming biodiversity in production sectors.

6.3   Vulnerability and Risk Governance
Chair: Mark Tebboth, Room: JSC 2.02

Dealing with environmental health risks - The role of children's and adolescents' environmental risk perception in the development of local risk communication programs

Susanne Börner

Global issues such as environmental pollution increasingly call for local responses at the community-level. Here, community-based risk communication strategies can decisively contribute to local empowerment and the improvement of community health since they help overcome blockages such as a lack of knowledge and generate social transformations. Yet, literature shows numerous examples of cases where communities are considered homogeneous entities. Children's and adolescents' perceptions in particular are often neglected in environmental risk research. Against this background, this paper aims to analyze the role of children's and adolescents' environmental risk perception in the development of community-based risk communication programs in the city of San Luis Potosí, Mexico. This paper presents the results of empirical research on environmental risk perception carried out with 74 children and adolescents from the two urban communities of las Terceras and Morales, which are severely affected by environmental pollution. Participants were asked to do drawings and take photographs of elements and situations they believed affected their personal health both at home and outside their homes. They were also asked to describe each photograph in writing. Photographs and drawings were then analyzed based on content and statistical analysis. Results demonstrated that children and adolescents can provide key information on a local risk context. Through the combination of research techniques a wide range of environmental health risks in the study area were identified such as hazardous garbage storage, air and water pollution, the insufficient division of living and working space, and the lack of road safety. At the same time, participants provided a detailed impression of their personal concerns with regard to environmental destruction, and social disintegration. Hence, this paper addresses an important gap in environmental risk research by demonstrating the importance of recovering local knowledge especially from marginalized community groups such as children and adolescents.

Climate change impacts on urban hazards governance in Idaho: a comparative policy network perspective

Eric Lindquist

Numerous frameworks and models exist for understanding the dynamics of the public policy process. A policy network approach considers how and why stakeholders engage in policy problems and solutions. Factors may include the relationships between these stakeholders, how they influence the process, and how networks change as a result of new information or public interest. This dynamic approach is useful in understanding how urban governance in regard to natural hazards as new information influences and disrupts the status quo. Two significant natural hazard policy networks exist in the semi-arid urban region of Southwest Idaho, which includes the capitol city of Boise. Boise is situated along the Boise River and adjacent to steep foothills, making the community vulnerable to wildfires at the wildland-urban interface (WUI) and flooding. These hazards have devastated the community in the past and are projected to occur with more frequency as a result of climate change.

Both hazards are well understood, scientifically, however, there are stark differences from a policy and governance perspective. The WUI wildfire network is large, diverse and established, has well defined objectives, and conducts promotional and educational activities. The flood control network is less defined, dominated by a few historically strong interests and is constrained by the complex legal and management foundations of Western water rights and federal and state regulatory practices. Overlap between networks occurs as many of the stakeholders are found in both, yet significant distinctions can be identified. This paper will focus on a comparison of these policy networks as they respond to climate change and the probability of increasing natural hazards and discuss the implications to the governance process in the region. This paper will contribute to the broad ESG Agency and Adaptiveness themes and the specific Transformative Pathways to Sustainability conference theme.

Institutional Responses and Equity Constraints in Disaster Relief Governance in Kwara State, Nigeria

Usman Raheem, Afolabi Tunde

During and after disasters, institutional interventions in Africa have been shown not achieve their desired aim of providing relief, reducing effects of disaster events and assist victims in the recovery process because the targets for the relief are often excluded. This study examines the administration of relief materials and post disaster services for victims of disasters in selected communities of Kwara State, Nigeria with a view to identifying dimensions of inequality and equity constraints in the distribution of the materials and post- disaster management efforts. Data on flood and rainstorms events between 2002 and 2011 were obtained from the National Emergency Management office while structured questionnaires were administered to 600 purposively sampled parametric and inferential statistics. Findings show that 79% of the heads of households combined more than one activities to earn sustenance and more than one livelihood distributed to enable owners of houses repair them. There are no safety-nets designed to reconstruct livelihoods and only 5% and 13% of female headed and rural households respectively benefitted from government intervention materials while 85% of rural households indicated that no post- disaster ' follow -up' was extended to them. The study proposes a paradigm shift in disaster management from property renovation to livelihood reconstruction and a balance in attention received across space and between gender while drawing implications for social justice and equity in disaster administration in developing countries.

Towards explanations of 'deep' shifts in environmental governance practices: a framework and examples from the domain of Flood Risk Governance in The Netherlands

Dries Hegger

Changes in environmental governance practices can be part of and may constitute an important force behind the transformative pathways to sustainability that are increasingly asked for in society. To be able to understand and help constitute such changes, insight is needed into, first, the types of shifts that are occurring or have occurred, and second, potential explanations for such shifts. Literature provides some evidence that both conceptualising the former (the explanandum) and providing an overview of the latter (possible explanatory factors) is often done in an incorrect or incomplete way.

To address this gap, this paper presents a framework for explaining 'deep' changes in environmental governance practices, based on a review of recent literature from the fields of policy sciences and environmental governance. The framework, first, provides guidance on how 'deep' changes can be distinguished from 'shallow' ones and, subsequently, introduces five types of explanatory factors (and their possible interrelationships): physical circumstances, infrastructures, structural factors, characteristics of agency and shock events. The usefulness of the framework is illustrated with the example of a shift towards a risk-based approach to water safety in the Dutch city of Dordrecht.

The paper concludes that the presented framework provides a good starting point for empirical studies into explanations for shifts in environmental governance practices. Our tentative expectation is that a future comparison of explanatory studies will show diversity in: i) the extent to which shifts can be identified across domains and geographical contexts; ii) the extent to which these shifts can be attributed to policies purposefully aiming at such shifts (or not) and, finally iii) the relative importance of structural factors vis-à-vis characteristics of agency in explaining such shifts.

6.4 Transformative Pathways in Conservation and Environmental Management
Chair: Adrian Martin, Room: JSC 2.03

Transformative Pathways toward Governance for Sustainable Rangeland Management

Lance W. Robinson, Jonathan Davies, Fiona Flintan

Rangelands cover about 50% of the world's land area, they sustain the livelihoods of millions of

people, and they provide ecosystem services important at every level from local to global. While there are numerous examples of effective rangeland governance around the world, inappropriate national and international frameworks (e.g., CBNRM frameworks that are ill-adapted to the unique characteristics of rangelands) and incentive systems (e.g., valuation systems that ignore the full economic value of rangelands) threaten to undermine effective rangeland governance. We identify key drivers of these frameworks and incentive systems as falling into four broad categories: knowledge systems, discourses, power dynamics, and norms and values. Now, however, an interconnected set of international initiatives, including the Rangelands Governance Initiative and Rangelands Observatory both supported by the International Land Coalition and various partners, and the Sustainably Managed Rangelands Initiative led by the IUCN, is taking steps to leverage appropriate forms of governance for rangelands. They aim to do this primarily by addressing the first of these drivers, through:
establishment of a knowledge base
- on rangeland ecosystem and land use dynamics,
- on effective and ineffective forms of rangeland management including mapping the many rangeland systems that are sustainably managed, and
- on governance for sustainable rangeland management; and
development of knowledge mobilization and decision systems and tools both at the level of institutional design and at the level of management.
We offer suggestions on steps that might be taken to create transformative pathways toward governance for sustainable rangeland management by addressing the other three types of drivers: by influencing the discourses which shape the thinking of policymakers, by shifting power dynamics in favor of those with the strongest incentive for sustainably managing rangelands, and by facilitating the emergence of shared norms and values.

Bringing Systems Thinking into Community-based Environmental Management Decisions

Marilyn Buchholtz ten Brink, Joseph Fiksel, Brian Dyson, Gary Foley, Ingrid Heilki, Matt Hoagland, Andrea Bassi, Patricia Bradley, Eric Ruder, Susan Yee, Walter Berry, Henry Walker, Johanna Hunter

The U.S. EPA's 'Sustainable and Healthy Communities Research Program' is developing methods and tools to assist communities in making decisions that lead to more just and environmentally sustainable outcomes. Work includes collaborative development of systems models that capture linkages between environmental, social, and economic spheres. These models assisted communities and environmental managers in understanding social and economic benefits and trade-offs for choices that range from business-as-usual to taking actions, e.g., adopt innovative wastewater technologies, restore wetlands, implement Agricultural BMPs, adopt multi-state coastal management strategies, enforce existing standards, or implement climate resiliency practices. We will discuss three complementary models and their effectiveness in bringing systems-thinking into community-based environmental management decisions: A simple concept map, which can be developed by individuals or groups to capture their own understanding of systems of interest and integrate knowledge and values from different perspectives. A Driving Force-Pressure-State-Impact-Response framework that identifies cause and effect within the system and allows community decision-makers to recognize factors that may need to be quantified in order to evaluate trade-offs and co-benefits. Use of these two models within exploratory workshops with stakeholders and within a structured decision-framework (Decision Analysis for a Sustainable Environment, Economy and Society) resulted in shifts of participants' thinking and willingness to invest in both additional data acquisition and in environmentally protective actions. A dynamic simulation model that creates a triple-value system simulation (3VS) for specific watershed management scenarios. Narragansett Bay and the Cape Cod cases brought state, federal and local researchers, and environmental managers together to identify critical model components, linkages, data, management options, and implementation roadblocks. Collaborative development of these models resulted in better understanding of the financial and social impacts to communities of coastal water quality, increased willingness to work across boundaries, recognition of the costs of delaying actions, and agreement on research and data needs.

Climate-smart agriculture: Challenges and opportunities in Sub-Saharan Africa

Mairon G. Bastos Lima, Sepo Hachigonta, Leisa Perch

Sub-Saharan Africa is particularly vulnerable to climate change. The region is marked by strong dependence on rain-fed agriculture and natural resources, high levels of poverty, and poor infrastructure in rural areas. Projections suggest this region will suffer greatly from further water stress, more frequent droughts, floods, and alteration in rainfall patterns, leading to lower agriculture yields unless adaptation measures are taken. Climate change, in addition, may reduce the land suitable for agriculture, potentially leading to increases in clearing native forest and pasture lands for crop

cultivation, with a consequent significant increase in carbon release, too. The effects of climate change on African agriculture will thus be severe and one of the largest emerging challenges to household livelihoods. As such, this research has set out to analyze the barriers and opportunities for "climate-smart" agricultural development in Sub-Saharan Africa. The term refers to agriculture that (i) increases productivity and income, (ii) adapts and builds resilience to climate change, and (iii) reduces greenhouse gas emissions where needed. This research is based on a comparative assessment of relevant policies in 16 countries across Eastern and Southern Africa. It has included document analysis and key-informant interviews with local researchers, government officials, the industry sector, and civil society organizations. The research draws lessons not only for the individual countries, but also for the region as a whole. Finally, it highlights the existing potentials for North-South and South-South cooperation in climate-smart agriculture promotion.

The Correlates of Best Practice in Transnational Eco-Labeling

Hamish van der Ven

Eco-labels provide information to encourage the demand for and supply of products and services that cause less stress on the environment. They do so by establishing rules about proper environmental conduct intended to guide and constrain companies that voluntarily agree to be bound by these rules. From humble origins in 1970s Germany, there are now 444 eco-labels operating in 197 countries worldwide and covering 25 industry sectors. While the explosion of environmental labeling and certification systems is remarkable, the prospects of eco-labeling schemes achieving their stated environmental objectives remains uneven. Whereas some eco-labeling organizations demonstrate a remarkable commitment to internationally-accepted best practices like consulting stakeholders during standard design and employing independent third-party auditors to monitor compliance, others are less rigorous. Using an original data-set of 156 transnational eco-labeling organizations, this paper tests a range of hypotheses about the role of public versus private ownership, interest group influence, geopolitical context and temporal conditions in explaining variation in adherence to best practices amongst transnational eco-labeling systems. In doing so, it seeks to lend broad insight into the conditions under which transnational governance is most likely to achieve environmental objectives. It also seeks to contribute empirical substance to contemporary debates around the prospects and perils of private authority in global environmental governance.

6.5 Non-state Actors and Private Environmental Governance
Chair: Michelle Betsill, Room: JSC 3.02

Rien Ne Va Plus: Exploring Private Sustainability Governance Failure

Philip Schleifer, Michael Bloomfield

Not only do sustainability issues transcend geographic borders, but the production and consumption decisions driving these issues are also often transnational in nature. Private governance institutions are being developed through the collaboration and contestation between business and civil society actors to govern these transnational spaces. To date, research on the topic has tended to focus on the most robust and 'successful' cases of non-state institution-building. In this regard, much has been written about private forestry governance and, in particular, the Forest Stewardship Council. While it makes sense to study the most developed institutions, we posit that much can be learned by studying failed institutions and an analysis of these 'non-cases' is long overdue. There are many possibilities for why non-state institution-building efforts might fail. The explanatory axis we explore in this paper is whether institutional failure was due to lack of a common zone of agreement among the parties involved (breakdown of bargaining), or whether these arrangements failed due to their inability to win the support (ideational and/or material) of dominant actors in their institutional environments. In other words, did these institutions fail due to internal or external factors? We explore these hypothetical explanations for private governance failure through a structured focused comparison of the Flower Label Program (FLP) and the Marine Aquarium Council (MAC).

Assessing Agency inside the C40 City-Network: A Conceptual Model of Diffusion, Convergence and Clustering

David Gordon

Much ink has been spilled of late in praise of cities as global climate governors, based on the notion that cities, responding to local needs and free from the strictures of national sovereignty, are more apt to cooperate, share information, and learn from each other. The propensity of cities to join transnational networks such as the C40 Climate Leadership Group further underscores this assertion. But while networks like C40 may facilitate the flow of information, little is known about why some

ideas flow while others do not, nor why diffusion sometimes produces convergence and sometimes does not. I argue that addressing these questions requires thinking about networks as spaces of political interaction, and specifying how power dynamics impact which (and whose) ideas enter networks, move through them, are taken up, and run into barriers along the way - in other words, how agency and architecture interact within the C40. In this paper I propose three conceptual moves that can facilitate this task. First, the paper disaggregates city-networks like C40 into multiple, functionally differentiated networks-within-the-network. This analytic distinction creates space to identify and account for differential patterns of diffusion and convergence. Second, the paper proposes a multidimensional account of network centrality to identify which cities have the power to upload ideas and drive diffusion across the network. Third, the paper suggests that diffusion flows remain, to varying degrees, constrained by the continued embedding of cities in sovereign systems of authority. The paper then assesses the viability of the framework by presenting empirical evidence of convergence within the C40 around a "measure to manage" approach to local climate governance, arguing that the conceptual tools provide a useful means of accounting for convergence patterns and can offer a means of assessing the potential of city-networks like C40 as pathways of transformation.

Climate change, perceptions and governance: a critical analysis of São Paulo city

Gabriela Di Giulio

Debates about risks and impacts associated with climate change often over-emphasize the need of effective institutional responses as well as individual attitudes to adapt in different ways. Increasingly more publications are now showing that while climate change will expose regions to similar impacts, the extent of those impacts and responses at the local level will be determined not only by the location's sensitivity and vulnerability but also by local groups and individuals' capacity, including their institutional links, social networks and motivation to action (Serrao-Neumann et al., 2013). Exploring these ideas, in this talk we will report some preliminary results of an empirical research project based on a set of qualitative methods in São Paulo city. The biggest Brazilian metropolis exhibits the main elements of an urban environment, and highlights the problems and challenges which are faced by decision makers and residents, such as irregular settlements, scarcity of sanitation, traffic congestion and pollution. Considering some projections on environmental change to São Paulo (Nobre et al., 2010; Ambrizzi et al, 2012), it is possible to infer that climate issues may bring a set of hazards that would exacerbate even more the urban problems as well as the risks to which people are exposed. Drawing on empirical research we seek to understand how stakeholders of science/policy/civil society perceive risks associated with climate issues at the local sphere, and how they think about the city's capacity of protection/adaptation. In a deep level, drawing on empirical research in a specific neighborhood with risk areas, we also seek to analyze how people understand their vulnerabilities in a context of extreme events and how they are willing to engage in changes to their life styles. In this talk, we will examine our preliminary results, in order to contribute to the critical debate about perceptions, behaviors and governance.

From Top Down to Bottom Up: Investigating the influence of emerging non-state actors and networks on restoring climate justice in China

Sabine Dauth

Much has been written about climate justice and China's growing contribution to greenhouse gas emissions. Academic analysis has predominately treated the country's approach to climate governance as a fixed entity dominated by state led top-down regulation. This paper moves away from a black box view to reveal a multitude of actors and networks. It also examines the shift of agency and authority from the central government to business and civil society seeking to influence the direction of climate politics bottom-up with their diverging interests and conflicting agendas.

 The study focuses on two areas. Firstly, by drawing on adaptive governance theory and making it applicable to the unique political economy of China it aims to identify actors, individuals, groups and networks, their relationships and influence on processes and institutions. To this end a review of relevant literature will be conducted. The paper then speculates how actions and interactions will shape the future governance framework and impact rule setting and policy making. Particular attention is paid to the implementation of a national carbon market which is firmly on China's political agenda and marks a departure from state initiated command-and-control measures.

 Secondly, the paper attempts to provide initial answers to the question of restoring ecological, social and economic equity across China's society and regions which are characterised by vast differences in wealth and vulnerability to climate events. By investigating the impact of these actors on the allocation of benefits and burdens as well as risks and opportunities associated with economic climate instruments, the paper intends to shed light on the role of non-state led climate governance and the

effectiveness of its response to ecological, economic and social injustice in an emerging market economy prioritising growth and development. The results obtained through qualitative analysis will be interpreted through concepts of access and allocation.

Pull to the political center or diffusion across geographical scales? The role of policy entrepreneurs in environmental governance

Katharina Rietig

The level of analysis in international politics is frequently the interaction among states. Little is known about the individuals that frequently played a key role in developing, negotiating and gathering support for a policy proposal that becomes legislation in the form of international treaties or national laws. We also know little about the spatial scales at which these individuals operate. Do they tend to cluster in few centers of political power or are they distributed evenly? This article examines how policy entrepreneurs were key drivers behind European climate policy. It presents three case studies on the European level that each point towards policy entrepreneurs who made use of windows of opportunity to present policy proposals and steer the political decision-making process towards adoption. The first case study examines the key role of civil servants at the European Commission in drafting, negotiating and agreeing the Renewable Energy Directive aimed at 20% renewables by 2020 and the linked controversy on biofuels. The second case analyses the driving forces behind decades of reforming European agricultural policy towards a public goods-oriented and increasingly environmentally sustainable model. Although traditionally decided by national agricultural ministers, this contribution points to individual policy entrepreneurs at the European Commission as key drivers for reform. They were very progressive against strong opposition from the farm lobby and several member states in rebranding the Common Agricultural Policy as 'public money for public goods'-policy. The third case contrasts these two instances of integrating climate policy into energy and agricultural policy with the drafting of the European Emission Trading Scheme. It finds that these policy entrepreneurs predominantly use supranational decision-making circles that involve a limited number of individuals to design the policy strategy and then steer their proposal through the decision-making process using their expert knowledge and time advantage during windows of opportunity.

6.6 The Role of Science in Transformations toward Sustainability
Chair: Corinne Le Quéré, Room: JSC LT

Science And Climate Change Diplomacy – Cognitive Limits And The Need To Reinvent Science Communication

Manjana Milkoreit

In a time of multiplying international problems that require scientific input, a well functioning science-diplomacy interface is vital for the success of global governance. The case of climate change offers valuable lessons concerning current institutional design patterns of this interface, building on more than two decades of experience with of the Intergovernmental Panel on Climate Change (IPCC) and the UNFCCC. In this chapter I depart from the usual approach to analyzing the role of science in diplomacy. Instead of assessing the functioning and processes of the IPCC, I use a cognitive perspective to analyze how diplomats' minds receive and make use of scientific knowledge. Using interview data from 2012, I argue that (i) most negotiation participants use a very basic and limited set of insights about climate change that has not changed significantly for a long time, (ii) that recent scientific concepts are not part of most diplomats belief systems, most notably the idea of climatic tipping points, and (iii) that hardly any negotiator is able to imagine qualitatively different long-term futures that have been affected by climate change, and to link present decisions to those possible futures. I discuss the implications of these findings for the negotiation process and outline possible ways to improve the design of the science-diplomacy interface to address present cognitive limitations.

Studying climate change perception. How to use science to raise awareness of climate change

Maria Jose Ambrosio-Albala, Maria del Mar Delgado Serrano

Current consumption and production patterns give rise to new challenges influencing human-earth system relationship and hindering adaptive capacity. Among others, society must meet the challenge of climate change. Against this backdrop, it is vital to firmly commit society to environmental issues and to approach climate change from a new angle. If society does not believe that a change in climate pattern is risky, it may be more difficult for policymakers to "legitimately" work on the issue. To this respect, changes towards an understandable, comprehensive, and usable knowledge are required. Scientific knowledge must embrace interdisciplinarity and research should focus on action and practice. But this alone will not be enough. Transformations toward sustainability will be

accomplished when countering unsustainable behaviours. Making people concerned about climate change is related to raising the awareness of benefits, threats and sustainability of the current life style. Previous research indicates that understanding how social features affect risk perception is crucial to dealing with climate change and to properly encourage people to act sustainably.

Here we give insight into the effective delivery of scientific evidence on climate change that aims to increase the engagement of the general public. Firstly, based on scientific evidence some recommendations to enhance usefulness of scientific knowledge are presented. Then, we highlight the importance of the study of perception for reverting unsustainable actions and compelling/constraining political actions. We present preliminary results of a case study in the area of Bahía Blanca (Argentina) where we aim at examining the influence of social aspects in climate change perception both across local population and scientific community. The results presented are based on the analysis of the first set of data collected, although further data collection in Latin America will be used to corroborate these findings.

Governing Geoengineering: Responsible Innovation in the Anthropocene

Rob Bellamy

Deliberate large-scale interventions in the Earth's climate system, known collectively as climate 'geoengineering', have been proposed in order to moderate anthropogenic climate change. Insufficient mitigation efforts, the risk of a climate 'emergency', and a host of other rationales for geoengineering the climate have led to a growing number of assessments to evaluate the different proposals and provide critical decision support for their effective governance. As an 'upstream' suite of sociotechnical imaginaries, geoengineering poses a unique challenge for governance: a 'technology control dilemma', where governance architecture cannot know its impacts until significant research and development has taken place; by which time governance could not exercise adaptiveness over the trajectories of its innovation. Frameworks for responsible innovation seek to overcome this dilemma through the application of anticipatory, reflexive, inclusive, and responsive methods of assessment, few of which have yet been adopted in the context of geoengineering.

Here we exhibit the governance implications of the first assessment to 'open up' geoengineering appraisal to a diversity of framings, perspectives and future pathways. Using an innovative and inclusive method called Deliberative Mapping, diverse international experts and stakeholders and local publics anticipate the impacts of geoengineering, reflect on personal and institutional assumptions and agency, and help to build a responsive governance architecture. Four propositions for the governance of geoengineering are made. First, that governance should develop sociotechnical foresight of the futures under which geoengineering might be deployed. Second, that governance should control geoengineering through an adaptive and accountable architecture, and provide access for the acquisition of consent from parties affected by the allocations of justice, equity and fairness. Third, that governance should anticipate the possible impacts of geoengineering and seek to alleviate them. Fourth, that governance should necessitate a robust demonstration of the geoengineering technology. Possible governance architectures are considered for implementing these ambitious propositions.

A Data-Intensive Approach for Quantifying Concepts of Sustainability for Earth Systems Science

Masaru Yarime, Ali Kharrazi, Rakhyun E. Kim

A critical necessity for the sustainability of our coupled human-environmental system is the quantification of related underlying concepts. Towards this end, researchers and policy makers should advance a data-intensive approach whereby complexities are best understood and decisions for governance can be more objective, just, and precise. Given, the lack of data, especially data on the availability, consumption, and cycling of resources, a data-intensive approach is currently at a nascent stage of development. This paper proposes a framework for the governance of data, where local, national, and regional institutions collaborate towards the collection and standardization of data. Furthermore, this paper discusses the concept of resilience in relationship to access and allocation in the anthropocene and how this relationship can be quantified through a data-intensive approach. Specifically, this paper evaluates recent advances in the ecological information-based approach for gaining insight into complex concepts such as resilience in networks. We hope that this paper can contribute to the establishment of a new direction for future research for quantitative aspects of sustainability science and earth system governance.

The policy relevance of ecosystem service science: A reflexive assessment by the Belgian ecosystem services expert community

Hans Keune, Tom Bauler

The concept of Ecosystem services (ES) has been in the foreground of a considerable amount of recent scholarly work. An entire Ecosystem services science, or at least a community of interdisciplinary scholars and experts, has been emerged. The promise of Ecosystem services as a concept, a science and community lies in allowing a conceptual and epistemological reconfiguration of environmental policies, with the objective to generate a deeper prioritisation to some of the perceived "lost" causes of policy-making processes and trade-offs (e.g. biodiversity conservation).

On this pathway of the Ecosystem services concept's operationalization, the quest lies today in discussing, experiencing and documenting the usability, insertion and use which could - and is - made of the Ecosystem services -concept and its (e)valuations when it comes to define, configure, amend public policies for nature and biodiversity protection. Imagining the policy implications and usefulness of Ecosystem services (e)valuations has thus logically become the core of a series of recent debates in the field; a discussion which can also be understood as an attempt to improve our understanding of the largely enthusiastic reception such (e)valuations of nature trigger among many environmental policy makers.

Our paper will contribute to this debate by exploring how the actors of the Ecosystem services' community themselves evaluate the link which Ecosystem services science could make up to here to policy-making processes. A survey was set up as to highlight the views of a diversity of Belgian actors: scientists, policy representatives and others (http://www.beescommunity.be/). The survey touched upon valuation issues, context dependency, the role of biodiversity, the policy relevance of scientific knowledge on ecosystem services, the science - policy interface, scientific objectivity and independence, knowledge communication from science to policy, the responsibility of social scientists and the knowledge ability about science or policy for subsequent 'other actors'.

6.7   Law, Politics and Global Environmental Change
Chair: Rebecca Farnum, Room: JSC 2.01

The Politicization of the Global Commons

Marcel Dorsch

This contribution draws on work in political philosophy to reflect on the growing discourse about "commons" in science and civil society. In general, "commons" can be seen as contested (mostly through enclosure, under-/overuse or social dilemma) im/material resources, whose relevance for a group (e.g. humanity) justifies a demand for regulation, mostly described as a form of inclusive self-governance. Thus, it's not only about a specific governance of common-pool-resources in diverse property regimes, but touches fundamental questions of legitimate ownership, sovereignty, inclusion or democratic will-formation - just to name a few.

The paper explicates some of these inherent implicit and explicit normative assumptions found in the commons concept to then ask whether this helps to tackle wicked problems of sustainable global commons (GC) management, e.g. related to biodiversity, forests or atmosphere. In giving reference to a Habermasian approach on the possibilities of a "global public policy" in a post-national setting, it claims and justifies a politicization of global governance to develop notions of a transnational derivative legitimation.

The origins of this politicization are twofold. Firstly, there's a demand for regulation, meeting the prevalent absence of "global-internal-policy-institutions", or a "world state". At the same time the indisputable influence of existing global governance on domestic decisions generates a demand for legitimation, which hardly can be met via formal democratic procedures globally.

In using this approach the paper stresses the need for a discursive public struggle about the most justifiable rationalities and adequate procedures in dealing with GC-problems. Therefore the (re)emergence of political competency on the international level does neither rely exclusively on professional expertise or output orientation, nor only on abstract moral claims (like the one on initial ownership of natural resources), but also on the proper involvement of a global public sphere to shape the horizon of recognized justifications for global action.

Realpolitik and Reform at Rio+20: The Politics of Change in the Form and Function of the United Nations Environment Programme (UNEP)

Luke Kemp

This research aims to explore the barriers and opportunities to change in the form and mandate of UNEP and to develop scenarios for the future of the United Nations Environment Programme (UNEP) based upon observed drivers and constraints for change. It provides an original contribution to the existing literature by analysing the political dynamics underlying UNEP reform based upon a case-study at the Rio+20 Conference on Sustainable Development. Scenarios, emergent from interviews

and observation of negotiations, suggest that UNEP can undergo a change into a World Environment Organisation (WEO) either through a slow, incremental upgrade, or a speedy transition to a WEO without US participation, pushed by a coalition of proactive states- a "Critical Mass WEO". Other more operational options include a network and regional focused structure or a merger with the United Nations Development Programme (UNDP). In terms of mandate, there was political momentum from developing countries for UNEP to take a stronger role in implementation, but continued opposition from industrialised non-EU states against adopting a stronger coordinating function. This article argues that the most politically feasible and attractive future pathway for UNEP is to become a more decentralised, operational agency with a mandate focusing upon capacity building, information gathering and dissemination, implementation and perhaps a movement towards integration with UNDP. However, the issue of US participation must eventually be addressed and adopting a semi-global Critical Mass WEO or World Sustainable Development Organisation (WSDO) are potential options in the short-term and long-term respectively.

From state-centrism to regional water security: Rethinking international law in the Anthropocene

Bjørn-Oliver Magsig

The world's freshwater supplies are squeezed by rapidly increasing demand, the impacts of global climate change and unsustainable management. Given the fact that water is the gossamer linking various other security issues – energy, food and environment – it seems obvious that business as usual in transboundary water management will endanger international peace and security. Yet, the much longed for new approach is missing. This is mainly due to the fact that addressing water insecurity is a highly complex task where multilevel and polycentric forces must be balanced and coordinated.

Earlier work has examined international water law through a security lens and revealed two main weaknesses of the current governance regime: (1) the tension between the task to provide for 'security of expectations' and the needed innovation to meet fluctuating demands and supplies; and (2) the tension between the ecological unity of the water resource and the diverging sovereign interests of states. In order to address these shortcomings, the present mindset of prevailing rigidity and state-centrism has to be challenged by examining how international legal instruments might be crafted in a way that advances a more flexible and common approach towards transboundary water interaction. Here, the concept of considering water security as a matter of 'regional common concern' is introduced in order to better address the challenges of global water insecurity in the Anthropocene.

The growing complexity and interdependence between states demands a break with the prevalent thinking in silos and within national borders. A renewed effort to foster international cooperation on all issues shaping our common future is desperately needed. This paper analyses transboundary water interaction – the fault line of international conflict in the 21st century – as a 'case study' for advancing public international law in order to fulfil its responsibility of promoting international peace and security.

The recognition of subnational governments by the UN system: overcoming scale and legal barriers in global environmental governance

Joana Setzer

The governance of the global environment requires multi-actor and multi-level action. Within the actors involved, governments have many important roles to play. Governments can legislate, enforce rules and implement policies on the local, national, and regional levels. However, governmental action circumscribed to traditional territorial spheres of competence is insufficient to address global environmental problems. Global environmental problems ask for local solutions, and local governments must engage in the global governance of such problems. Acknowledging this need, subnational governments are playing an increasingly active role within international efforts to address global environmental problems, particularly climate change. At the same time, the UN system is starting to recognise subnational governments as a new category of 'governmental stakeholders' among its accredited observers. Within the climate change and the biodiversity Conventions, for instance, subnational governments had their critical, complementary and distinct role recognized by the UNFCCC and the CBD.

This paper analyses subnational governments' recognition within the UN system as a rescaling process. Scholars drawing upon the multilevel governance approach identify new horizontal and vertical interactions, linking different actors across levels of governance. Yet, many aspects of subnational governments' rescaling processes remain poorly understood. For instance, how are these rescaling processes actually occurring, and what is their legal basis? The paper aims to evaluate the rescaling processes involved in subnational governments' initiatives to address global environmental

problems. It argues that although subnational governments are promoting a significant rescaling of environmental governance, there are legal limitations for their international engagement. The paper explores the processes through which the UN is involving subnational governments in international environmental policymaking. It concludes by suggesting forms through which the barriers for subnational engagement in global governance can be overcome.

Assessing Adequacy of Law on Local Communities and Extractive Industry in Africa: Perspectives from Nigeria

Suraj Saeda, Aliyu Barau

From colonial through the post colonial periods, mining has been the mainstay of Nigeria's revenue earning process. Tin, columbite and coal were the major export mineral resources in the colonial era before oil industry dominates Nigeria's extractive industry after the independence. Presently, Nigeria is focusing on expanding its export of the Seven Strategic Minerals (7SM): Coal, Bitumen, Limestone, Iron Ore, Barytes, Gold and Lead/Zinc. It is common knowledge that the extractive industry has done much harm to the Nigerian environmental system. It also harms many communities within and around the extractive industry's operating environment. The current attempt to diversify Nigeria's economy involves diversifying and strengthening the extractive industry. This paper assesses the strength and relevance of the existing legal and regulatory frameworks to cope for the rights, privileges and safety of local communities. The paper is based on intensive review of relevant legal and regulatory framework established by Nigeria's constitution and the law. While there has been growth in civil society activities and increase in institutions such NEITI - a local Extractive Industry Transparency Initiative but the regulatory frameworks need to be reviewed to cope with challenges of the expansion of the extractive industry in Africa. This paper argues that its findings may answer similar issues affecting other African countries.