The conference is hosted by the National Autonomous University of Mexico, together with the Earth System Governance Project.

The 2019 Mexico Conference will be organized around the five analytical lenses structuring the new earth system governance research agenda, as captured in the 2018 Science and Implementation Plan; and a sixth stream focusing on specific issues and challenges relevant to the Latin American region.

This book of abstracts lists all accepted abstracts for that conference, structured along the six thematic streams of the conference and grouped in panels.

Please note that the grouping in panels is tentative, that no time-slots for presentation have been assigned to panels, and that not yet all presenters have registered for the conference, and that recent changes to or withdrawals of abstracts might not yet be reflected in this version of the book of abstracts. Updated versions of this book of abstracts will be made available on the conference website frequently.

Contents

Architecture and Agency ................................................................. 2
Democracy and Power ................................................................. 92
Justice and Allocation ................................................................. 122
Anticipation and Imagination ..................................................... 160
Adaptiveness and Reflexivity ....................................................... 190
Socio-environmental impacts of economic globalization .................. 225

Conference Co-Hosts:
The SDGs and Agenda 2030 highlight the crucial role of partnerships in global environmental governance for the achievement of seventeen sustainable development goals. Partnerships, it is argued, could potentially solve implementation gaps and address democratic deficits in sustainability governance, particularly by including various stakeholders. In other words, inclusive governance (Goal 16) and partnerships (Goal 17) are expected to go hand in hand and provide the blueprint of a process to achieve Agenda 2030. Previous research shows that the specific ways in which partnership and inclusion are practised have major consequences for the achievement of the policy goals. Successful and legitimate partnerships depend on a set of factors, such as accountability, transparency, and representative models of inclusion of major stakeholders. However, there is a need for a more focused study on what type of partnerships have been developed and implemented in the specific context of the SDGs? Which groups of SDG partnerships make a meaningful contribution to the implementation of Agenda 2030, and are regarded as legitimate governance mechanisms by most stakeholders involved? How can we explain the legitimacy, or the lack thereof, in these partnerships? The successful implementation of the Agenda 2030, therefore, depends on effective and legitimate partnerships and responsive, representative, and participatory models of inclusion of major groups and stakeholders. This paper aims to answer this question and discuss how these two process-oriented goals are being taken up in existing SDG initiatives, how they are perceived and interpreted by key stakeholders and the ways in which different interpretations influence the perceived legitimacy and success of SDG initiatives. In 2019, we are developing a unique data set at Stockholm University on multi-stakeholder partnerships related to three specific SDGs: Goal 7 (Affordable and Clean Energy), Goal 11 (Sustainable Cities) and Goal 13 (Climate Action). These three SDGs are selected because of their priority to the HLPF process and will be assessed in 2019. Using this database and preliminary interview data, we systematically analyze and compare over 1000 multi-stakeholder partnerships and their specific characteristics.

Joining Forces for Sustainable Development – A Social Network Analysis of Multi-stakeholder Partnerships for SDG Implementation
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Multi-stakeholder partnerships have been deemed essential for the implementation of the Sustainable Development Goals (SDGs). In the light of an alleged declining capacity of governments to effectively steer societal development towards a more sustainable future, contributions of non-state actors to the implementation of the 2030 Agenda offer great potential to leverage synergies in the path to sustainable development. Since the SDGs are highly interrelated and involve numerous complex trade-offs regarding social, economic and environmental...
objectives, multi-stakeholder partnerships can help to share knowledge, values and resources and thus facilitate SDG achievement. The 2030 Agenda, as part of SDG 17, explicitly calls for the enhancement of these partnerships as important means of implementation. While research has focused on identifying interlinkages between different SDGs in theory or through case study approaches, less is known about the emerging architecture of multi-stakeholder partnerships for the SDGs and the synergies it creates in practice. In this article, we aim at exploring the underlying structure and actor composition of 4,086 multi-stakeholder partnerships and voluntary commitments registered on the Partnerships for the SDGs online platform. Since data is only available through a browser-based web interface, we develop an automatic crawling software to systematically retrieve the information provided and conduct computer-assisted identification and matching of entities to create a structured database of actors with normalized names. Subsequently, we explore the structured data by means of a Social Network Analysis (SNA). We investigate what kind of interlinkages between different SDGs can be identified in the multi-stakeholder partnership network and how these reflect nexus previously identified by research. Additionally, we analyze what type of actors (UN Member States, civil society, local authorities, private sector, scientific and technological communities, academia) combine in which constellation to address which goals. Here, we further assess the nature of the links identified between individual SDGs by calculating the betweenness centrality of different types of actors. Finally, we examine the centrality of actors in the network and test for potential differences between public and private stakeholders’ connections to the overall network. The findings shall provide insights on the structure of transnational governance for the SDGs, the topology of the current multi-stakeholder partnership network and on how synergies for SDG achievement are leveraged in practice.

264

Quality Partnerships for the SDGs
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Partnerships are not new to the UN. The 2030 Agenda and the SDGs postulate effective partnerships as one key means of implementation. Moreover, the 2030 Agenda’s objective of “Transforming our World” elevates aspirations towards their performance. Partnerships are expected to not only reflect on structural systemic deficits, but also to provide “fit-for-purpose” solutions for transforming markets while ‘leaving no one behind’. Next to being inclusive, the 2030 Agenda calls on partnerships to become more accountable, in particular regarding their contribution to national development priorities. These aspirations thus beg the question of how previous experiences may inform partnerships to strengthen these qualities. Our research project’s findings posit partnership effectiveness as contingent on the institutional design and – as field research in South Asia and East Africa revealed – the partnerships’ fit to local context. In the final phase of our research, we asked whether and how relevant actors turn such lessons learned into “meta-governance” to assist partnerships in becoming fit for implementing the SDGs. We drew on scholarly concepts that define meta-governance as “governing of governing” or “organization of self-organization”. In particular, we focus on institutionalized frameworks, such as principles, (funding) criteria, guidelines, or other standards and rules for partnerships and their activities, which can be both, enabling and ensuring the quality of partnerships, and carried out at different levels, by state, intergovernmental as well as non-state actors. We analyzed if and how actors adapt existing or
design new meta-governance frameworks, comprising overarching rules intended to guide, accompany and evaluate partnerships. Our empirical research focused on views and activities by actors at the UN level, by donors and funders, at the national level and by private initiatives. While incidents of partnership meta-governance can be found at different levels, they portray a patchy picture rather than a coherent multi-level meta-governance framework. Several shortcomings of both, technical and political nature, persist. Our findings indicate that these problems are not due to a lack of experience or knowledge but ultimately of political will and leadership. Although our interviews as well as policy debates emphasize that the biggest potential for governing partnerships is at the national level, only few governments have seriously addressed the issue. Debates tend to get stuck at rather generic principles, the details for implementation are politically controversial while turf battles about influence and resources persist.

144

Creating a “Momentum for Change” in the developing world through transnational climate partnerships

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The body of research on transnational partnerships in climate resilient and sustainable development has grown considerably in recent years, contributing to a better understanding of their role in climate and sustainable governance; their potential to contribute to mitigation, adaptation and sustainable development; as well as their effectiveness. However, there is a considerable lack of understanding of such initiatives in the context of developing countries. Current scholarship has observed considerable underrepresentation and relative underperformance of developing country-based transnational partnerships, but has thus far failed to explain these patterns. This paper offers a better understanding of transnational climate initiatives in developing countries in the context of sustainable development, asking how effective these initiatives are, and what explains variations of effectiveness. The empirical focus is on a broad sample of initiatives under the “Momentum for Change” campaign led by the secretariat of the UN Framework Convention on Climate Change. Despite a global coverage, this campaign uniquely focuses on climate actions in developing countries with strong sustainable development co-benefits, including women empowerment (“women for results”), poverty alleviation (“urban poor”), and finance (“finance for climate friendly investment”). Using a mixed method approach, which includes a large-n analysis and expert interviews, we assess and explain effectiveness; patterns of implementation; and transnational leadership of “Momentum for Change” initiatives.

414

Who is Orchestrating Whom? The World Bank and its Partners in Sustainable Development

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In 2010, Abbott and Snidal generated a new research program on orchestration that would be a defining feature of what they called a “transnational new governance” architecture. The growing literature on orchestration identifies IOs with expansive governance mandates but limited resources to fulfill all tasks expected of them, as ideal orchestrators of non-state intermediaries that can implement various activities through public-private partnerships. Abbot and Snidal argued that partnerships in turn could have a beneficial effect on IOs by stimulating them “to learn and adapt, offsetting some of their bureaucratic pathologies” (2010, 341). This paper explores the limits of partnerships in generating beneficial
outcomes for sustainable development in general and IOs in particular. Using as a launching off point the same principal-agent framework of analysis that the original orchestration concept deployed, I examine how delegating management authority of a partnership to a trusted partner/intermediary enables agency slack. To theorize how intermediaries use that slack, I refer to Lipsky’s concept of street-level bureaucrats. These are defined as individuals who work in the field and as the front lines of their given agencies, “who interact directly with citizens in the course of their jobs, and who have substantial discretion in the execution of their work” (Lipsky 2010, 3). Some examples include teachers, policemen, and social workers. Like street-level bureaucrats, some World Bank partners have significant power of discretion in interpreting the nature of the problem they face and the resources that need to be allocated. An analysis of partners as street-level bureaucrats shifts our focus to the private goals and authority that these actors carry to the field which differ from the purpose of the original partnership and the World Bank’s mandate. I investigate the relationship between the World Bank and its partners in two of its largest conservation partnerships. The first is the World Bank/World Wildlife Fund Alliance for Forest Conservation and Sustainable Use (launched in 1998 and no longer active), the second is the World Bank/Conservation International Critical Ecosystem Partnership Fund (launched in 2000 and still active). These cases illustrate a dynamic where the World Bank delegates management authority over partnership activities to a trusted partner, and this enables an abuse of agency slack in a particular direction. In such cases, the opportunistic actor uses the partnership for individual, subsidiary purposes rather than for the provision of global public goods.

The Earth System Governance-Agency Harvesting Initiative draws lessons from Earth System Governance research on agency through a systematic analysis of 322 peer-reviewed journal articles published in the period 2008-2016. Our forthcoming edited volume, Agency in Earth System Governance, provide an accessible synthesis of some of the field’s major questions and debates and a state-of-the-art understanding of how diverse actors engage with and exercise authority in environmental decision-making. This introductory chapter details the harvesting process, which involved compiling and coding the articles to reveal the broad contours of agency-related research conducted within the context of the Earth System Governance Project. The Earth System Governance-Agency Harvesting Database provides a unique basis for examining how scholars within this research community have approached the analytical problem of Agency, in the process identifying key findings and debates. It also allows for reflection on how the Earth System Governance Project engages with broader environmental governance and social science scholarship. We find that the research represented in the Earth System Governance-Agency Harvesting Database reflects a multi-disciplinary and growing field of scholarship with distinct

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**Panel ID 9**

**Agency in Earth System Governance: Sharing the bounty of our harvest (1)**

75

**Introduction: Agency in Earth System Governance**

Michele Betsill1, Tabitha Benney2, Andrea Gerlak3, Calum Brown4, Sander Chan5, Ron Mitchell6, Ina Moller7, James Patterson8, Michelle Scobie9, Sandra van der He9, Oscar Widerberg10

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The Earth System Governance-Agency Harvesting Initiative draws lessons from Earth System Governance research on agency through a systematic analysis of 322 peer-reviewed journal articles published in the period 2008-2016. Our forthcoming edited volume, Agency in Earth System Governance, provide an accessible synthesis of some of the field’s major questions and debates and a state-of-the-art understanding of how diverse actors engage with and exercise authority in environmental decision-making. This introductory chapter details the harvesting process, which involved compiling and coding the articles to reveal the broad contours of agency-related research conducted within the context of the Earth System Governance Project. The Earth System Governance-Agency Harvesting Database provides a unique basis for examining how scholars within this research community have approached the analytical problem of Agency, in the process identifying key findings and debates. It also allows for reflection on how the Earth System Governance Project engages with broader environmental governance and social science scholarship. We find that the research represented in the Earth System Governance-Agency Harvesting Database reflects a multi-disciplinary and growing field of scholarship with distinct
clusters of researchers working in the areas of global environmental politics, policy studies, and social-ecological systems.

Theories and Methods of Agency Research in Earth System Governance
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This chapter reviews the articles in the Earth System Governance-Agency Harvesting Database from the perspective of the theoretical and methodological approaches used. The Earth System Governance-Agency Harvesting Database is a collection of 322 peer-reviewed journal articles published between 2008 and 2016 and provides a snapshot of how Earth System Governance scholars have taken up the analytical problem of Agency. We observe that most of the scholarship falls into one of three broad theoretical categories. Social and system dynamics approaches, which explore the complex interactions between agents and structures in Earth System Governance, are the most prominent. Agent-based approaches, which place greater emphasis on the autonomy of agents as they engage with Earth System Governance, are also central to this area of research. Critical theoretical approaches that emphasize asymmetric relationships related to power, class, race, gender, and human-nature relations are surprisingly less common within this body of scholarship. We find that despite earlier calls for methodological pluralism, Earth System Governance-Agency scholarship is dominated by qualitative research approaches, although we note that scholars increasingly apply multi-method qualitative approaches to their analyses of agency in Earth System Governance. In the future, scholars in this field may benefit from the integration of cross-disciplinary and increasingly complex methods in an effort to foster the linking of environmental sciences more broadly into environmental governance research.

Power (ful) and Power (less): A Review of Power in the Earth System Governance-Agency Scholarship
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In the 2009 Earth System Governance Science Plan (Biermann et al., 2009), Power was identified, alongside Norms, Knowledge, and Scale, as a cross-cutting research theme that is crucial for the study of each analytical problem, and also for the integrated understanding of Earth System Governance. Power has both constraining (power over) and enabling (power to) effects. The purpose of this chapter is to summarise the ways in which Earth System Governance scholars have studied the link between Agency and Power over the last decade through an analysis of publications in the Earth System Governance-Agency Harvesting Database, a collection of 322 peer-reviewed journal articles published between 2008-2016. We reflect on how power is used as an explanatory variable in research on agency in Earth System Governance and note that while power is a frequent consideration, it often remains undefined and/or under-theorized. We differentiate between agency-centred notions of power (power to) and structural perspectives (power over) and connect these conceptions of power to broader literatures and debates in the social sciences. Moving forward, we hope to see research that better conceptualizes and measures power. Future research can help Earth System Governance scholars better understand how governance can mitigate power imbalances. As a number of authors in our assessment have demonstrated, using power to
analyze normative governance considerations can reveal dynamics and relationships that might otherwise remain hidden (e.g. Bernstein, 2011; Cashmore et al., 2015; Menga & Mirumachi, 2016). Thus, the field will benefit from studies that effectively use power to further improve our understanding of normative issues such as equity, justice, legitimacy, inclusion, and transparency in earth systems governance.

Issues and Geography in Earth System Governance-Agency Scholarship
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In the 2009 Earth System Governance Science Plan (Biermann et al., 2009), Power was identified, alongside Norms, Knowledge, and Scale, as a cross-cutting research theme that is crucial for the study of each analytical problem, and also for the integrated understanding of Earth System Governance. Power has both constraining (power over) and enabling (power to) effects. The purpose of this chapter is to summarise the ways in which Earth System Governance scholars have studied the link between Agency and Power over the last decade through an analysis of publications in the Earth System Governance-Agency Harvesting Database, a collection of 322 peer-reviewed journal articles published between 2008-2016. We reflect on how power is used as an explanatory variable in research on agency in Earth System Governance and note that while power is a frequent consideration, it often remains undefined and/or under-theorized. We differentiate between agency-centred notions of power (power to) and structural perspectives (power over) and connect these conceptions of power to broader literatures and debates in the social sciences. Moving forward, we hope to see research that better conceptualizes and measures power. Future research can help Earth System Governance scholars better understand how governance can mitigate power imbalances. As a number of authors in our assessment have demonstrated, using power to analyze normative governance considerations can reveal dynamics and relationships that might otherwise remain hidden (e.g. Bernstein, 2011; Cashmore et al., 2015; Menga & Mirumachi, 2016). Thus, the field will benefit from studies that effectively use power to further improve our understanding of normative issues such as equity, justice, legitimacy, inclusion, and transparency in earth systems governance.

Agency and Knowledge in Environmental Governance – A Thematic Review
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This chapter unpacks the complex relationship between knowledge and agency in environmental governance by assessing the scholarship produced by members of the Earth System Governance Project over the past ten years. The environmental governance literature accords knowledge a special status, regarding it as crucial for “identifying problems and devising solutions to global environmental problems” (Bäckstrand, 2004: 695). Without knowledge of the environment, there would be no foundation to act upon environmental problems. Seeking to tie this basic insight to the notion of agency, we explore how Earth System Governance scholarship has addressed a number of agency-related questions, such as how do different agents create, acquire, use and share knowledge? And how and when does knowledge generate, enable or constrain agency in global environmental governance? The analysis presented in this chapter is grounded in an examination of the Earth System Governance-Agency Harvesting Database, a collection of 322 peer-reviewed journal articles published between 2008 and 2016. We identify
six key scholarly debates over the last decade relating to: 1) scientific expertise, 2) participatory knowledge-production, 3) local and indigenous knowledge, 4) knowledge-based authority and power, 5) learning, and 6) actor diversity. The Earth System Governance-Agency scholarship contributes to larger debates in the social sciences concerning the growing importance of participatory processes of knowledge co-production, moving beyond the conventional primacy of scientific expertise in environmental governance and elevating the role of non-scientific knowledge holders.

Panel 10

Agency in Earth System Governance: Sharing the bounty of our harvest (2)

91

Agency and Norms: Who Defines What Ought to Be?
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This chapter evaluates how the nexus of norms and agency has been treated in the Earth System Governance research network, through a review of the Earth System Governance-Agency Harvesting Database, a collection of 322 peer-reviewed journal articles published between 2008 and 2016. Our review indicates that the subject of Norms, identified as an important cross-cutting theme in the first Earth System Governance Science Plan (Biermann et al. 2009), has garnered interest amongst many. However, the amorphous character of this theme makes the evaluated contributions fragmented and dispersed, necessitating systematic review to bring together key insights. We find that norms are conceptualized in different ways, including as regulatory instruments, as parts of the surrounding structure, and as expectations held by researchers. These diverse conceptions yield different research approaches that are not necessarily comparable. With respect to agency, we find that actors engage with norms in multiple ways. These include commonly discussed efforts to use agency to shape norms, but also include exercising agency to interpret and use norms and exerting agency to manage norms and other actors’ interpretation of them. We also find that the research on norms and agency, at least in this sample of articles, has concentrated within a few regions. Thus, the international perspective, the European perspective and Asian perspective are much more heavily represented than African or Oceanian perspectives. We conclude that future case studies should give priority to underrepresented regions and themes, and we also highlight the need for theoretical contributions that draw insights from existing empirical literature.

143

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Evaluating agents and their effectiveness has long been, and continues to be, an important topic for scholars of Earth System Governance. The growing number and types of actors engaged in environmental governance provides new opportunities to understand how agency works in Earth System Governance while, simultaneously, making such assessments more complicated. For instance, the growing relevance of multiple agents not only raises the question of their individual governance contributions, but also whether and how interactions affect governance. The Earth System Governance project specifically engages questions of the evaluation and effectiveness of agency against a background of analytic problems, including
accountability and legitimacy; allocation and access; and the design and adaptiveness of institutions, all of which have prompted diverse scholarship over the last decade. This chapter reviews publications in the Earth System Governance-Agency Harvesting Database, a collection of 322 peer-reviewed journal articles published between 2008 and 2016. We find that Earth System Governance-Agency scholars have embraced the notion that agent influence is complex, contingent, and context dependent, with the success of environmental governance depending considerably on propitious environmental and social conditions. We note a shift from evaluating agent influence on behaviour and environmental outcomes to a focus on governance processes, with particular attention on democracy, participation, legitimacy, transparency, and accountability. Along with this more nuanced understanding of agency and its effects on Earth System Governance, we observe an increase in the diversity of methodological approaches and efforts to integrate findings from many different types of studies. At the same time, we see a need to return to evaluations of agency influence on behaviors and environmental quality through more interdisciplinary, multidisciplinary, and transdisciplinary approaches to meeting the governance challenges associated with the Anthropocene.

169

Agency in a Multi-scalar World
Michelle Scobie¹, Michele Betsill², Hyeyoon Park²
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Earth System Governance processes take place within and across diverse boundaries, which in turn shape the way actors understand problems and possibilities for addressing them (Bulkeley, 2005; Sternlieb et al., 2013). The scales at which governance processes take place are marked by particular ideologies (Bai et al., 2010; Dore and Lebel, 2010), goals and values (Armitage et al., 2012; van Leeuwen, 2015), and power dynamics (Mirumachi and Van Wyk, 2010; Sova et al., 2015; van Kerhoff and Lebel, 2015), which affect who is able to participate, what forms of authority are recognized as legitimate, and whether agents are effective in influencing decision-making processes and outcomes. This chapter reviews research by scholars associated with the Earth System Governance network on the link between Agency and Scale through an analysis of the Earth System Governance-Agency Harvesting Database, a collection of 322 peer-reviewed journal articles published in the period 2008-2016. We define scale as ‘the spatial, temporal, quantitative, or analytical dimensions used to measure or rank any phenomenon’ (Gibson et al., 2000, p. 218). Noting the existence of multiple scales in Earth System Governance, we find that Earth System Governance-Agency scholars have focused most heavily on the institutional and geographic scales, often in conjunction with one another. Our review reveals that agents deploy many different strategies, such as bridging organisations, networks, and orchestration, to navigate the multi-level and multi-scalar dynamics of Earth System Governance. Whether these dynamics enable or constrain the exercise of agency depends on the power relations between different actors as well as whether agents have sufficient resources and capacities to engage with Earth System Governance. The chapter concludes by encouraging Earth System Governance-Agency scholars to look to literatures in geography and political ecology to strengthen understandings of how agents shape the social construction of levels and scales in Earth System Governance.

176

Agency in the Allocation of and Access to Natural Resources
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The problem of access and allocation, understood as the process of sharing scarce resources among multiple users, resulting in an overall
maximum social welfare, has emerged as a dominant discourse among academics and global policy makers in the field of sustainable development, especially with the critical role of agency. The concepts are inextricably associated with efficiency criteria and pricing mechanisms playing key role in economic development and environmental conservation. Fair and equitable allocation of benefits produced from the conservation of environment among all stakeholders reduces inequalities, poverty and promotes sustainable livelihoods. Following its importance, studies on access and allocation are raising key questions and debates regarding the issues of distributive and procedural justice in an uneven global political environment, and continue to generate unresolved debate in earth system discourses. This chapter focuses on the linkages between the analytical problems of Agency of Allocation & Access in Earth System Governance research. The goal of the analytical question of access and allocation in the Earth System Governance research is focused on analysing and understanding the role and influence of state and non-state actors towards fulfilling functions under the earth system transformations. This chapter reviews relevant articles within the Earth System Governance-Agency Harvesting Database, a collection of 322 peer-reviewed journal articles published between 2008 and 2016. We examine this body of literature through the lens of different natural resource systems: land and forests, water, and biodiversity. We note that research on the particular questions of allocation of and access to resources has focused on developing countries in Africa, Asia, and South America. We highlight the trade-offs and synergies between environmental conservation and socioeconomic development and emphasize the importance of recognizing those stakeholders who are dependent on resources and providing opportunities for meaningful participation in decision-making.

Policy implications of Earth System Governance-Agency research and reflections on the road ahead
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Collectively, the contributions to Agency in Earth System Governance provide a state-of-the-art understanding of how diverse actors engage with environmental decision-making and exercise authority in steering society towards (and away from) a more sustainable future as well as their capacity to deliver effective, legitimate, and equitable Earth System Governance. Drawing on a systematic analysis of 322 journal articles published in the period 2008-2016 within the context of the Earth System Governance Project, the chapters offer an accessible synthesis of this broad body of literature and a valuable orientation to some of the field’s major questions and debates. The purpose of this final chapter is to connect key findings from our analyses of articles in the Earth System Governance-Agency Harvesting Database to broader debates in environmental governance scholarship and the social sciences. In this final chapter, we outline how Earth System Governance-Agency scholarship can inform decision-making across the policy process. We highlight the complex, fragmented, and multi-scalar nature of environmental governance systems as well as the challenges of developing participatory processes that truly empower stakeholders and account for diverse interests. We then reflect on what we have learned about ourselves as a research community. While Earth System Governance-Agency scholars have made exemplary advances in
empirical research, we note that many of the core analytical concepts, such as agency, power, authority, and accountability, remain under-theorized. In addition, some types of actors, including women, labour, non-human agents, those who work against Earth System Governance, and many voices from the global South, remain largely hidden in Earth System Governance-Agency scholarship. We conclude by suggesting next steps for future research and connecting our findings from the past decade of Earth System Governance-Agency research to the Earth System Governance Project’s new Science Plan (Earth System Governance Project, 2018).

Panel ID 11

Discussing the (city) network effect I: Issues of effectiveness in global climate governance

From Fragmented Global Climate Politics to the Assemblage of Local Climate Policy: the role of Transnational Municipal Networks actor’s constellations in effectiveness

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Global decarbonization involves politics within and between multilevel spaces. An interesting example of this comes from transnational municipal climate networks (TMCNs) engaged in climate governance. TMCNs are spaces where cities discuss a variety of urban issues on an equitable basis. They are also transnational structures that go beyond their staff and cities, but also include diverse partners who collaborate (e.g. local or multinational companies, intergovernmental organizations, research institutes, other TMCNs, private foundations, NGOs, etc.), influence TMCNs and are influenced by them. We claim that TMCNs can be better pictured as broad constellations of actors from diverse levels and sectors that interact to influence policy-making. Likewise, such interaction, we argue, has a considerable impact in the policy’s effectiveness. When studying local climate policies, we must consider the impact of these transnational constellations. How do TMCNs, as programmers of a system of constellations of actors, influence local climate policy, and the effectiveness of such policies? We envision these constellations of actors as complex adaptive systems (CAS), whose involvement in urban climate politics has an impact in the effectiveness of such policies suggested by them. The CAS interdependent actors exchange information to explore and exploit the system. Nonlinearity, positive feedback and openness make change very likely. Focusing on the interactions of actors themselves and constellations of actors rather than on their attributes might help us understand better the dynamics of the system, the role of marginal actors, and the origins of change, as well as the effects on policy’s effectiveness. We then conduct a social network analysis and three case studies based on interviews, observation and document analysis of the CAS identified around three North-American cities and their TMCNs: Mexico City, Guadalajara, and Montreal. These cities have had increasing participation in TMCNs over the years. We find that the implementation of low-impact climate policies by city members might foster the design of climate policies with bigger impact by other city members and that the promotion of TMCNs actions might lead to the design of climate policies in untargeted cities.

The Importance of Networks in Urban Climate Policy

Milja Heikkinen

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Cities are widely considered as an important actor group when it comes to climate change mitigation and adaptation. Different networks have been created to support urban climate policy.
High hopes are placed on the effectiveness of these new parts of governance architecture. However, if and how they actually support reaching the climate goals remains unclear. In this presentation, I explore effectiveness from four different perspectives regarding networks in urban climate policy using both quantitative and qualitative methods. I define effectiveness as the ability to support change towards sustainability. Here, I focus on climate change mitigation and adaptation as parts of change towards sustainability. This means that measuring effectiveness of climate change mitigation cannot be reduced to measuring the decrease of GHG emissions or temperature. The mitigation process needs to support sustainability in a wider sense. Similarly, adaptation cannot be reduced to e.g. responses to direct consequences of climate change, like sea level rise. This raises the question of how the effectiveness of city networks can be observed or measured. First, in the level of strategic planning, I analyse how fundamental are the changes cities propose in their climate change mitigation and adaptation strategies. I use as a sample example a group of C40 members cities, since the network and its members define themselves as leaders towards sustainability. Second, I present the results from a statistical analysis of connections between network participation and adaptation planning process of 402 large cities. Third, I explore the effectiveness from the point of view of city officials and their daily implementation of climate policy, using interview data from Madrid, Stockholm and Helsinki. All three cities participate in various networks at different levels of governance. Fourth, I give a network analysis perspective on how effectiveness can be understood in a city to business network that attempts to commit private sector to the climate change mitigation in the city of Helsinki. As a summary of the results, city networks seem to be effective to some extent, and at least cities themselves experience them as effective. Certain networking methods are described as more effective than others. However, from the wider perspective of global sustainability, there seems to be unlocked potential. Overall, the four examples demonstrate the difficulty of measuring the effectiveness of city networks, as well as defining cause and effect relationships. These sources of uncertainty highlight the need to further develop methodology in the field.

**98**

*Polycentricity as a Condition for Effectiveness? Urban Climate Governance in Brazil and South Africa*

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Scholarship has contended that the engagement of local governments in transnational city networks (TCNs) can under certain conditions increase the effectiveness of their actions to curb greenhouse gas (GHG) emissions. In particular, within the context of limited resources and capacity in cities of the Global South, TCNs can increase capacity by providing tools such as GHG protocols, transfer knowledge in the form of solution-oriented policy advice and incentivize policy learning through the exchange of knowledge between member cities. However, as some of the recent literature demonstrates and in line with what decades of research in policy analysis has suggested, the calculation is not always as simple. There is neither consensus on how to define effective urban climate governance nor how to measure it. Some authors argue that it entails a set of concrete policy actions, such as issuing, implementing, and monitoring an urban climate plan. Others see effectiveness rather given in cases where climate experiments evolve between different types of actors and scales. Others again underline the importance of processes, for instance through mechanisms of deliberation and participation. Finally, some other authors have identified polycentric systems as an effective governance structure for coping with
climate change. But the concept still lacks empirical evidence and has rarely been adopted to the context of urban climate politics. This contribution therefore seeks to establish whether polycentricity can increase the effectiveness of urban climate action and how it would do so. Based on a literature review on policy effectiveness, effective urban climate governance is defined. Second, other elements constituting polycentric urban climate governance besides the involvement in transnational networks are introduced. Finally, empirical evidence from case studies of cities in Brazil and South Africa is presented to analyse the impact of TCNs on the effectiveness of urban climate governance.

105

Global City Networks and Internal Motivations: Four Case Studies
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Globally, many cities have taken on responsibility for climate mitigation and adaptation efforts for myriad reasons. Chief among these reasons include increasing climate vulnerability in the form of heat waves, flooding, and decreased air quality. City leadership on climate action planning has not happened in a vacuum, however. Especially in the case of cities within countries that have experienced histories of colonialism, occupation, and exploitation, understanding global networks for city climate action planning have proved crucial. A recent report from the International Panel on Climate Change (IPCC) Conference on City Climate Governance, released in December 2018, listed the need for “more evidence [...] to understand the impacts and effectiveness of different forms of governance, to solve tensions and reduce trade-offs, negotiate business practice and information use and create enabling conditions for effective city-based action.” I argue that given the constraints that many cities in the Global South face, city climate action planning networks operate as key sites for capacity building and financing (e.g. funding sustainability initiatives). To support this argument, I use interview data and city policy documents collected between 2005-2019 from Ho Chi Minh City, Vietnam; Buenos Aires, Argentina; Mexico City, Mexico; and Seoul, South Korea. In all four cities, I have conducted interviews with city officials who work on sustainability initiatives to understand what types of learning occur in climate change action networks, which cities are most influential in these networks, and how networks either support or bolster sustainability goals. I also use city planning documents to map references to climate action planning networks and other cities in order to understand the influence of external actors in cities setting climate action goals. Through both interview and policy analysis data, I find that city climate action networks can help cities approach resilience, adaptation, and mitigation in differentiated ways that take into account each city’s unique historical background, available resources, and agency. These findings reframe our understanding of how we consider networks to be effective. While reduction of GHG and decreasing climate vulnerability are important measures of effectiveness of city networks, this research shows that climate action networks also play a critical role in building technological, financial, and human capacities necessary for cities to sustainably develop.

121

A diversity of climate governance structures in North America: Comparing effectiveness in state-province networks and/within city networks
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In North America, pro-climate governance architectures are multi-scale. One of the most effective networks are transregional carbon markets integrated by states and provinces. They have been effective to reduce GHGs and most importantly, they have innovated in putting
together transnational governance architectures and policy design. Another type of climate network in the region is integrated by cities. These networks are effective to diffuse governance best practices and their scope is wider, reaching other regions and global governance institutions. Apart from being useful for promoting policy innovation, city networks give basis to social pro-climate movements, such as “We are still in” in the United States. What both types of networks have in common is that they contest anti-climate or insufficient policies in the region. Do these networks support each other? Does effectiveness decrease when both networks overlap, given the federal systems in all three countries? This paper compares effectiveness in both types of networks through four criteria (GHG reduction, policy innovation, robustness, social benefits) and identifies the nodal points when they converge and diverge to account for how effective they are.

Influence of local and global networks in municipal climate policy in Jalisco, México.
Arturo Balderas Torres
Mexico

Action to promote climate change mitigation and adaptation stemmed initially from the negotiation process at the United Nations Framework Convention on Climate Change. Thus, implementation has followed an outside-in and top-down implementation from the international to the domestic agenda, and from the national to the regional and local legislation and policy making processes. Effectiveness of climate action at local level shares the challenges and problems also faced by policy making and implementation of measures addressing other public issues. Local environmental action is halted by scarce financial, technical and material resources. Moreover, the time horizon of local administrations, 3 years in the case of Mexico, is not enough to advance in substantive environmental or climate action. The objective of this work is to identify and discuss specific factors associated to the implementation of local climate action through the collaboration of municipalities with local intermunicipal environmental associations and to the participation of these municipalities in the global city networks for climate action. In the Mexican state of Jalisco there is an institutional arrangement that promotes cooperation among municipalities sharing the same watershed through intermunicipal environmental associations (JIMAs by the acronym in Spanish). These public technical bodies provide specific services to their members promoting the continued implementation of environmental action. In coordination with JIMAs the State Government of Jalisco has promoted climate action in 125 municipalities for the last six years. Within the activities of the research project “eLection: evaluating municipal climate policy in Mexico (2009-2018)“, developed at the University of Leeds in England, the 125 municipalities of Jalisco were invited to participate in 2 workshops, in 2018 and 2019, to advance in local climate action and to participate in a global city network for climate action (i.e. CDP Cities). The 2018 workshop allowed us to work with members of the 2015-2018 administrations while in 2019 we worked with members of the nascent 2018-2021 ones; overall 70 persons participated in the 2018 workshop and 80 persons in 2019. Based on the surveys and interviews made in this period we identify the drivers and expectations behind the engagement of municipalities in international city networks and challenges for effective local climate action highlighting the role of domestic and international networks.
Panel ID 12

Discussing the (city) network effect II: Advances in the study of cities in global climate governance

81

Subnational Contribution to Global Climate Governance: the case of São Paulo and the SDG 13
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The relevance of subnational contribution to govern climate change is no longer a matter of discussion, but imperative to the effectiveness of international agreements. The objective of this article is to discuss the implementation, or the performance of the Sustainable Development Goals (SDG) 13 at a subnational level, focusing on São Paulo, the largest city in South America, with a population of 21.7 million. Replacing the Millennium Development Goals (MDGs), established in 2000 after the adoption of the United Nations Millennium Declaration, the Sustainable Development Goals (SDG) are adopted without the ensembles of the countries involved having achieved the previously established objectives and targets. In the Millennium Development Goals, the environmental issue was focused on a single indicator, Goal 7, “Ensure environmental sustainability”, in which climate change, had no protagonism, focusing on access to water, or integration of principles of sustainable development in public policies to reverse the loss of biodiversity. The goals of Sustainable Development, based on its 17 goals, make a considerable difference to the MDGs in relation to governance strategies and the attempt to bring the environmental issue transversally to each of the goals. From the environmental governance point of view, SDGs actions and obligations are federal responsibility. However, it has grown not only perception, but also the indication that it is not possible to achieve the targets only with national responsibility. In this sense, the importance of cities – and its networks (ICLEI, C40, e.g.) - has being increasingly emphasized in actively participating in the decision-making processes. An alternative, therefore, is the implementation of a multilevel environmental governance. A different architecture governance approach, given the complexity of social and intergovernmental relations in the contemporary world, where classical theories are no more apt to explain interrelationship in the proportion claimed. From a global south perspective, how is the current status and planning of São Paulo government in relation to the SDGs 13. Preliminary research indicates two questions: what are the limits from the subnational contribution to reach the objectives established and what is the relationship between initiatives for mitigation and adaptation to climate change in the São Paulo already underway related to Goal 13 of the SDG which has synergy with Paris Agreement? In this sense this study aims to contribute to a more comprehensive of the architecture of Earth System Governance global analysis of climate actions from a city level engagement.

140

Giving members what they need: Identifying configurations of programs linked with higher member engagement in climate-related city networks.
Vicente Cortes Berrueta
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Climate-related city networks have multiplied and developed a diversity of structures and programs in the last decades as they evolve trying to spur urban climate action. While the structure of the network indicates which actors get linked with each other (whether a network includes non-city organizations, cities from one or many geographical regions, smaller sub-networks with similar members or one heterogeneous group, etc.), the programs govern the flows between these actors. Through these flows, city networks provide different opportunities for their members to have access to knowledge, resources, or leadership opportunities. The potential benefits
a city can get from joining the network would depend on these flows as well as the actors the city can connect through them. Assuming that when a network provides benefits that their members consider useful, the members will be more engaged with the network, a high level of member engagement in a climate-related network would suggest that members see an opportunity to improve their capacity for climate action from participating in the programs offered by the network. This implies that the governance of the flows in a network governance arrangement would affect the capacity of the network to affect the behavior of its constituencies. To do this, qualitative comparative analysis (QCA) will be used to identify sets of configurations of programs linked with city networks with higher member engagement. The profiles of the members of the networks in each resulting configuration will be analyzed to search for patterns that could indicate the programs that different cities find more useful. This would indicate which combination of programs are linked with a higher engagement of cities with specific characteristics suggesting that these city networks are more efficient in providing these cities with useful capacities to promote urban climate action. By exploring how the characteristics of the programs of a climate-related city network relate to higher levels of member engagement, this study will help to understand how efficient city networks could be at spurring climate action. This might also help us understand what different types of cities are searching in city networks and so suggest what they are missing to implement more urban climate action.

Where Does Novelty Come From? A Social Network Analysis of Transnational Municipal Networks Engaged in Global Climate Governance
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Research on Transnational Municipal Networks (TMNs), spaces where cities from different countries discuss distinct issues, among which climate change, has become increasingly prominent. Scholars have highlighted TMNs’ horizontal and voluntary nature. Besides, they have analysed their effects on local climate action through various case studies. In that sense, ICLEI—Local Governments for Sustainability, created in 1990, or the C40 Cities Climate Leadership Group, founded in 2005, have been the object of numerous analyses. Researchers have also emphasised TMNs’ innovativeness, but have not clearly defined what this innovativeness is and where it comes from. As in the case of other nonstate actors, reviewing the literature on TMNs shows a need for more diverse empirical research, moving beyond individual case studies and engaging in discussions on how TMNs behave as a group. This effort implies observing their interactions and their effects. This paper thus focuses on the interactions of TMNs and their capacity to produce new arrangements, seeking to answer the following question: why do some TMNs produce more novelty than others? This paper uses a theoretical framework based on complex systems approaches and network theory, and claims that the centrality of TMNs and the diversity of their partners might be significant in their generating novelty. Although the attributes of TMNs do matter, in a nonlinear and open system, in which interdependent entities constantly exchange information, considering interactions is necessary. The most central TMNs that also have most diverse partners receive more information, and information other actors do not necessarily have. Therefore, they are likely to generate novelty, here identified in the production of novel governance instruments. The paper then conducts an empirical analysis based on data compiled by the author. Data enumerates the memberships and partnerships of 15 climate-related TMNs that have at least one city member in the
European Union, and lists their governance tools. An analysis of these tools in terms of governance functions, obligation, directness, and target follows, and underlines the most novel. A social network analysis then links interactions to the production of novel tools. By looking at the changes TMNs and cities might offer, this work is in line with the Architecture and Agency stream of Earth System Governance. All in all, it proposes a new way to study these entities, which we must consider more comprehensively in the assessment and strengthening of global climate action.

299
Scaling up, down or sideways? Learnings from municipal implementation of transnational network policy
Anne Nielsen
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An increasing number of cities are joining forces in Transnational Municipal Networks (TMNs) to cooperate and facilitate action on urban environmental issues. In this paper, I explore the governance structures of TMNs in order to enhance our understanding of these emerging institutions and their institutional set-up. While existing studies of the subject offer an understanding of how TMNs operate across spaces, sectors, and actors, we have a limited understanding of how policies are formulated and implemented locally as part of a municipality’s engagement in a TMN. To fill this knowledge gap, this paper gives insight to the operational governance processes in municipalities by investigating local decision-making practices co-produced by transnational network organizations. More concretely, I look at how three different municipalities, Porto Alegre in Brazil, Chennai in India and Vejle in Denmark, work with a specific TMN, 100 Resilient Cities, to create local resilience. I find that a small and limited group of municipal actors acts as ‘transnational ambassadors’ characterized by high expertise and networking abilities. These ambassadors have in-depth knowledge of the resilience programme and its potential benefits for the municipality as well as strong social networks. However, they are also facing obstacles in terms of sharing and transferring this expertise both inside and outside municipal borders. I further identify different strategies of ‘scaling’ – strategies used to spread the expertise gained through 100 Resilient Cities - to a broader audience and discuss to what extent the transnational ambassadors are successful in achieving this maneuver. The paper builds on extensive empirical material collected from 2016 to 2019 in three different municipalities across different continents. It includes more than 40 in-depth interviews, archive research and participant observations of leading civil servants in charge of the implementation processes in all three municipalities.

80
Urban policies related to Low Carbon Emissions Public Transportation (LCEPT) in Latin American cities. The cases of Lima and Mexico City
José Manuel Leal
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According to the International Energy Agency (IEA), between 40% and 70% of GHG emissions in three of the largest cities in Latin America, comes from the public transportation system. In the same sense, the IEA expects urban transport energy consumption in the region to double by 2050, while the tendency in global transport emissions has been growing by nearly 2 billion annual tones of CO2equivalent (CO2eq.) since 2000. In this sense, the question of urban mobility can be studied around different aspects, such as the social, political and economic. This article focuses on the aspect of transportation and mobility of people within an urban area, also known as commuting, and all the economic and political interest that guide public policies related to that. Therefore, the article aims to show the dynamics involved in their design in two Latin American cities; Lima and Mexico City. As a secondary goal,
the chapter aims to describe Lima’s and Mexico City’s relations with foreign actors related to climate politics. An analysis of cities’ international activity related to climate change contributes to realizing until which point transnational actors influence urban politics. The study aims to observe if the urban politics respond to interest from external actors, if the urban policies and strategies related to climate change follow tendencies dictated by foreign actors; or up to which point cities’ climate politics are formulated, and driven, by endogenous actors. The article is about transnational actors with the power to influence public transportation policies in the big metropolis by offering technical solutions or contacting those who have technical solutions with city officers. These group of actors, as well as international institutions, contribute to shaping different cities’ strategy in the public transportation sector. Specifically, the article describes the influence from transnational actors in Lima and Mexico City—in particular from networks such as C40-to promote the implementation of a Bus Rapid Transit (BRT) system in each city. For instance, how these actors influenced the decisions of construction, implementation as well as the expansion of the BRT system based on the optics and the results its promoters can show. Particularly, the article aims to show the economic interests that motivate the development of BRT systems in each city, and the process of, what I call, the neo-liberalisation of Transnational Climate Change Governance (TCCG).

384

From the Ground Up: How Co-development of Innovation Climate Service Provision could Assist Climate Governance in Cities
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Climate change manifested as both slow-onset and extreme impacts threaten sustainable development and challenges welfare achievements. While facing impacts of climate change, cities are encountering extreme weather events and this has motivated us to further look into whether the different climate scenarios cities employ in their climate adaptation projections and planning (e.g. perceiving the very different levels of magnitude from the expected climate risks. Understanding how climate is changing, and how this change becomes evident as impacts on urban communities are critically important for local adaptation. There is a growing volume of both observational and climate change modelling data admissible to decision- and policy-makers of different scales, from global to local. It is the primary role of such actors to address vulnerabilities and becoming climate resilient. Even while we are increasingly becoming data rich, there are pertinent questions and challenges relating to the usability and admissibility of such wealth to contribute to local climate change adaptation. The production of “climate services” is promoted as an important mechanism to close the usability gap between climate data and information (model predictions and projections) and local decision-makers. The development of services by which (climate) data are transformed as part of a specific and applied solution, requires scientific creativity combined with real-world innovation. INNOVA, an ERA4CS project 2017-2020, is providing pathways to developing climate services covering all components of the climate change policy cycle and how innovations in climate services provisions could assist governance in climate policy. The objective of this paper is to demonstrate how INNOVA is identifying and exploring ways and means through which the development of climate services can be accelerated, simplified and contextualised at the local scale. It also promotes innovative development models for climate services that can be replicated and transformed to be broadly fit-for-purpose. Cities in urban, peri-urban, coastal and islands case studies are selected
for to co-develop and co-produce technological and social innovation in climate risk management is critical for addressing vulnerabilities and becoming climate resilient. climate governance.

Panel ID 48

Multi-level Governance (i): National and Sub-national implementation of the SDGs

Sustainable Development Goals (SDGs) Interlinkages: Influence of international goals for domestic policy change

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The operationalisation of sustainable development is commonly defined by integrating three dimensions: social, economy, and environment. Despite this, there is still little evidence of policy integration with previous international efforts for policy coordination often failing to translate to domestic implementation. Towards breaking this stalemate, international goal setting has emerged as a global governing instrument. What are the prospects for international goal setting in breaking silos through an interlinkages approach? This conference paper investigates two interrelated questions related to the above; firstly, what is the influence of international goal setting (Sustainable Development Goals) to address issue linkages at the domestic level; and secondly, what are the determinants of domestic policy change in implementing interlinkages. Towards this end, the paper identifies a set of mechanisms that elucidate the pathways of how causal influence travels from goal setting to domestic policy. The mechanisms range from a spectrum of direct utilisation, with a functional influence of goals at one end, to consequences that emerge from the wider global system at the other end. Empirically, the linkages of Biodiversity (Goal 15) and Food Production (Goal 2), with a focus on the Biodiversity-Food-Energy-Industry nexus in the context of Palm Oil production in Malaysia, is investigated. The findings are three-fold. Firstly, it identifies how (i.e. mechanisms) the Sustainable Development Goals are utilised by different transnational actors, highlighting the different strategies and pathways that actors utilise international goals as a tool for linking issues. Secondly, it identifies the conditions and constraints under which implementation of interlinkages through international goals occur, and thus, identifying the determinants of domestic policy change. Thirdly, through process tracing, it maps out the interactions across the different mechanisms and actors. In summary, the results demonstrate that the SDGs are often not implemented directly and instrumentally on interlinked goals, but rather through indirect and interacting pathways via a non-linear process. Through the interactions of different mechanisms, the interlinkages approach will yield mainly tactical linkages (where actors link issues for their own benefit) rather than substantive linkages (where normative and scientific consensus is achieved). This suggests an incremental rather than a comprehensive approach on interlinkages of issues is likely to be triggered by the Sustainable Development Goals.

Local governance transitions and the governing of the Sustainable Development Goals in Indonesia and Japan

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Following the discourse on the 2030 Agenda and the Sustainable Development Goals (SDGs), the implementation of the Agenda calls for an integrated approach and transformational change to achieve its objectives by 2030. This new discourse promotes a holistic way of planning and implementing policies, and greater involvement of private sectors and civil society in the provision of public goods. At the local level, it means that the SDGs implementation requires an
inclusive and integrated national-local policy mainstreaming. As such, transposing the global SDGs into local policy through close vertical and horizontal coordination of policy efforts implies the needs to ensure the way architecture and agency of local governance are constructed is fit to address multi-level and cross-sectoral challenges. In reality, local authorities struggle to transition from the traditional way of government-led to cross-sectoral governing system and the changing agency and functions of private sectors and civil society over time are not clearly understood. Further, local governance is often based on means-ends rationality and constantly operated within divergent priorities and depended on other actors and resources. The focus of this paper is to understand the importance of architecture and agency in the local governing of the SDGs implementation, contributing to the research field of transition in the context of governance. It explores whether a certain form of architecture leads to positive advantages or negative constraints in the SDGs policy-making and implementation processes. It examines whether the changing functions, agency and dependency of government, private sectors and civil society to implement the SDGs contributes to the transition of local governance. This paper conducts a comparative analysis on the cases of piloting cities for the SDGs in Indonesia and the SDGs Future Cities in Japan where multiple modes of local governing through the SDGs implementation is taking place. The transition management for sustainable development is used to build the analytical framework. The impacts of city-to-city networks, national policies, experience on implementing other development policies, such as the Millennium Development Goals, climate change, disaster risk reduction or green economy, and exposure to knowledge and information on sustainable development will also be examined to understand their functions and conditions in influencing the architecture and agency on transitions. Keywords: architecture, agency, transition management, local governance, SDGs

Implementation or decoupling? Reflections on the implementation of the 2030 Agenda by civil society actors and their contribution to the SDGs in Brazil
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Since the ratification of the 2030 Agenda for Sustainable Development in September 2015, a wide range of civil society actors has been engaged with the Sustainable Development Goals (SDGs) in Brazil. In this context, social movements and civil society organizations have established a series of coalitions to disseminate and implement the agenda across the country. Yet, while organizations often claim that they are implementing the 2030 Agenda and thus contributing to the achievement of the global goals, empirical findings show that there is some misunderstanding around the concepts and practices used to pursue these aims. In fact, civil society actors have been using different narratives to describe their alleged contributions to the global goals for sustainable development. The most frequent concepts used in this regard are “localization” and “implementation.” However, empirical data reveal that organizations often adopt the SDGs without necessarily implementing the related practices. Against this background, three main questions emerge. First, how do civil society actors localize the Sustainable Development Goals? Second, do they really implement the 2030 Agenda or decouple their practices from their formal or espoused structure? Finally, how can civil society actors implement the 2030 Agenda and contribute with concrete practices to the achievement of the global goals? To address these questions, this paper draws on an empirical research conducted in Brazil, on
practical experiences of the authors in working with the 2030 Agenda, and on approaches to diffusion research in Sociology and International Relations. In doing so, it presents a series of initiatives carried out by civil society actors to disseminate and implement the 2030 Agenda and the SDGs in Brazil. This paper seeks to present empirical findings and discuss the main challenges and opportunities for civil society in Earth System Governance. This transdisciplinary approach to sustainable development governance research is particularly useful to unearth the contradictions in the implementation of the 2030 Agenda and to bring light to the role of civil society actors in this process.

Panel ID 49

Private Governance and Finance: Accountability of Non-State Actors

The rise of sustainable investment as a private regime in global environmental governance
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Sustainable investment (SI) aims to enforce its policy through scrutinizing corporate environmental and social performance for its investment decision-making and engaging with corporate management on sustainability issues. Such a private governance initiative is widely considered to create positive incentives and flexibility for actors to resolve market failures and to meet public expectation. This paper frames SI as a new site and mode of global environmental governance and argues that, through SI activities, the global financial industry has become capable of creating a new institution that sets up a global private regime, influences multinational corporations’ business activities, and shapes the public discourse on sustainability. By investigating the evolving institutional architecture, agent network, and shared norm, the paper aims to critically evaluate the effectiveness of SI as a privatized environmental regime. Emerging factors in global environmental governance - the expansion of global markets, the rise of corporate power and its social and environmental impact, and international/national governance deficits - raised a demand for a variety of private governance mechanisms to enforce corporate social responsibility. Over the past decades, market mechanisms and financial considerations have increasingly taken the central role of environmental management and sustainable development at national and global levels. Among the various market-based environmental initiatives, SI has made a remarkable growth over the past decades in terms of the assets under management (over $12 trillion as of 2018), as well as the diversity of actors in its institutional alliance. The study specifically analyzes the relationship between the power shift within financial market since the 1970s and the evolution of sustainability discourse and practice among the SI participants and discusses how the dynamics of market landscape change act upon the effectiveness of the SI regime.

New York Declaration on Forest: non-state actors accountability challenges on the Earth System Governance
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To what extent the orchestration employed by international organizations impacts the accountability of the non-state actors? Does the current Earth System Governance architecture influence non-state actors to adopt new accountability mechanisms? It is understood that international organizations employ orchestration when enlist intermediary actors - non-state actors, transnational networks and other international organizations - on a voluntary basis to address targets - States or the private sector - in the pursuit of the international organization goals. This article aims to explore the accountability challenges and opportunities faced by the members of the
New York Declaration on Forest, an initiative orchestrated by the United Nations Secretariat in the run up to the COP 21. The initiative gathers multinational companies, civil society, indigenous people and governments to halt global deforestation, one of climate change major drivers. The case of earth governance system is symbolic to better understand the adoption of accountability mechanisms by non-state actors due to a hybrid multilateralism context. This because the climate governance hybrid multilateralism represents both the non-state actors' roles as implementers, experts and watchdogs and their interaction with the with the multilateral diplomacy. In this article, we will shed light on the conditions under which non-state actors adopt new accountability mechanisms and their interaction with multilateral organizations. Moreover, we assess the accountability mechanisms, according to its democratic credentials, adopted by the New York Declaration on Forest Global Platform, a secretariat to coordinate the advancement of global forest goal, and its members. After presenting the New York Declaration of Forest study case, we conclude by evaluating how each category of non-state actor adopts accountability mechanisms vis-à-vis the orchestrator. In doing so, we contribute to the debate about accountability on the global environmental governance.

Failing to Act: What Explains the Reticence of Canadian Universities to Divest?
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The fossil fuel divestment movement has grown considerably in recent years, with funds committed to fossil fuel divestment now totalling more than $6tn. In addition to many companies in the insurance industry, and the world’s largest pension fund, many cities such as New York have also pledged to divest. The impact of divestment is no longer purely symbolic: fossil fuel giant Shell regards it as a material risk to its business. The divestment movement began with student-led initiatives in the United States asking universities to divest their endowments. While these efforts have had some success, many universities have opted to focus on incremental internal sustainability programs aimed at reducing the carbon footprint of campuses, rather than more overtly political actions to address climate change such as divestment. This is particularly evident in Canada. In the past five years, a number of Canadian universities have rejected student initiatives calling for divestment, instead offering pledges to address climate change and sustainability in other ways. Laval University, which announced in February 2017 that it would be the first Canadian university to divest from fossil fuels, has since backtracked on its pledge, suggesting that it will instead track the greenhouse gas emissions associated with its investment portfolio. What explains the reticence of Canadian universities to act? The power of the fossil fuel industry in Canada (which some have described as a petrostate) is certainly strong. Nevertheless, the same can be said of Australia, and yet there has been a comparably greater willingness on the part of Australian universities to divest. This paper, based on a review of statements issued by Canadian universities in response to divestment proposals and interviews with both student activists and university administrators, assesses the relative importance of various factors in explaining the unwillingness of Canadian universities to divest. These factors are: 1) concerns about fiduciary responsibility/the viability of a fossil-free investment portfolio; 2) concerns about loss of research funding from the fossil fuel sector; 3) concerns about a backlash from donors/alumni; 4) concerns about bad press from conservative media outlets; 5) concerns about divestment being seen as too “political”; 6) a lack of understanding of the purpose of fossil fuel divestment and a belief that it will not have any impact in combatting climate change. By providing evidence for why
Mitigating energy poverty remains a big challenge for Indonesia to overcome. Nearly 25 million Indonesians still live in energy poverty; many on outlying islands or other remote areas where logistical problems and a sparsely distributed population preclude grid-based solutions. This situation resembles many countries in Asia-Pacific where similar challenges are prevalent including around 421 million people remain without electricity access. On such islands and other remote areas where much of the population lacks access to electricity there is an opportunity to leapfrog fossil-fuel based energy solutions and embrace technologically advanced and increasingly cheap renewables technology (i.e. zero-carbon electricity expansion). However, financing renewable energy proposals has proved extremely problematic. Beyond geographical challenges, there are oft-cited challenges that could deter the growth of private low-carbon investments such as misaligned policy, an underdeveloped financial sector, scaling up challenges, lack of credible climate finance business models and an inclement investment environment. However, to what extent and in what ways the above factors constrain climate finance is an empirical question which the literature has not yet resolved. This paper examines layers of barriers to private financing identified above and considers the entrenchment and complexities of such challenges. This approach is crucial to generate more realistic policy goals, effectively design sequences for policy measures and improve designing priorities for public finance allocation to leverage private climate finance. The first level constitutes policy/regulatory barriers that are caused by uncertain regulatory environment and complex institutional arrangements could be superficially tackled in a short term. The second level consists of structural barriers and problem with underdevelopment which need longer time and support to overcome. The third level includes the barriers posed by geography and complex dealing with land access. The paper concludes with exploring the form of viable policy and governance arrangements to narrow the financing gap.
offs and the implementation of the precautionary principle. Second, digitalization and bioinformatics are transforming the utilization of genetic resources yet presently risk undermining fair and equitable benefit-sharing under the CBD’s Nagoya Protocol. Third, proposed technologies for climate engineering could contribute to biodiversity conservation by mitigating the impacts of global warming, while also posing unpredictable threats to marine and terrestrial ecosystems. We find that institutional changes in the CBD regime are increasingly facilitating the uptake and processing of new technological challenges. However, this procedural effectiveness is not matched by substantive effectiveness at the level of governance output. While the CBD regime is gaining in importance for technology-related debates, its relevance for technology governance remains limited. We propose that transformative governance of biodiversity-related technologies under the CBD regime should entail the following elements, as part of the deliberations for a post-2020 global biodiversity framework and beyond: a) a regular horizon-scanning process for the early identification of potential technological changes that may subsequently create substantive governance challenges; b) the integration of technological risks and opportunities into biodiversity policies, including contracting parties’ National Biodiversity Strategies and Action Plans; and c) enhancing the participation of independent experts within the CBD’s technical bodies and working groups, including through appropriate conflict-of-interest policies.

265
Justice and equity in post-2020 biodiversity governance
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Reasons of justice and equity underpin calls for transformative biodiversity governance to be inclusive as well as effective. Biodiversity loss can create new injustices or exacerbate existing ones, particularly when the ecosystems that sustain vulnerable groups degrade or collapse while others profit from ecological exploitation. Transformations towards more environmentally sustainable governance could help to alleviate these injustices but may also produce other injustices, for example if the creation of protected areas deprives vulnerable groups of access to their traditional lands. Despite considerable advances in theorising environmental justice – and, more recently, related concepts such as climate justice and planetary justice – there remains a need to clarify the scope and content of what could be called ‘biodiversity justice’ or ‘just biodiversity governance’ and to critically assess its role in transformative biodiversity governance. This chapter/paper addresses this task through critical engagement with recent theory and practice in environmental governance, with a primary focus on the negotiation and implementation of the UN Convention on Biological Diversity’s (CBD’s) post-2020 framework. We begin by setting out a conceptual framework for understanding biodiversity justice and its relationships to environmental, ecological and planetary justice. We briefly map how discourses of justice, equity and rights have featured in the CBD to date. We then address questions of justice and equity that arise in three key areas of debate about the trajectory of transformative biodiversity governance: What should be conserved? How should resources for transforming conservation be mobilised and allocated? And how should decision-making processes relating to those transformations be structured? First, we discuss questions of justice embedded in proposals for a massive expansion of protected areas, as with Wilson’s (2016) ‘Half-Earth’ proposal. We critically assess debates about whether such an expansion could further disenfranchise the global poor, or whether it may strike a more equitable balance between human and non-human
interests. Second, we address considerations of justice associated with an unprecedented scale-up of financial investment in nature conservation, including how the global conservation effort should be shared fairly among contributing countries, how financial resources should be allocated among recipient countries, and what role the CBD could play in this context. Third, we discuss how procedural justice applies to decision-making about transformative justice, focusing on the extent to which different actors have been included in the process of developing the CBD’s post-2020 framework.

323

Animals in biodiversity governance: Mainstreaming animal rights and animal welfare to enable transformative change

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Animal concerns have, so far, often been neglected in debates on biodiversity governance. Whereas mainstreaming of other sectors, such as forestry and fisheries, has received considerable attention, we here argue for including animal rights and animal welfare into biodiversity governance. This will broaden ongoing debates on transformative biodiversity governance to include attention for the individual animal — a change necessary for sustainability. Previously, animal concerns have often only featured in normative debates originating in political theory and philosophy or in environmental and natural sciences — debates that often remain rather disconnected from those on biodiversity governance. Our objective is to analyze existing governance instruments and policy approaches on animal rights and animal welfare on the one hand, and how biodiversity governance influences animal welfare and rights on the other hand. The latter includes discussions on wildlife management (including sport hunting), captive breeding and re-introduction of endangered species, the management of Invasive Alien Species, and the use of animal testing in conservation research. We will do so by reviewing and bringing together different strands of literature from the natural and social sciences and humanities. Particular emphasis will be placed on the state of the art from political philosophy, including on inter-species justice and animal rights, as well as conservation, including human-animal interaction and animal welfare. We will also analyze existing legal approaches and governance instruments, for example constitutional animal rights (Germany, Switzerland), the concepts of “one health” and “one welfare”, in which animal, environmental, and human health or welfare are viewed as one, and rights of nature, where non-human species are granted legally enforceable rights, usually involving a guardian taking decisions for the benefit of the ecosystem (in e.g. Colombia, India, New Zealand). We will use these examples to analyze and explore how mainstreaming animal concerns leads to more sustainable governance decisions. This will strengthen our argument for including animal rights and animal welfare in transformative biodiversity governance approaches.

358

Fair and equitable benefit-sharing for integrated and inclusive ocean governance

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The paper will investigate overlapping patterns of international normative developments through a selective reading of the sources of international law and their perceived limits, with a view to gauging incipient trends in addressing interconnected problems threatening ocean health in a more integrated and inclusive manner. The paper will focus in particular on fair and equitable benefit-sharing norms in the law of the sea and their relevance not only for bio-prospecting, but also for the use of other marine resources, conservation, marine technology transfer and
marine scientific cooperation. The paper will put forward an interpretation of benefit-sharing as a concerted and dialogic partnership-building process to identifying and allocating economic, socio-cultural and environmental benefits among States and non-State actors, with an emphasis on the vulnerable. Such an interpretation will be based on evolving, combined reading of international biodiversity and human rights law. On the one hand, interational biodiversity law has provided the most sophisticated, consensus guidance on the operationalization of benefit-sharing in the context of natural resources (and related knowledge) governance. On the other hand, international human rights law has clarified the minimum content of international benefit-sharing obligations, both substantively and procedurally, thereby providing a clearer sense of the limitations of State discretion in exercising sovereignty over natural resources. On that basis, the paper will critically identify the opportunity and limitations of framing existing management, financial, technological and capacity-building obligations under the law of the sea as benefit-sharing with a view to enabling multilateral institutions to increasingly play a proactive and brokering role in developing and administering integrated approaches to ocean governance according to context-appropriate modalities and beneficiaries’ preferences.

189

Biodiversity Policy Integration for nature conservation in agricultural landscapes

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Agricultural landscapes cover over 30% of the world’s terrestrial surface and support a wide range of ecosystem services and habitats. Nevertheless, the agricultural sector has been identified as the single largest contributor to biodiversity loss worldwide, principally as a result of habitat conversion and agro-chemical pollution. Though trends differ across the Global North and the Global South, with agricultural expansion and land use change of greater concern in the latter, a worldwide trend towards farm specialization, intensification, and enlargement has driven losses of biodiversity, soil degradation, and the pollution of landscapes worldwide. In 2010, parties to the Convention of Biological Diversity (CBD) collectively agreed to transform their agricultural systems to ensure sustainable management of biodiversity (Aichi Target 7 of the 2011–2020 Strategic Plan), as well as to reduce harmful subsidies (Aichi Target 3). Achieving those targets and the upcoming targets under the post-2020 Strategic Plan of the CBD, as well as several SDG targets, requires a coherent mainstreaming of biodiversity into agricultural policies and practices. Theory on Biodiversity Policy Integration (BPI) suggests that objectives, legal frameworks, political incentives, and instruments and implementation processes all need to be integrated to produce coherent guidance towards agricultural sustainability. Based on an analysis of BPI using the criteria of Inclusion, Operationalisation, Coherence, Capacity, and Weighing (Zinngrebe, 2018), we (a) assess the potential biodiversity gains of BPI by identifying the presence or absence of the above conditions and (b) identify and analyse the structural economic and political factors which explain the presence or absence of the conditions and which need to be favourable for transitions towards agricultural sustainability. Data are derived from desk research and two ongoing research projects in the Global North (EU) and the Global South (Peru, Uganda, Rwanda, Indonesia, and Honduras). While there are large differences in the presence of the five conditions across countries, the overall inclusion of biodiversity objectives in agricultural policies and practices is generally
Biodiversity instruments and policies are predominantly ‘add on’ policies that do not directly address the dominant productivist paradigms in both the Global North and the Global South. In general, a stronger transformation of agriculture integrating biodiversity objectives will be necessary to achieve both global biodiversity goals and the Sustainable Development Goals (SDGs), especially those aiming at preserving life on land (SDG 14) and life in water (SDG 15), as well as that relating to sustainable production and consumption (SDG 8).

Mainstreaming, discourses and social capital: reflecting existing knowledge on biodiversity conservation with National Planning processes
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National Governments of signatory countries to the Convention on Biological Diversity (CBD) are responsible for translating the national commitments on biodiversity into National Strategies and Action Plans (NBSAPs). In this article I assume that this process is conditioned by the ability to (A) link objective to national biodiversity discourses, (B) address dominant causes of biodiversity loss, (C) link objectives and activities to sector specific implementation processes and (D) the ability to engage relevant sector actors and build social capital. Looking at the case of Peru I build an analytic framework based on existing studies for each of these aspects (A-D) and analyse their performance based on the NBSAP document, reports from the Peruvian National Commission for Biological Diversity (CONADIB) and selected expert interviews. A: Despite the coexistence of five dominant biodiversity narratives in Peru, I find that the national NBSAP is dominated by the Capitalist and the Protectionist narrative, focussing on the economic value of biodiversity and protected areas. B: The NBSAP addresses several elements, such as climate change, deforestation and the use of fertilizers and herbicides. Several key causes of biodiversity loss, such as pollution, mining, agricultural practices and expansion as well as overfishing however remain unaddressed. C: Few NBSAP activities are aiming at supporting sector policies, such as providing a monitoring guideline for Environmental Impact Assessments, such as applied in the Mining and Transport sectors. By contrast, the NBSAP misses links to many important sector policies as those regulating fish extraction, forestry and agriculture. D: About two thirds of the CONADIB agenda items are focused on CBD reporting and planning. Participants from non-environmental sectors perceive little added value for strengthening implementation. Despite a growing debate on mainstreaming and biodiversity planning, there literature to date falls short of providing specific guidance for how to improve it. Identifying shortcomings in policy planning is a necessary prerequisite to stimulate institutional learning. In this perspective, the findings of this article provide a range of practical entrance points for improved biodiversity policy planning.

A difficult journey. Exploring the history and future of international biodiversity governance
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COP 15 of the Convention on Biological Diversity (CBD) will be held at the end of 2020, in China. It will be a significant milestone in the history of international biodiversity governance, as it will see the adoption of the "post-2020 global biodiversity framework", a new architecture whose principal aim will be to better contribute to the deep socioeconomic transformations necessary to halt biodiversity loss. The CBD has long recognized the importance of these issues, but associated decisions are made elsewhere in sectoral arenas (trade, high seas, climate, development policies, etc.). Biodiversity actors must therefore
be able to challenge these arenas and find allies, points of convergence, and levers of change within them. This ambition can be found, quite explicitly, in the documents drafted by the CBD Secretariat that describe the CBD’s objective to stimulate a “transformative change” in favour of biodiversity. This paper will review the challenges for the development of this new framework, both from an intellectual and from an international negotiation perspective. It will first provide an overview of the highly fragmented biodiversity governance landscape: as an “old” international environmental issue, biodiversity, or some of its components, is the object of multiple international conventions and international governmental and non-governmental organizations. This will enable making sense of this landscape, and of its successes and limitations so far. Then, the paper will dwell on the fact that the strongest limitations of the biodiversity regime, so far, has been its incapacity to intervene on different sectoral drivers of biodiversity loss, both at the international level and, even more importantly, at the national level during implementation. The different explanations for these implementation gaps will be reviewed, and serve as a base to imagining how the future framework could face these obstacles. Finally, the paper will outline potential options for the post-2020 framework, and will link them to on-going negotiations, to outline the challenges ahead.

Panel ID 50

Multi-level Governance (ii): Climate Policy at Sub-national Level

An institutional interplay perspective to multi-level governance: The case of the São Paulo Macrometropolitan region

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Multi-level governance (i.e., decision- and policy-making that involve multiple actors and take place across multiple jurisdictions and sectors) has been proposed as a promising approach to deal with the multidimensional nature of pressing environmental issues. This is because these issues manifest at multiple levels, from local to global, and need to be addressed accordingly. However, multi-level governance is very often challenging given the complex institutional environment (e.g., rules, norms, decision-making processes and network of actors) in which it is implemented. This paper proposes that the concept of institutional interplay (i.e., interaction between institutions) is critical if the challenges to multi-level governance are to be better understood and addressed. Drawing on the literature on institutional interplay, it develops an analytical approach to examine challenges to coastal governance at multiple subnational levels. São Paulo Macrometropolitan region (MMP, in Portuguese) is used to ground the empirical analysis. The MMP is one of the largest urban areas in the Southern Hemisphere; it houses the Metropolitan Region of São Paulo - one of the the six largest in the world, and important coastal urban areas, such as Baixada Santista and Litoral Norte. The MMP concentrates critical infrastructure, such as ports, airports and roads and major knowledge, technology and innovation hubs. The analysis of the MMP underscored several interacting institutions pertaining to multiple policy sectors across local, state and national levels. These comprised a complex environment featuring a great deal of fragmentation, and, consequently, jurisdictional and functional gaps and overlaps. This environment was best explained in terms normative, functional and political interplay. Improved governance of the MMP will require interplay management to enhance synergies and minimise tensions among the institutions analysed. This includes fostering cognitive interaction (i.e., promoting inter-institutional learning and assistance, and enhancing synergy) between institutions with complementary and/or similar objectives. Ultimately, interplay
management may reduce fragmentation, improve compliance and monitoring and increase cost-effectiveness. The findings from this paper may prove useful to other jurisdictions where pressing environmental issues involve multiple governance levels and interacting institutions.

Institutional development and reconfiguration in governance systems under pressure: Urban climate adaptation in Santiago, Chile
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Governance systems across scales are increasingly confronted with a need to adapt and transform under growing social, political, and environmental pressures. Urban climate adaptation governance is a particular example of this issue, as cities are confronted with growing climate-related risks and impacts. Institutional development and reconfiguration is a key need. However, the processes by which this occurs remain vastly under-developed, and are still often treated as a ‘black box’ (e.g. widely called for, but rarely studied explicitly). Addressing this gap is challenging, because institutional development and reconfiguration largely occur in situ on the fabric of present setups, potentially in multiple co-occurring ways. This calls for process-oriented explanations of how and why (i.e. under which permissive and productive conditions, and through which causal mechanisms) are institutions for climate change adaptation developed, and with what consequences for reconfiguring urban governance systems? This paper examines processes of institutional development and reconfiguration in urban climate adaptation, through an in-depth case study of Santiago, Chile over a 12-year period (2005-2017). Drawing on primary and secondary data, including 26 semi-structured interviews with policy, academic, and civil society actors, we identify six key institutional developments occurring across multiple levels (i.e. programmatic, legislative, constitutional levels), and apply a systematic process tracing methodology to identify causal conditions and mechanisms explaining them. Findings reveal a promising, yet tentative, ‘work in progress’ towards institutional reconfiguration for climate adaptation in Santiago, achieved through a multiple response pattern involving differing causal mechanisms, and synergistic and antagonistic interplay between them. Yet, there is an evident need for further bold action to consolidate current developments, although the prospects for this seem uncertain. The study reveals the simultaneous presence of multiple institutional logics (i.e. consequence, appropriateness, history) involved in institutional development and reconfiguration in practice. This suggests the relevance of a variety of existing institutionalist and policy change theories, but that these may need to be combined with some degree of eclecticism to explain deliberate efforts to adapt and transform governance systems, and constraints on this. Overall, the paper contributes to advancing process-oriented explanations of change in institutional architectures that goes beyond input-oriented assessments of capacity, or output-oriented assessments of adaptation planning. It demonstrates a novel exploratory approach to studying institutional development and reconfiguration by disaggregating causal processes across institutional levels and over time. This contributes to Earth System Governance scholarship on Architecture and Adaptiveness, by developing process-oriented explanations underpinning the production of adaptiveness.

Drawing descriptive inferences from regions and states climate actions data: contributions for understanding climate multilevel governance architecture
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New and more pluralistic forms of climate governance are necessary to achieve emission reductions based on the 2ºC target, and new empirical research has indicated a shift to multi-level and bottom-up governance architectures. Innovative institutional governance arrangements, separate negotiation tracks under UNFCCC umbrella and INDCs evidence this shift. In this context, regions, provinces, states and cities actions engaged with climate change mitigation and adaptation have been presented as alternatives to compensate for insufficient regulation at national and international levels, and as means to contribute to national targets and compromises. There is extensive literature about cities engagement and commitments, but research about the intermediate level comprised of regions, province and states is still scarce. Such studies can be especially relevant considering that seven out of the ten major greenhouse gas emitters are federated systems. This paper objective is to draw descriptive inferences from data about states and regions actions for climate change mitigation and adaptation based on multi-level governance and architecture fragmentation approaches. The analytical category is subnational action, which can reveal motivations and differences in behavior made by countries with similar emission profiles or commitments. The research question is how are regions and states' climate actions framed and how this framing interacts with multilevel governance for climate change. The hypothesis is that the majority of actions is aligned with the UNFCCC, considered the overarching frame, and this alignment allows a situation of cooperative fragmentation in governance architecture. The multilevel approach is used for contextual description of climate change governance, while data results are analyzed considering the degree of governance architecture fragmentation and its implications for global climate governance. The methodology is based on descriptive inferences and statistical techniques using data from subnational actions organized in terms of observable implications of a specific theory: quantity and characteristics of subnational actions for climate change, number of national legislation for climate change, country GHG emissions profile and vulnerability to climate change. The CDP Disclosure Insight Action database comprises 140 actions of 63 regions or states in 24 countries, which together represent 34% of world emissions. This study expects to offer sound descriptive inferences based on empirical data and preliminary work on global multilevel governance and governance architecture fragmentation. Even though it will not demonstrate systematic relations between the variables presented, it will be able to suggest developments for further research.

205

Climate policy integration in rapidly urbanizing middle-income countries: insights from Kenya
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The United Nations' 2030 Agenda for Sustainable Development and the Paris Agreement under the UNFCCC create profound challenges for the development and implementation of coherent policies at national and local levels. This paper discusses how multilaterally negotiated and nationally developed policies relate to governance challenges that are pertinent to both climate policy and sustainable development at subnational levels. It is based on an in-depth empirical analysis of climate policy in lower middle-income country Kenya with a focus on urban service provision in the water and energy sectors. Considering cities as increasingly relevant agents in Earth System Governance, this paper asks specifically to what extent climate policies are integrated in urban development in Kenya and how this is reflected in the country’s decentralized governance architecture. Building on the climate policy integration (CPI) literature the paper explores enabling and constraining factors for the
alignment of national climate policies with sub-national development priorities and related challenges for policy implementation. As one of Africa’s rapidly urbanizing countries, Kenya and its domestic “Vision 2030” provide for an interesting case study regarding the synergies and trade-offs between climate policy and sustainable urban development. Internationally, Kenya was actively engaged in the development of the Sustainable Development Goals (SDGs) and in advancing the Paris Agreement. Domestically, the country has adopted ambitious climate policies, which it now seeks to integrate with national and sub-national sectoral development aspirations in the context of Kenya’s ongoing devolution of powers. Against the backdrop of Kenya’s newly decentralized governance architecture, the country’s dynamically growing cities are facing considerable challenges, especially regarding the provision of adequate basic services such as clean water and sustainable energy. Empirically, the paper draws on qualitative case studies of three Kenyan second-tier cities, Eldoret, Kisumu and Nakuru, all of which are concomitantly capitals of their respective counties. Differentiating policy frames, political subsystems, policy goals and policy instruments it provides innovative insights regarding challenges and future perspectives for the coherent integration of climate policies into urban development and their prospective contribution to achieving sustainable development goals in a dynamic lower middle-income country.

Comparing climate change responses in São Paulo and Mexico City: the quality of governance
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Mexico City and São Paulo, the two largest metropolis in Latin America, share a history of air pollution that had political, social and institutional implications that later affected their climate change policies. In addition, the two cities are "global cities" and have an active international agenda, which also had a central role in driving the climate change agenda. Thus, from a historical perspective, the paper will analyze the evolution of the climate agenda in Mexico City and in São Paulo since the crises of extreme air pollution in the 1970s, 1980s, and 1990s in conjunction with its international insertion through the network of cities C40 from 2005 to 2020. Mexico City and São Paulo approved climate change laws, demonstrating their commitment to reducing GHG emissions and promoting adaptive actions. However, almost ten years after the initiation of these commitments, we have seen little progress in terms of reducing emissions and building resilience. In the case of São Paulo, the approval of the climate law that installed the policy in 2009 was not efficient in guaranteeing the mitigation of its emissions nor in promoting significant adaptive actions. On the other hand, Mexico City has made more progress in reducing its GHG emissions and in developing its resilience, as can be seen in its climate action plans beginning in 2004. Finally, the paper analyzes what are the main elements that led to these results, such as financial, human and political resources, combined with their international relations in order to also draw forecasts for the near future. The question that the paper intends to answer is how the air pollution crisis, the emergence, and strengthening of the environmental movement and the international agenda have affected the decisions of public environmental policies, leading to climate responses. In order to analyze these aspects, the paper takes a historical look at the evolution of the municipal climate agenda, beginning with the approval of climate laws and climate action plans, together with an analysis of the structures working with the environment and climate in the municipal bureaucracy. From this historical perspective, it is possible to better understand the more recent situation in the two cities and to compare how similar processes started in cities with similar
political, institutional and economic structures have resulted in different outcomes. At the same time, our analysis allows us to draw projections for the coming years.

Energy Transition in Yucatán: impacts, responses, and possibilities
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Transitioning from fossil fuels to renewable energies (energy transition; ET) is perhaps the most important globally coordinated response to climate change. To understand whether the implementation of ET is attuned with the protection of local environments and the strengthening of local governance a critical assessment of the policy framework surrounding ET is needed. This paper uses Yucatan, a predominantly indigenous state in Mexico, as a case study for analyzing the potential harm to local environments and communities caused by ET. In 2016 Yucatan jumped to the forefront of the global renewable energy sector when it became the “big winner” of the first renewal energy auction in the country. Today, Yucatan hosts at least 22 renewable energy mega projects (12 wind farms and 10 solar farms) that, if developed, together would occupy more than 11,000 hectares of fragile ecosystems. The paper presents an overview of ET’s main socioenvironmental impacts (e.g. territorial dispossession, land-use planning law violations, indigenous rights violations, deforestation, aquifer destruction), assesses how those impacts are related to a global institutional network and Mexican ET policy, describes how local communities have responded to ET, and suggests how global networks and regional policy can be changed to redirect ET towards a more sustainable path.

Panel ID 51
Politics and Interest in Global Environmental Governance
249
China’s engagement in transnational extractives governance and global environmental norm development
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Traditional norm literature in IR does not sufficiently explain the impact of changing power relations among states on norm development. This theoretical gap leads to a lack of research on the role of China as an emerging power in developing global environmental governance norms. Meanwhile, Chinese actors are beginning to engage in global extractive governance due to growing overseas investment and business in extractive sectors. This research explores the role of China in transparency norm development in global extractives governance through the concept of norm contestation. It examines norm development as a two-way socialization process where China is both a norm-taker (adopts existing norms) and a norm-maker (shapes/re-shapes norms) through analyzing forty-two transnational extractive governance initiatives (TEGI) selected based on the Standards Map of International Trade Center and previous literature. This analysis will use the data collected from TEGI’s official websites, conducting questionnaires and interviewing TEGI secretariats for Patton’s data triangulation approach (Yin 2014). Applying a qualitative coding method, the following characteristics in each initiative will be evaluated: (1) the types of Chinese actors participating in TEGI; (2) the distinctive features of their engagement; (3) the centrality of the transparency norm in each TEGI; (4) the influence of Chinese actors in transparency-related rules of the TEGI; (5) and relationships between the TEGIs in which Chinese actors engage. My preliminary analysis finds that one or more Chinese public or private
actors are involved in one-half of the initiatives, the vast majority of which emphasize transparency, for instance, by declaring it in their mission statement. This result suggests that Chinese actors are involved in TEGI which reproduce and disseminate the transparency norm. Nevertheless, Chinese actors do not actively engage in governance platforms where transparency is the most primary norm, while they are more involved in business-oriented voluntary programs in which transparency is less emphasized. Instead, the Chinese government recently developed a Chinese version of transnational extractive governance guidelines to promote social responsibility in outbound mining investments. This result suggests that China is both a norm-taker and norm-shaper through a two-way socialization process in global environmental governance. Regarding the conference stream of Architecture and Agency, this paper contributes to understanding how an emerging country (an agent) interact with existing environmental governance institutions (architecture) and influences in global environmental norm contestation.

276
Power disparities and inequalities in the politics of marine biodiversity
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Ocean science is developing rapidly. Technological innovations for monitoring marine biodiversity promise that existing knowledge and data gaps on marine biodiversity in open waters and the deep sea could be significantly reduced in the near future. At the same time, the capacities to develop and use data infrastructures are unequally distributed among countries and global initiatives for data sharing are significantly challenged by conflicting perceptions of who benefits from marine biodiversity research. How do international institutions and actors in marine biodiversity politics resist or respond to these changes and how can related power disparities and inequalities be conceptualised, empirically be studied and be reduced? The research presented in this paper uses on-going negotiations on marine biodiversity in areas beyond national jurisdiction to analyse power disparities and inequalities related to marine biodiversity monitoring infrastructures in international ocean politics. The assumption is that they shape how governments use and contest scientific knowledge and how they position themselves in international negotiation processes. The paper examines two cases based on data collected through ethnography and Social Network Analysis (SNA) at international negotiation sites: Conferences of the Parties of the Convention on Biological Diversity (CBD) and the Intergovernmental Conference on an international legally binding instrument under the UN Convention on the Law of the Sea (UNCLOS). The aim is to contribute to a better understanding of the role of science and data in decision-making arenas, analyse the means by which they shape power disparities and inequalities and discuss what forms of international (scientific) cooperation carry the potential to reduce them.

286
Nationalism and Earth Systems: A Challenge from the Anthropocene
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The rise of nationalism and populism are challenging international law and global governance developments. Nationalism is more apparent in the last few years, as countries have reacted to the challenges of globalisation. There is evidence that it is increasingly more difficult to generate new international environmental treaties that will coordinate and develop laws and policies for the world on particular issues or problems. This is partly because of the high cost for countries in agreeing to certain environmental standards. The challenges around achieving more ambitious
climate change goals, for instance, pose an apparent and deep problem for global environmental governance and for Earth systems. Drawing from Australia as a case study, this paper argues that there are two kinds of emerging drivers of environmentally oriented forms of nationalism that have potential implications for Earth systems. The first relates to the flexing power of international environmental administrative agencies in relation to environmental issues that potentially influence Earth systems. The other relates to the sense of solastalgia that comes from more frequent severe environmental damage and harm. Solastalgia it is argued can encourage greater ecological isolation or nationalism for local communities that are deeply connected to their local environments. The potential reaction of local communities to such experiences of ecological nostalgia may have detrimental effects on Australia’s likely interest in being involved in certain international environmental law developments. The reluctance of Australia to register the loss of ecological character in some of its Ramsar wetlands with the Montreux Record is a good example of the first. To do so would otherwise allow the Technical and Scientific Committee of the 1971 Convention on Wetlands of International Importance to carry out domestic investigations to assist Australia to restore the wetland. Another similar example includes the decisions to drain some wetlands for farming needs, which then impact the long-term ecological character of those areas. The second driver discussed is the increasing incidences of severe environmental degradation evoking solastalgia. For instance, megafires are now common in Australia, as are decisions to continue extracting resources at a large scale, with consequent implications for local communities. This form of ecological nostalgia, however, can have counterintuitive effects leading to a sense of nature nationalism. The paper argues that these drivers of nationalism can have adverse influences on Earth systems which in turn can further aggravate, if unchecked, the participation of countries in global environmental governance arrangements.

297

Re-Politicizing the Study of Climate Governance
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Most recent scholarship on global climate governance is marked by a focus on the effectiveness of novel and experimental policy instruments. Scholars have studied in detail the effectiveness of combining various novel institutional arrangements, including non-state, transnational institutions, along with a fresh emphasis on polycentricity, governance orchestration, and regime complexes. Yet, this dominant focus on governance effectiveness, and the prevalent affirmative approach towards polycentricity in an apolitical "all hands on board" approach, lacks any deeper attention to the crucial questions of power, dominance, and political conflict. In the larger quest to prevent galloping climate change, the mainstream has become overly apolitical, especially when it comes to the novel involvement of non-state actors, where powerful multinational corporations become "business stakeholders" and powerful rich Northern NGOs turn into "global civil society". The role of spoilers, the influence of money, the necessity of complex alliances, or the role of violence, conflict and exploitation, are too often neglected, and the interests especially of poorer countries in the South is too often overlooked in the prevalent analyses of "multi-stakeholder partnerships" and "non-state climate initiatives". This paper argues hence for a fundamental re-politicization of climate governance research within the institutionalist mainstream.
Assessing the chances of global climate governance: the role of Climate Powers in a conflictive world

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In previous works, we have assessed the prospects for global climate governance - in particular mitigation - focusing on the political economy of the world’s major climate state actors - or climate powers. As such, our question was how power asymmetries and different levels of agency affected global climate governance. We concluded that the path of global mitigation would be strongly affected by the level of climate commitment of these powerful actors, namely the United States, the EU, China, India, Brazil, Indonesia, Japan, South Korea, and Russia. As most of these actors showed low levels of climate commitment, our conclusion was that climate change mitigation would not increase visibly, despite the path taken by the UNFCCC negotiations. In recent years, there have been a number of relevant developments in the area of mitigation governance: First, the rise in temperature seems to be accelerating, bringing us closer to dangerous climate change. Accordingly, the chances of reaching the 2C target by 2100 are very low. Second, the impact of low-carbon technologies on the emissions trajectory has increased, particularly in the energy sector, where a price revolution is making non-traditional renewable energy sources competitive with fossil fuels. This has probably been the most notable development in climate change mitigation, and is not directly related to public policies. Thirdly, non-national-state actors continued to increase their level of agency: Cities; States and provinces; NGOs and large corporations. Fourth, climate negotiations have followed the path of many talks and little action, including the Paris Agreement. Fifth, the level of economic and security conflict has increased in the core of the international system, in particular between the US, the EU, Japan, China and Russia. Sixth, the climate commitment among climate powers has decreased since 2011, with the partial exception of the EU. This paper focuses on the last three points, i.e. how the increasingly conflictual nature of the international system, combined with the declining level of climate commitment among climate powers, negatively affects the path of cooperation in climate change mitigation, including but not limited to the UNFCCC negotiations. To achieve this objective, the article is divided as follows: A first part describes the current characteristics of the conflictive international system. A second part contains a short history of how systemic conflict have affected climate cooperation in the past, a third part assesses the level of climate commitment of the major climate powers and, finally, our conclusions.

Panel ID 52
International Environmental Regimes: Influence, Interplay, Effectiveness

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Numerous International Environmental Agreements (IEAs) contain provisions that are linked to international trade. Many of these provisions have potential effects on international trade flows. For example, a number of IEAs include provisions that entail a commitment towards liberalized trade or provisions that promote international trade in environmental goods and services. On the other hand, several IEAs also include provisions that seek to restrict certain imports or exports. While trade-related provisions are an important feature of many frequently discussed IEAs, such as the Montreal Protocol on Substances that Deplete the Ozone Layer, their
implications have not been thoroughly researched yet. In this paper, we investigate trade-related provisions in IEAs, putting the focus on their effects on the trade flows between the signatory countries. To the best of our knowledge, this paper is the first to address this gap in the literature. We investigate the effects of trade-related provisions in IEAs on trade flows in a large study by making use of a novel, fine-grained dataset on “Trade and Investment Provisions in International Environmental Agreements” (TIPEA). To analyse the effects of trade-related provisions in IEAs on trade flows, we use a panel of worldwide bilateral trade flows and use fixed effects estimations to address issues of endogeneity. We assess the effect of the overall number of trade-related provisions in IEAs but we also classify provisions by whether they are rather trade-restricting or trade-liberalizing in nature. Our paper contributes to the literature on the effects of international environmental agreements and the interplay between trade and the environment.

210
Are international environmental regimes effective? The case of the Hyogo Framework for Action and its implementation
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While there is partial agreement that international environmental regimes matter, it is still unclear when and to what extent. Despite the increase in numbers of such regimes and the associated efforts, many environmental problems persist including climate change and losses caused by natural hazards. In this context, this study systematically assesses for the first time the Hyogo Framework for Action (HFA), which was set up by the United Nations International Strategy for Disaster Reduction (UNISDR) as a first global audit of the national measures for disasters risk reduction (DRR) with the substantive goal to substantially reduce disaster losses by 2015. While the body of literature in DRR research has to a large extent focused on single case studies and in particular failures, this study attempts to offer an alternative perspective using a large-N approach with the spotlight on success. This analysis of effectiveness focuses on the outcomes of the regime, meaning the national implementation of measures. Thereby, it investigates whether widespread progress in the national DRR strategies, i.e. substantial positive change in HFA indicator scores, materialised over the runtime of this environmental regime. Descriptive statistics are used in the search for evidence for the effectiveness of the regime and to spot instances of progress and success in space and time. Although there is no support for the effectiveness of the HFA on a larger scale, this study is able to identify several countries and periods of progress for future research. These findings can enrich scholarship on both the effectiveness of environmental regimes and disaster governance. The study provides future research with potential success and failure cases deserving of closer investigation and comparative analysis for unraveling mechanisms and pathways that have led to successful implementation.

235
The inter-organizational interplay of intergovernmental treaty secretariats in global environmental governance
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Over the past two decades, numerous scholars have broadened our understanding of the role and function of intergovernmental bureaucracies in world politics. Today, there is general consensus in the literature that bureaucracies matter, in fact, bureaucratic influence plays an important role in contemporary policy-making in many political arenas. However, inter-organizational interplay between various bureaucracies has only recently attracted wider scholar
interest in International Relations research, especially in the field of global environmental governance. Due to their rather narrow mandates, the political leeway and decision-making capacity of intergovernmental treaty secretariats has traditionally been considered as rather limited compared to other bureaucracies. Yet, in the past few years, these secretariats have adopted a more active role in global environmental policy-making by connecting and engaging in horizontal interplay with other secretariats across policy domains. Building upon a qualitative case study approach, the aim of this paper is to explore the genesis, structure, and effectiveness of the inter-organizational interplay between three intergovernmental treaty secretariats in the field of global environmental governance, i.e. the secretariats of the United Nations Framework Convention on Climate Change (“climate secretariat”), the Convention of Biological Diversity (“biodiversity secretariat”), and the United Nations Convention to Combat Desertification (“desertification secretariat”). By focusing on the interplay activities of these secretariats, the results of this study might also shed light on ways in which intergovernmental bureaucracies better and more effectively provide continuous agency for multilateral environmental agreements.

293

Influence of international non-governmental organizations on the Regional Fisheries Management Organizations
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The increasing participation by international non-governmental organizations (INGOs) in global environmental governance is often viewed as important for the effectiveness of international organizations to solve transboundary environmental problems. Over the past decades, researchers and policy-makers alike have promoted INGO participation as a way to address both democratic deficits and governance gaps in global environmental governance. However, we still know little about the conditions under which INGOs can influence effectiveness in the first place. To address this gap, there is need for additional comparative studies of INGO influence across international organizations. In this paper, I study the INGOs and trace their influence on policy outputs achieved by the five tuna Regional Fisheries Management Organizations (RFMOs), in the past two decades. These RFMOs are the sole international organizations with a mandate to adopt binding measure for managing highly migratory and straddling tuna stocks, with the objective is to achieve optimum utilization of the world’s tuna stocks. In recent years, there are also some indications that RFMOs have broadened their mandate. For example, previous studies have found that RFMOs have taken some initial steps to implement an ecosystems approach to fisheries, which is a perspective advocated for both by the international community and researchers to achieve sustainable fisheries management. Indeed, in the past three decades, all tuna RFMOs had adopted binding management measures on non-target species, such as e.g. sharks, sea turtles, seabirds, cetaceans, in addition to measures concerning target fish stocks. The question is why? I hypothesize that this may have to do with the increasing participation by INGOs in tuna RFMOs in the past two decades, as well as a general shift and increasing public interests for environmental issues and the oceans more broadly. Therefore, in this paper, I study and trace the influence of INGOs on policy outputs achieved by the tuna RFMOs, related to non-target species, over the past two decades. I combine data from policy statements submitted by INGOs to RFMO meetings, and RFMO meeting minutes, as well as with interviews with representatives of INGOs, RFMO member states and secretariats of RFMOs. The findings of the paper are discussed in relation to ongoing scholarly debates on the linkages between INGOs, influence, and effectiveness in the global environmental
governance literature. The paper ends by critically discussing these linkages in relation to the prospects for RFMOs to implement an ecosystem approach to fisheries.

315
Role and evolution of informal regimes within global environmental governance. Insights from the Arctic
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Despite their widely recognized deficiencies, regulatory instruments and hard-law institutions are still commonly viewed as primary forms of response to problems arising in governing human-environment relations. The emergence of the Anthropocene with its emphasis of interconnected, interdependent and dynamic nature of issues and systems has, however, called into question the suitability of those prevailing modes of governance and mobilized the quest for its more adequate forms. As part of this effort, this paper explores the role and evolution of informal regimes within global environmental governance with the case study of the Arctic Council (AC), a high-level forum established in 1996 by eight Arctic states to promote and facilitate their collaboration on common Arctic issues, in particular those of environmental protection and sustainable development in the circumpolar North. While the Council was established through a political declaration and not a legally-binding treaty, the deficiency that according to many should be corrected, over the course of more than twenty years in operation the AC has proved its value far beyond expectations of its originators and it has provided numerous contributions to Arctic governance. Among others, it has helped to generate knowledge on the rapidly changing region, informed global environmental negotiations and created instruments supplementing overarching international treaties. Furthermore, the informal status of the Arctic Council enabled an active involvement of actors such as organizations of indigenous peoples whose engagement would have been otherwise constrained. Drawing from those examples, this contribution elaborates on the types and forms of contributions offered by informal regimes within global environmental governance. Building from the general literature on international environmental regimes and gradual institutional change, it also reflects on dynamics and processes of change within such bodies. Finally, it proposes means to enhance their effectiveness using, again, the Arctic Council as an example. In all this, the paper not only advances our understanding of an institution named today by Arctic states “the preeminent intergovernmental forum for the Arctic Region”, but it also contributes to our comprehension of international environmental regimes more broadly, in particular in light of the fact that so far the studies of those have focused predominantly on regulatory, treaty-based and hard-law arrangements.

Panel ID 53
New Directions in International Environmental Law
232
Legitimacy and effectiveness in new environmental law and governance structures
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With increasingly complex environmental problems and with an aim to create better prerequisites for transformation towards sustainability, new environmental law approaches or structures have developed. They have appeared both in international law, EU law and increasingly also at national levels. As traditional law and governance has often failed in achieving environmental change, a reassessment of such approaches has led to the development of new governance approaches and regulatory structures, with focus on ecosystem approach, adaptivity, wide
stakeholder participation and collaboration in a multilevel and polycentric structure of pluralistic overlapping procedures, where also non-state actors are actively involved in governance. These changes in the structures of environmental law and governance are present in many different areas of environmental law and governance, especially in areas of global transboundary problems, such as in the case of marine or ocean governance. However, they will perhaps be put to their ultimate test in relation to climate change and the need for fast and strong social transition. The new law and governance structures have obvious qualities in relation to environmental complexity. They also reflect many aspects often held important for governance for social-ecological resilience. However, from the point of view of the role of law in society, legal certainty and general principles of law, such structures also raise questions on legitimacy and the rule of law. With these new structures, new procedures for both law-making and decision-making are created. Other actors than those traditionally seen as authorities in the legal system and the process of creating law now often have significant roles. Moreover, despite the aim of creating potential for transformation and effectiveness in the system of environmental law and governance – through bridging many of the uncertainties connected to complexity – these structures along with the non-linear environmental complexity also challenge the possibilities of assessing effectiveness. The aim of this paper is to discuss and analyze the aspects of legitimacy and effectiveness raised above, as well as how potential problems could be compensated for in such environmental law structures. This analysis will primarily deal with these issues on a general theoretical level, but to some extent also in regards to relevant examples from marine governance or climate change governance. Moreover, the paper aim to present new methodological approaches for how to assess effectiveness in new environmental law and governance – including potential connections to theories on social-ecological resilience.

255

How do we achieve equitable sustainability in the Anthropocene? - An agenda for legal research
Michelle Lim
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Leach et al. (2018) coin the term ‘equitable sustainability’ to denote a desirable operating space for humanity in the Anthropocene. Here equity and sustainability are recognised as being so closely connected that they are emergent outcomes of coupled socio-ecological systems. The emergent outcomes of a just and sustainable world thus arise from the feedbacks across networks formed between the Earth system and human societies. Viewing the Anthropocene through the lens of equitable sustainability goes beyond conceptualising equity and sustainability as biophysical or social limits or foundations. Instead, focus is on understanding the dynamic interactions across human and natural systems and the way in which this system could develop into the future. Transformations to a better future require technological progress as well as dramatic social changes and governance reforms. It also requires greater understanding of how to shift coupled socio-ecological systems towards a desirable future while recognising historical inequities in the contributions made to undermining the stability of the Earth system. In this paper, I argue that the law is not sufficiently recognised as a key tool for addressing the interconnected social-ecological challenges of the Anthropocene. Revolutionary approaches to environmental law are, nevertheless, required to shape a sustainable and just world in the epoch of humans. It is vital that we think creatively, yet realistically, about the design and implementation of environmental law. There is the need to envision a range of plausible and desirable future states of the Earth and the human systems that operate amidst the uncertainty and surprise of
the Anthropocene. Next, there is the need to forge legal pathways which steer humanity towards desirable future states. This paper sets out four inter-related priority areas for interdisciplinary legal research: 1) the adoption of systems thinking; 2) harnessing mechanisms across a range of legal fields (e.g. from rights based approaches to tort law; 3) exploring legal options in the private sphere which mobilise new actors; and 4) strengthening the capacity of legal institutions to facilitate transparent, democratic and responsive decision-making. The paper concludes by calling for lawyers and legal scholars to reach across disciplinary divides and to undertake the transformations required to achieve equitable sustainability and the continued relevance of the legal discipline in the Anthropocene.

271
Proxy representation of future generations and ecosystems: transforming global governance through an integrated discourse
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Global institutions to represent future generations tend to be more widely embraced than institutions to represent ecosystems. One reason for this may be the perception that justifying representation of ecosystems requires adopting an eco-centric worldview, which is less broadly accepted than anthropocentric worldviews. This paper argues that in practice there are strong synergies in the normative justifications behind both forms of representation. Part I: Architecture. This part outlines models of proxy representation of future generations and ecological systems found in national and international law including: guardianship, trust models (including atmospheric trust), erga omnes claims in relation to whaling, global commons, actio popularis (international tribunals), amicus curiae briefs, and conferral of legal personality on elements of nature (e.g. New Zealand’s Te Urewera Act 51 of 2014). The paper examines the normative justifications made in relation to each particular mechanism. Part II: Theory. The key theoretical justifications for representation of future generations of human beings. These theories rest on either 1) arguments based on the furthering of intergenerational justice, or 2) democratic values, including the ‘all affected principle’ and extension of the demos into the future. It is argued that proxy representation is also linked to other democratic mechanisms including deliberation in the public sphere and education. A golden thread running through these theories is the concept of vulnerability; proxy representation provides both symbolic and substantive recognition of the vulnerable. Schlosberg (2007) justifies proxy representation of ecological systems within the context of a theory of ecological justice. While proxy representation of ecological systems has great appeal as a vehicle for countering the current undervaluing of ecological systems, significant problems in determining inherent value, creates difficulties. Nevertheless, given the dependence of human beings on ecological systems, representation of future generations’ interests goes a long way in achieving the same objective of representation of ecological systems. Analysis. The theoretical justifications for representation set out in Part II with the justifications found in the case studies in Part I. Do the justifications for representative institutions in the real world fit with the theory? To the extent that they do not, are there tensions between justifications for representation of human beings resting on anthropocentric assumptions and justifications for representation of ecological systems resting on ecological assumptions? The paper argues that there are strong synergies between the justifications made for representing future generations of human beings and ecological systems opening up exciting pathways for an integrated discourse.
While the focus of Earth System Governance is explicitly on the human-social aspects of Earth system changes, law has played a conspicuously peripheral part in the Earth System Governance scientific agenda. To date, Earth System Governance perspectives have also not significantly infiltrated the juridical domain, despite increasing calls for such a convergence. Thus, while there is a clear link between Earth System Governance and the law, this link is largely under-explored, and it remains unclear how law could respond from a regulatory perspective to some of the key problem characteristics of Earth System Governance. As a first contribution to the work of the recently established Task Force on Earth System Law as part of the Earth System Governance Project, the purpose of this paper is to initiate an academic debate on the juridical dimensions of Earth System Governance. We make out a case in support of developing a new overarching legal phenomenon that comprehensively accommodates and encapsulates all juridical aspects of Earth System Governance, including a new research agenda that is able to respond to the unique epistemic, ontological and normative characteristics, demands and nature of Earth System Governance in the Anthropocene. We call this new legal phenomenon and its accompanying research agenda ‘earth system law’.

Earth system law, as we will show, could introduce a new era in legal scholarship, while seeking to comprehensively respond to the regulatory challenges presented by a changing Earth system as reflected by the Anthropocene’s global socio-ecological regulatory and associated normative and epistemic demands. In elaborating earth system law, we first introduce the Anthropocene as the broader context within which to contemplate the relevance and role of law in a radically altered human-dominated geological epoch. We then reflect on the prevailing juridical response to global environmental change, focusing for the sake of brevity specifically on environmental law and its attendant scholarship. We specifically highlight some of the mounting regulatory and epistemic concerns surrounding environmental law in the Anthropocene; concerns which we believe could in time be more effectively addressed through the lens of earth system law. The paper then offers a first working definition of earth system law and describes, for illustrative purposes, what a conceptual progression from international environmental law to a planetary form of earth system law might entail. We conclude the discussion with a brief elaboration of a proposed future research agenda that could contribute to establishing, clarifying, elaborating and further developing earth system law.

Panel ID 54

Transforming Biodiversity Governance (ii)

Nation-Branding through Peace Parks in Costa Rica

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This paper discusses the role of Peace Parks in strengthening nation-branding processes. We first trace back the origins of what we refer to as the “Green (environmental) – Blue (peaceful)” nation-branding project in Costa Rica; then highlight the historical events that come to shape the Costa Rican identity; and finally reflect upon the expansion of the nation-branding project through the establishment of the Si-A-Paz Peace Park in the east border between Costa Rica and Nicaragua. Portrayed by conservationists as the “global solution” to problems of environmental degradation, poverty, and unemployment,
Peace Parks go beyond these goals to include the promotion of peace between nations. Peace Parks have been described as the “hallmark” of neoliberal conservation since they emphasize an all-encompassing or “win” solution that promises benefits for a diverse group of actors ranging from large international corporations, development agencies, Western consumers, state agencies, and local inhabitants. The idea of fostering peace and regional unity through protected areas—while simultaneously promoting economic growth and biodiversity protection—fit well with former Costa Rican president Oscar Arias’ attempts at achieving regional peace. At the same time, Peace Parks could help to further reproduce the national imagery of a peaceful and sustainable country, which make up the two main constituents of Costa Rican tourist identity. Considering such potential, two Peace Parks were established in Costa Rica’s Southern (La Amistad Peace Park) and Northern borders (Si-A-Paz Peace Park). This paper discusses the governance of Si-A-Paz in relation to the broader nation-building project in Costa Rica. Evidence from this study problematize an image of the Costa Rican identity that has rarely been disputed. We argue that the continuous reproduction of the national identity in Costa Rica, which lays the foundation for the Green-Blue nation branding strategy, is a major obstructing factor for improved cross-border cooperation with Nicaragua because of the failure to recognize and address the historical roots of the narrative on colonial politics and process of othering that remain present in today’s discourse and actions. While Peace Parks may have been conceived as a way of building further the Green-Blue brand of the country, the national imaginary of Costa Rica is built on differentiation and is therefore contradictory to the goals pursued through the Peace Parks project.

167

Complex Diffusion: The Rise and Fall of the Ecosystem Services Norm in the Regime Complex for Biodiversity

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Much of the focus on regime complexes has focused on their structure, causes, and consequences. Negotiated carefully amid the proliferating sets of overlapping rules and mandates, new organizations can cause significant change within regime complexes. Here, we focus on a more subtle form of change in regime complexes: policy norm diffusion among existing organizations. It seems plausible, perhaps likely even, that a policy norm adopted in one regime could spread to other regimes that are also working on the same issue and may share similar memberships. To investigate this relatively unexplored phenomenon, we chose a policy norm that was designed to appeal to multiple regimes and a wide variety of actors: ecosystem services. Ecosystem services is a policy norm that entails identifying and valuing, usually in monetary terms, the contributions of nature to human well-being. It was designed by advocates to put nature on the proverbial balance sheet, and to speak to the private sector and finance ministers in their own language. Yet, we find minimal evidence of policy norm diffusion in the biodiversity regime complex. After the norm’s adoption in the center of the regime complex, the Convention on Biological Diversity, we find only a few other venues or actors in the regime complex taking up the concept. We suggest a two-stage framework to help understand policy norm diffusion in regime complexes. First, we suggest that the content of the norm when it was adopted can shape its future diffusion, and, second, we suggest that brokerage by norm entrepreneurs, the structure of the regime complex, and the venues’ perceptions of similarity or
being alike one another serve as pathways for norm diffusion. Perhaps surprisingly, we note that shared membership among regimes does not seem to be a pathway, as responsibility for further norm diffusion seems to remain with the original norm entrepreneurs. We trace how the ecosystem services policy norm travelled along these pathways, to show how they can facilitate, or perhaps impede, the uptake of a policy norm. Over time, even the principal norm entrepreneurs started to advocate for other, related policy norms, such as nature’s contributions to people or nature-based solutions, which perhaps indicates that the success of a norm could rely on its uptake by the wider regime complex.

250
Can 'Nature's Contribution to People' Facilitate Effective Orchestration of International Law for Integrated Biodiversity Governance in the Anthropocene?
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The magnitude of global biodiversity decline is so significant it poses a greater risk to humanity than climate change. Managing biodiversity at the appropriate scale complicates attempts at global biodiversity governance. This is evidenced, for example, in the challenges of delimiting a planetary boundary for biosphere integrity. Emerging legal scholarship and jurisprudence underline the urgent need for legal regimes which achieve an appropriate balance between ecological integrity and the livelihoods that rely on the use of the environment. Nevertheless, legal frameworks often undervalue or ignore the importance of biodiversity for sustainable livelihoods. At the same time, governance frameworks largely fail to coordinate responses in a manner which adequately addresses the complex issues that impact on biodiversity and human well-being. This is particularly evident in the fragmented nature of international instruments relevant to biodiversity which span areas of the environment, trade and human rights. The Intergovernmental Science-Policy Platform for Biodiversity and Ecosystem Services (IPBES) has developed a conceptual framework that aims to inspire an integrated approach to biodiversity which includes the full cycle of interactions between humans and nature. ‘Nature’s Contribution to People’ (NCP) is a central component of this framework. NCP represents the new global framing of the relationships between humans and biodiversity and with it a shift in thinking from ‘services’ to ‘contributions. The premise of NCP is that humans and nature co-produce the benefits we get from the environment. NCP extends previous conceptualisation of human-nature relationships by elevating Indigenous and local knowledge and emphasising the fundamental role of culture in shaping our interactions with the natural world. NCP aims to incorporate multiple world-views, a range of disciplinary perspectives and the multitude of ways stakeholders value biodiversity. This paper evaluates the capacity of NCP to facilitate global governance of biodiversity in a cohesive, socially legitimate and effective manner. It identifies the range of international legal instruments that would need to be coordinated at the global scale while highlighting the broad range of values that need to be reconciled across these instruments. The paper also interrogates the ability of existing international law to address biodiversity at the appropriate management scale in a manner which incorporates the concerns of Indigenous and local peoples.

332
Biodiversity Revisited: Developing a new approach to sustaining life on earth.
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The diversity of life that sustains humanity is being severely degraded by human action leading
to a deterioration in land, air, and water quality, loss of natural ecosystems and widespread declines in populations of wild species. Despite significant knowledge about the problem, effective broad-based action has not been forthcoming. With the persistence of major structural challenges in the form of economic and trade agendas that continue to threaten the biosphere and its human inhabitants, we question whether or not the concept of ‘biodiversity’ itself – and the science and policy that surround it – is sufficiently compelling to halt the degradation of life on earth. This paper will present the results of “Biodiversity Revisited”, a year-long expert convening process undertaken throughout 2019 to catalyse critical reflection and fresh thinking around the current research, policy, and practice agendas for biodiversity. The Biodiversity Revisited project engages with the five analytical lenses of the Earth System Governance research agenda as they relate to the governance of biodiversity. Our convening will critically assess the shortcomings of existing mechanisms for biodiversity governance from local to global scales, and reflect upon the ways in which biodiversity loss is inseparable from the political issues of land ownership and rights; access to natural resources; competing concepts, narratives and epistemic alliances; and the fragmentation of research and policy efforts into overlapping agendas including climate, oceans, land degradation and sustainable development. Through this work, we will draw on and contribute to thinking about the earth system in order to inform the future of conservation-related research and catalyse more holistic approaches that take account of social and policy dynamics alongside biophysical change. In this paper, we report on the process and set out the implications of the “Biodiversity Revisited” project as they relate to a more grounded and inclusive understanding of ‘biodiversity’ as part of the earth system and the governance implications therein.

Panel ID 55
Global Governance trough Global-setting

The Effects of the Millennium Development Goals: A Meta-Analysis
Frank Biermann, Matteo Spinazzola, Maya Bogers, Agni Kalfagianni, Rakhyun Kim, Francesco Montesano, Melanie van Driel, Marianneke Vlij, Abbie Yunita
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The Millennium Development Goals, agreed upon by UN member states for the period 2000-2015, were an important precursor to the current Sustainable Development Goals. With the Millennium Development Goals, the international community embarked for the first time systematically on the novel approach of “governance through goals” that became so dominant with the later Sustainable Development Goals. Yet, what were the actual impacts of the Millennium Development Goals? To what extent have they been achieved, in what areas, in which countries, and most importantly – how can we explain these impacts and the underlying variations? Answering these questions can give vital information to the future success of the Sustainable Development Goals and could even lead to important adjustments in the political framework around the SDGs. This paper provides a systematic meta-analysis of the current knowledge on the effectiveness of the Millennium Development Goals. We have built a database of all published studies in the English language that sought to assess the impact of MDGs so far, limited to academic articles and reviews published in the social sciences. We assessed these articles with a view of the countries that were covered; the selection of MDGs that were addressed; the methods that were used, particularly as to whether quantitative or qualitative methods were applied and whether the article is theoretical or empirical; and the place where the researchers have been located. Based on this database, we provided a systematic mapping of all existing research on MDGs over the last period,
including a meta-assessment of the overall effectiveness of the MDGs and the underlying variation across geographies and issue areas. Based on this mapping, we identified a subset of literature that analyzed in detail the causal effects of the MDGs and the pathways that led to the results that have been achieved. We conclude our analysis by detailing our expectations for the likelihood of success for the SDGs, as well as a list of policy recommendations to help decision-makers adjust the current SDG implementation process and strengthen this newest version of "governance through goals".

393
Integration and Coherence in SDG Implementation: Mapping the UN System
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In 2015, the United Nations (UN) and its member states adopted the 2030 Agenda for Sustainable Development. 17 Sustainable Development Goals (SDGs) and 169 targets are formulated to create an indivisible agenda that attempts to integrate the three dimensions of sustainable development: the economic, social and environmental. It is widely recognized that an integrated approach is necessary in global governance due to the interconnected and complex nature of current challenges. The UN system is partly tasked with implementing the SDGs, and must act in an integrated, coherent manner. Scientific literature highlights that institutional fragmentation can have negative effects on global governance. However, orchestration at the global level connects IGOs, exchanging resources, knowledge and creating ideological synergies. It is hypothesized that partnerships and collaborations between IGOs results in more integrated and coherent SDG strategies. This research analyses to what extent the implementation of the Sustainable Development Goals (SDGs) takes place in such an integrated, coherent manner across the United Nations (UN) system. The object of this analysis are all 27 UN Specialized Agencies and Funds and Programmes. The perceived interlinkages between SDG targets in implementation strategies by these IGOs are recorded and mapped through a large-scale data analysis of recent key strategic documents such as medium-term programmes, proposed budgets and annual reports. Through network analyses, we can map the degree of integration between SDG targets for each IGO, as well as the coherence between the SDG strategies between different IGOs. Furthermore, a landscape overview shows what targets are being addressed by multiple IGOs, and what targets are unaddressed. Central targets that connect multiple issue areas can be identified. The preliminary results show that there is a high degree of integration between SDG targets. Coherence of interlinkages between SDG targets varies across IGOs. Furthermore, there are specific targets pertaining to gender equality, poverty and health that act as central links between a variety of other SDG targets and issue areas. Finally, semi-structured interviews with key actors from various IGOs give insights into the functioning interlinkages between SDG targets in global governance, and help contextualize findings. This research contributes to the scientific debate on global governance by analyzing the effects of a specific architecture of global governance on the integration and coherence between SDG targets across the UN system. Furthermore, it demonstrates the potential of the SDGs to contribute to sustainable development across the globe.

453
Biodiversity Governance Beyond 2020: The Landscape of Transnational Initiatives
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Biodiversity decline is one of the most pressing sustainability challenges. Despite the ambitious
2020 Aichi targets, the state of biodiversity continues to deteriorate. The upcoming negotiations for a follow-up to the Aichi targets within the Convention on Biological Diversity (CBD) provide an excellent opportunity for discussing ways to increase the ambition level and to start implementing effective biodiversity actions. Many observers believe that transnational initiatives, public-private partnerships and commitments by the private sector might be the way forward. The CBD itself has recognized the important of non-state actions for biodiversity by establishing the ‘Sharm El-Sheikh to Beijing Action Agenda for Nature and People Therefore’. Consequently, there is a need to identify and map existing initiatives, as well as to assess their effectiveness in relation to the CBD objectives. The aim of this paper is to analyze the emerging institutional landscape of the transnational biodiversity initiatives. Based on empirical research, we characterize the distribution of actors, members, functions, focus areas, geographical coverage, monitoring, and reporting and verification mechanisms in place. We apply a replicable methodology suitable for exploring and analyzing any given governance landscape. First, based on a large set of initiatives from the climate, agriculture, forest, fisheries and energy governance, by using carefully chosen keywords, we identify biodiversity-related initiatives in the RStudio software. Second, we crosscheck remaining promising initiatives with the biodiversity experts to create a comprehensive database. The preliminary results show that mapping transnational biodiversity initiatives offers useful insights for the action agenda and a post-2020 biodiversity framework. These initiatives are often the first candidates on the international level to engage in the promising voluntary commitment-process. Therefore, the outcomes of our analysis are particularly interesting for biodiversity policy makers.

Keywords: biodiversity, governance, fragmentation, mapping, MRV.
participatory workshops, and document analysis) were used to gather data during the period 2016-2018. A thick network of private actors was found, which have mobilized to play an important role in environmental management and to act in collaboration with the local state. Multiple rationales account for this development, including high levels of environmental awareness among both state and non-state actors, particular with respect to water pollution, and lack of institutional capacities that motivates state actors to seek private partnerships. Private actors also mobilize in response to state corruption and failure and concern that environmental deterioration is undermining their economic interest. Outcomes include self-regulation and voluntary codes of conduct, alongside environmental monitoring to provide data and evidence to the state, including about the robustness and suitability of existing regulations and about problems with regulatory compliance. This development is occurring alongside, and feeding into, state and municipal reorganization and legislative reforms, resulting in a complex and dynamic hybrid governance form. Hybrid governance contributes to effective environmental governance of the CZ of Quintana Roo. However, this form of governance risks the privatization of environmental public goods and may support state retreat from its public responsibilities.

318

Implications of actor characteristics for polycentric governance processes. The case of multifunctional water use in the canton of Zurich, Switzerland

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Rural catchment areas that are situated close to urban regions provide a range of goods and services, such as food, recreation, tourism and ecosystem services. The resources of such regions are coming under increasing pressure due to climate change; this is particularly the case for water. The coordination of such competing resource uses calls for an appropriate governance system. Polycentric governance theory has posited that polycentric governance systems have a higher capacity to deal with complex natural resource systems. Important lines of debate in current research on polycentric governance include the traits, structures, processes and varieties of polycentric systems as well as the functions and performance. Some scholars describe actor-types. These types refer, however, only to actors who try to engender change for sustainable practices, such as leaders, pioneers and orchestrators. However, the precise characterization of different actor-types, their influence on the relationship and structure in evolving polycentric governance systems have attracted much less scholarly attention. In this paper, we take as an analytical starting point the differentiation of actor-characteristics like legitimacy, resources, power, urgency, degree of autonomy that actor-types usually share. Afterwards, actor-types with specific combinations of characteristics were used to understand the relationships between the actors and how these affect the ability of actors to maintain a certain degree of polycentric order. Against this background the outcome of the polycentric governance process is assessed. We use a qualitative case study approach to examine the role of actor characteristics in a governance system that transitioned from weak polycentric order to partly strong polycentric order. The case is a small-scale water governance system with competing water claims in the region Furttal, canton of Zurich, Switzerland. National, cantonal and local actors play a role in the evolving polycentric governance. The results show that the governance architecture needs to be improved to address the challenges posed by climate change. The actors with complementary characteristics and same goals strengthen their relationship to develop mutual benefit whereas actors with similar characteristics like few resources, high urgency and same goals weaken
their relationship. The different degrees of polycentric order shape the (un)sustainable outcome of the governance process. Given that characteristics of actors have relevant implications for understanding relationships between actors and structures within evolving governance systems and for understanding (un)sustainable practices, more research is necessary to improve the concept of actor-types and our understanding of the impact that characteristics of actors have.

324

Keystone actors in the global clothing industry
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The majority of global industries are dominated by a few disproportionately large corporations, or “keystone actors.” While concentration of economic production is not a new phenomenon, in an increasingly interconnected and globalized world the magnitude of the impacts that transnational corporations have on diverse social-ecological systems is greater than ever before. In this study, we examine the case of keystone actors in the global clothing industry – one of the most polluting industries in the world – and identify potential leverage points for encouraging industry-wide transformations toward sustainability. Through reviewing the sustainability reports for the 20 largest clothing companies, followed by multiple rounds of online snowball sampling, we map the network of high-level collaboration taking place among global actors to address core sustainability challenges in the industry. The network consists of 455 actors (e.g., clothing companies, trade associations, NGOs, research institutes) working on a suite of 16 different biophysical and sociopolitical sustainability challenges (e.g., hazardous chemicals, land use, working conditions, ethical sourcing). Using social network analysis, we identify: (a) which actors, and which types of actors, occupy key positions in the network in terms of their centrality, ability to bridge between diverse communities in the network, and other related structural measures; and (b) which sustainability challenges are most central, or conversely least central, in the network. This approach advances current research on keystone actors by moving beyond examining the actors themselves, to situating keystone actors within a larger business ecosystem, and focusing the analysis on identifying other organizations occupying influential positions in the wider networks in which keystone actors are embedded. Lastly, this study also illustrates how developing approaches to Earth System Governance may benefit from considering an industry-wide approach, as doing so directly addresses the connections among different components of the earth system that must be navigated in order to achieve truly global transformations.

427

Socio-environmental Observatories of Water in Mexico: challenges for transiting to participatory and adaptive governance
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A socio-environmental observatory is a set of actors and organizations formed with the purpose of gathering, systematizing and managing existing information, as well as generating new information and disseminating it, to encourage informed decision-making. Socio-environmental observatories play an essential role in the generation of applied, transdisciplinary, reflective knowledge that is accountable to society. Therefore, they have the potential to act as a bridge to transition to participatory decision making and adaptive governance of natural resources. The effectiveness of this bridge depends, however, on our ability to address questions such as who generates new knowledge and, what is the stakeholder’s capacity to collect, systematize and spread knowledge to influence decision making through the design and implementation of public policies. This piece presents the most
significant findings on the effectiveness of socio-environmental observatories in Mexico to achieve this transition, with specific attention to those addressing the problems of water management. Thirty-one socio-environmental observatories were identified, covering a variety of purposes such as conservation and sustainable development (18), water management (6), energy (1), urban sustainability (5) and coffee production (1). Among these, 11 address water issues, directly (6) or in combination with other objectives linked to sustainable development (5). The rationale of the analyzed cases ranges from data sharing to reveal system trends to advocacy agendas for the defense of territories. Most water observatories are concentrated in central Mexico, and most adopt a jurisdictional approach rather than basin vision (except for three cases). The adoption of a water-basin approach is crucial because it allows a comprehensive approach to the socio-environmental system of water, that is, to incorporate natural limits and processes of the natural water cycle and its compatibility with the social, economic, political and cultural limits and processes that can affect this cycle. Furthermore, it can allow the adoption of strategies that promote health, sustainability and socio-ecological resilience. The main challenges for water observatories in Mexico to achieve effectiveness as a transition bridge to participatory and adaptive governance are: 1) Ensuring quality, integration, security and data management, 2) influencing public policies, 3) detonate and maintain the participation of all the actors involved and 4) design and implement for durable and self-sustaining observatories. The analysis concludes with a proposal of specific strategies to face these challenges to achieve effectiveness as a transition bridge to participatory and adaptive governance.

Panel ID 57
Unlocking Transformative Change: Agency, Institutional Dynamics and Metaphors
185
(Re)conceptualizing institutional dynamics for urgent transformations in Earth System Governance
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Transformations in Earth System Governance are urgently needed to address multiple major sustainability challenges, as well as fundamental social, political, and environmental shifts unfolding in the Anthropocene. While there has been rapidly growing attention to understanding transformations in society and the environment (e.g. behavioral, technological, infrastructural, and cultural changes), scholars still do not have a good grasp on how fundamental changes in governance systems themselves occur and can be accomplished. Institutional dynamics are central to transformations in governance, entailing the processes by which institutional architectures change. But this remains a difficult issue to get a grip on, not least because it also means confronting questions about how intentional or deliberate efforts to bring about change (e.g. reform, renewal) collide with long-recognized challenges of institutional complexity, contestation, and path-dependency. This raises questions about how scholars can systematically study institutional dynamics in order to better understand how urgent transformations in governance systems may be realized. This paper presents a novel conceptual synthesis of institutional dynamics within governance transformations, focusing at domestic political and policy scales, drawing on a broad range of insights from various scientific communities which have emerged in recent years. For example, this includes lines of thinking on governance innovation, policy reform, and transitions thinking; each of which
points towards a variety of sometimes overlapping and sometimes differing dynamics relevant to understanding governance transformations, but which so far remain quite fragmented. A typology of six broad categories of institutional dynamics is presented, comprising: Novelty (e.g. innovation, experimentation), Uptake (e.g. scaling-up, diffusion, catalysis), Decline (e.g. dismantling, drift, decay), Lock-in (e.g. path-dependency, reinforcement, increasing returns), Interplay (e.g. coherence, competition, mutual adjustment), and Maintenance (e.g. productive stability, protection of democratic norms). This provides a novel set of ‘entry points’ for scholars studying institutional dynamics, a bridging concept to enable communication and debate, and a tool for comparative study within and across political settings. It also allows novel propositions about institutional change to be formulated and tested, both within a single category or by combining multiple categories (e.g. tensions between Uptake, Lock-in, and Decline; synergy between Uptake and Interplay; or nuance between Decline and Maintenance). Overall, this contributes to advancing Earth System Governance scholarship at the intersection of Architecture & Agency and Adaptiveness & Reflexivity, by providing a novel lens for unpacking the institutional dynamics of “urgent transformations” in governance systems.

Using a typology of these dynamics and processes, this paper draws on document review and elite interviews to understand how decision makers in Canadian politics are navigating the complexities of the transformation to a low-carbon economy. Semi-structured interviews were conducted with over 20 elite participants — current and former politicians, senior public servants, business leaders and NGO representatives involved in Canadian economic and the environmental policy, with particular attention to climate change. Participants were identified and contacted using snowball sampling techniques to increase the potential number of respondents, while ensuring a diverse range of perspectives was included. Interviews were transcribed verbatim. These were input into NVivo 12 and coded for themes, both the hypothesized dynamics and processes, as well as themes that emerged from the data. Interviews and document review were then used to identify how elite decision-makers navigate the complexities of Canadian politics of climate change. Results illustrate the ways elite complexity-managers navigate these dynamics, but are also constrained by them. Looking beneath the surface can reveal counter-intuitive strategies, open up possibilities for transformative change, and ultimately help complexity-managers more effectively navigate towards sustainable economies.

Navigating complexity in Canadian climate politics: evidence from elite interviews
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Transformations to low-carbon economies are unpredictable, present trade-offs, and may be politically risky. How can decision-makers better navigate these political minefields in ways that minimize trade-offs and risks that may deter action? This paper proposes that transformations can be better navigated by understanding their underlying sociological dynamics and processes. The international community has largely treated climate change as an emissions challenge—reduce greenhouse gas emissions to address the problem. While not wrong, this approach focuses on the proximate cause of the problem rather than the underlying pathology: the practices, processes and policies that produce greenhouse gases. The focus on emissions reductions lends itself to framing around the analytic
metaphors of the carbon budget, global public goods, and the global commons, and thus the politics of collective action and international co-operation (Keohane and Victor 2016). These guiding metaphors have so far failed to produce the global response necessary to catalyze transformation on the scale required to avoid catastrophic impacts of climate change. We argue that new guiding metaphors and analytic tools are needed to move the global response forward with requisite speed. In this paper we propose decarbonization as the key political goal and that the challenge of carbon lock-in (Unruh 2000; Seto et al 2016) can be usefully characterized as a fractal system (Perey 2014; DeFlorio et al 2013; Barret and Swallow 2006). The analytic/policy problem is therefore how to escape what we call the fractal carbon trap (a characterization we adapt from Barret and Swallow 2006, on fractal poverty traps)—how to produce catalytic action that generates transformation by disrupting the status quo in a way that overcomes the inertia in social systems that tends to reinforce equilibria. This new metaphor implies a different kind of politics and research agenda—a focus on experimentation and multilevel action (Overdevest and Zeitlin 2014; De Búrca et al. 2014; Bulkeley and Castán Broto 2013; Hoffmann 2011; Bernstein and Hoffmann 2018) in fractal systems. We argue that this metaphor will be more analytically and practically productive in generating effective means of responding to the climate challenge and illustrate its utility drawing on primary and secondary case material from our project on the politics of decarbonization.

291

Environmental Politics and Earth System Transitions: The End of Environmentalism?
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This paper reviews the notion of 'environmental' politics in light of conceptual developments in earth system science and global change research. How is the traditional concept of environmental politics, which gained prominence in the 1960s, affected by the increasing recognition of an 'Anthropocene' as the current epoch in planetary history? What are the impacts of novel conceptualizations of 'planetary boundaries', 'tipping points' or 'socio-ecological systems' for the field of environmental policy and politics? When proponents of the notion of an Anthropocene claim the 'end of nature' and challenge the idea of a human 'environment', what is then left of environmental policy as an independent field of study? The Earth System Governance Project has developed in 2009, in response to these challenges, the notion of 'earth system' governance as a research field that expands beyond environmental policy. This paper, however, will have a much broader scope, covering also recent work under novel themes such as planetary politics, Anthropocene governance, earth system law, and so forth. The paper will systematically review the consequences of the advancements in earth system analysis for the field of environmental politics and address questions of ontology, epistemology, as well as policy relevance and the organization of research. In so doing, the paper will critically review also some published work from the first years of operation of the Earth System Governance Project, and hence seek to contribute to the ongoing harvesting efforts in the Earth System Governance community.

362

Pathways to transformative sustainability: governing small business interventions
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It is clear that progress towards fundamentally sustainable futures in urban spaces can be fraught with complexity, surprises, and contested decisions made by a multitude of public and private actors. Small- and medium-sized
enterprises (SMEs) are one such actor that can contribute to prosperous societies in numerous ways, including through provision of livelihood opportunities, creating environmentally sound products and services, and participation in collective deliberations on pathways to (and visions of) sustainable futures. Their transformational potential encompasses activities that are directed toward their own operations, as well as playing a role in shaping processes beyond their business, such as contributing to neighborhood development or influencing practices of other firms. While an abundance of case studies exist that document a long list of sustainability-oriented actions taken by SMEs, these actions are rarely analyzed in terms of their contribution to a broader pathway, including their contribution to momentum or system-wide ripple effects. Furthermore, a deeper understanding of the governance implications these pathways is required to inform more holistic, inclusive, and innovative climate change and sustainability policy. We draw upon a large sample size survey of small business in Vancouver and Toronto (n=1730) over 120 interviews in Vancouver (CAN), Toronto (CAN), London (UK) and Rotterdam (NLD), and new case studies in Lüneburg (GER) and Melbourne (AUS) to develop categories capturing the transformational actions of SMEs. This data suggests that these actions can be thought of as i) Adjustment interventions (i.e. modifications of quantifiable features and activities), ii) Function interventions (i.e. changes to practices and interactions between actors), iii) Design interventions (i.e. changes to the ability of people to take decisions and the associated influence over actions), and iv) Purpose interventions (i.e. changes to the reason behind operations, the values and worldviews underlying explicit and implicit goals of a system). We then map the connections, to explore the pathways that small businesses might follow as they exercise their agency to reconfigure the underlying values that define their business, interact with the urban system of which they are a part, and feed into broader decision-making or political processes.

Panel ID 58
Framing, Issue Emergence and Agenda Setting
322
Are we there yet? Characterizing milestones on the trajectory from issue emergence to institutionalization
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The environmental governance landscape sees new issues emerging at a regular pace. While some of these receive only low levels of attention, remain confined to small dedicated circles or eventually vanish, others progressively graduate from being an “emerging issue” to reaching broader audiences and eventually becoming institutionalized. Against this background, this paper asks: what are milestones in this institutionalization process? Using the empirical example of blue carbon, which refers to greenhouse gas sequestration in vegetated coastal ecosystems, this paper aims to develop a framework for analyzing the maturity of an issue. It does so by tracing the evolution of the blue carbon issue from being “the climate change mitigation opportunity you’ve never heard of” to being mentioned in, among other things, almost thirty countries’ Nationally Determined Contributions under the Paris Agreement. The paper argues that key indicators that characterize an issue’s graduation from emergence to institutionalization relate to its establishment within science, policy institutions, the media, and practice. Beyond adding to the literature on agenda setting, the paper illustrates the use of computational social science methods, such as web crawling, for the purpose of issue tracing.
Reform-oriented frames of the climate challenge
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Since the climate challenge emerged as a policy problem more than thirty years ago there has been lively debate about the policy measures best suited to mobilize action to reduce greenhouse gasses and minimize the risks of dangerous climate change. This paper offers a typology of frames used to communicate and design policy approaches intended to address climate change. For example, sometimes (a) climate change is approached as a pollution control issue, that is to say it is focused on preventing the release of GHGs and establishing quantitative goals for incremental emissions reductions. This fits well with an economy-wide instrument approach focused on carbon pricing. Alternatively (b) climate policy can be understood as an issue of encouraging transformative change in key systems of social provisioning to increase societal welfare (including lower carbon outcomes). This fits with sector oriented policies focused on inducing step changes in system arrangements that unlock pathways to transformative change. Other frames/policy linkages focus (c) on pursuing short term goals that also reduce GHG emissions (e.g. tackling local air pollution); (d) individual consumption focused frames that point to what can be done to lower personal carbon footprints; and (e) 'grassroots' transformation that emphasizes political contestation and local change. Behind these alternative frames (and the examples cited here are not exhaustive) lie very different assumptions about agency and structure and the forces than enable and constrain social change. This paper offers a broad survey of these frames and policy approaches, presents a typology that digs into their underlying assumptions, and discusses how successful they have been in motivating and orienting movement towards societal decarbonization.

The Economisation of Climate Change
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Economic institutions and actors from finance ministries to economic International Organizations increasingly address climate change. In this paper I argue that it makes sense to understand these efforts to address climate change constitute instances of the “economisation” of climate change. The concept of economisation is developed for the purpose of this paper, and consists of (1) framing an issue as an economic problem, and (2) the issue being addressed by economic actors and institutions within their own routines. Framing climate change in (mainstream) economic terms usually centres around defining the policy problem as an externality, a framing that has implications for the policy solutions that are proposed. Inherent to the framing is not only a way of defining the problem and how it should be addressed, but also a particular way of attributing value to outcomes, namely in monetary terms. Costs and benefits are all measured in terms of economic impact, including so-called “non-market” losses such as species becoming extinct. Framing an issue as an economic issue enables economic institutions and actors to address the issue within their own routines. These economic actors and institutions are characterised not only by their economic worldview but also by their power compared to domestic (e.g. environment ministries) and international environmental actors and institutions (e.g. the United Nations Framework Convention on Climate Change). Hence, economisation has significant transformative potential, which nonetheless may be limited by economic paradigms’ shortcomings in dealing with the root causes of climate change. The possibilities and limitations of this transformative potential is discussed in the context of the way in which the IMF treated the issue of subsidies to fossil fuels. Rather than adopting the established approach to fossil fuel
subsidies and focus on direct government support to the production (e.g. mining, oil fields) and consumption (e.g. lowering the price of petrol), the IMF argued that any fossil fuel sold at a price that did not fully include its externalities (climate change, local air pollution) was in fact subsidised. This definition led to an estimate of global fossil fuel subsidies of USD 5.3 trillion (compared to the International Energy Agency estimate of USD 325 billion in 2015), and to the conclusion that virtually all countries in the world subsidise fossil fuels.

Rolling the snowball: Norway’s efforts to electrify transportation
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Norway’s policies to encourage electric vehicle adoption have been highly successfully. In 2017, 39 percent of all new car sales in Norway were all-electric or hybrid, making the country the world’s most advanced market for electric vehicles (EV) (IEA 2018). This high rate of EV ownership is the result of thirty years of EV policies, Norway’s particular political economy, and significant improvements in electric vehicle and battery technology. This paper argues that Norway’s sustained policy interventions to make it easier to purchase and drive an electric vehicle, and prove that it can be done, is not only starting to decarbonize personal transportation but is also spurring innovative electrification efforts in other sectors in Norway, such as maritime transport and short-haul aviation. To explain this pattern of scaling, the paper employs Bernstein and Hoffmann’s (2018) framework on policy pathways towards decarbonization. It finds political causal mechanisms of capacity building and normalization have helped create a welcoming domestic environment to realize early uptake and scaling of electric vehicles, and subsequently fostered secondary scaling in other modes of transportation. The initial scaling was facilitated by Norway’s unique political economy. Ironically, Norway’s climate leadership has been, in part, because of its desire to sustain oil and gas development. This desire has steered the emission mitigation focus towards sectors of the economy that are less contentious and lack opposing incumbents. Indirectly, the wealth from hydrocarbon extraction bankrolls these pricey policies and the growing number of beneficiaries ensure these policies remain in place, creating positive feedbacks. Despite these domestic political economic concerns, the demonstration effects from Norway’s electrification are spurring other countries, companies and cities to pursue action. Evidence for these causal mechanisms and effects is drawn from interviews with key policy and industry participants and observers of Norway’s electrification efforts along with a range of secondary sources.

The Governance of Conservation and Land Management

320 Assessing conservation effectiveness of different governance regimes: Evidence from protected areas in Uganda
Michaela Foster
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The establishment of protected areas has been one of the most widely employed strategies to address tropical deforestation and biodiversity conservation across the globe. Along with the proliferation of protected areas, a growing body of research has emerged that attempts to assess the impacts of protected area networks and aims to better understand the conditions that are conducive to effective conservation. Many studies have compared the effects of protection versus no protection on deforestation, finding that many protected areas have successfully maintained forest cover. Little empirical evidence exists, however, on the conservation effectiveness of different protected area governance regimes,
and few studies have assessed how protected area performance varies with the level of protection and management authority. This study addresses this gap by evaluating the impact of protected areas on deforestation in Uganda from 2000 to 2017. In this paper, I use satellite data to measure deforestation and matching methods to compare the effects of more strictly protected national parks and wildlife reserves with mixed-use forest reserves and community managed areas. Protected areas experienced less forest loss than comparable unprotected sites. The analysis uncovered heterogenous effects across the different types of protected areas, suggesting that protected area governance is an important factor affecting outcomes. The findings of this research highlight the need for additional empirical evaluation on the impacts of protected areas that go beyond inside-outside comparisons to consider how different aspects of governance influence performance.

329
Reform and resilience in the Anthropocene: Neoliberal policies and land system change in Mexico and Latin America
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Recent research in land systems science, political ecology and institutional theory has focused on the complex intersections of rapid, widespread, and uneven processes of social and environmental transformation of landscapes in the era of the Anthropocene. One of the most pervasive forces shaping land use and cover globally has been the rise of neoliberal reforms and associated political-economic regime shifts. These transformations encompass changes to economic markets, land tenure and property rights regimes, and new forms of environmental governance. The impacts have been far-reaching, reshaping decision making across a wide variety of land managers, with social and ecological consequences at multiple scales. This paper advances a synoptic and empirical perspective on these dynamics. First, we review land system science and related scholarship on neoliberal policies targeting land reform and management across Latin America, to highlight implications for trajectories of land governance, use, and resilience in the face of global environmental and economic change. We further complement this broad, synoptic review with an in-depth, empirical case study of neoliberal reform and land systems in Calakmul, southern Mexico, to highlight how global and national structural changes are reshaping land management among smallholder farmers, with significant consequences for the region’s livelihoods, ecosystems and landscapes. This paper contributes a critical review and empirical insights relevant to key themes of Future Earth’s Earth Systems Governance project and its flagship 2019 meeting in Oaxaca, particularly, Architecture and Agency (e.g., institutional dynamics of land and forest management); Justice and Allocation (e.g., costs, benefits and livelihood implications of sustainability transitions), and Socio-Environmental Impacts of Economic Globalization (e.g., implications of neoliberal economic and environmental reforms for livelihoods and landscapes).

334
Between subsidies and parks: Agroecological change amid agrarian and conservation policy in Calakmul, Mexico
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Over the last decades, tropical agro-forest landscapes have been increasingly exposed to centralized forms of state governance, often rooted in modernist logics of agrarian development and/or environmental conservation. In landscapes dominated by swidden agriculture, favored policy arrangements often target restrictions to the access to old-growth forest on the one hand, and the reduction of farmland
extents through agricultural intensification, on the other. Broadly referred to as land-sparing, such interventions can have unintended impacts, such as the loss of resilient agroecosystems and landscape multifunctionality. In this study, we examine the role of the state in advancing land-sparing governance frameworks in Calakmul, Mexico, a region historically characterized by swidden agriculture. Drawing on household survey data, key-informant interviews, and satellite imagery, we trace the multiscale linkages between state institutions, smallholder farming practices, and landscape-scale dynamics. Statistical analysis and qualitative insights reveal how the prevailing policy regime incentivizes intensification through subsidies and cash-transfers, but also imposes it by introducing strict regulations against crop field rotations. At a broader scale, time series analysis of remotely sensed vegetation suggests that the intensification of agricultural practices is contributing to the stabilization and simplification of the formerly dynamic and complex agro-forest mosaic of the region. Our findings illustrate how government subsidies and environmental regulations, although seemingly disparate, converge in pushing towards the disarticulation and spatial segregation of agriculture and forests in Calakmul. This division of the landscape works against the local practice of swidden, failing to acknowledge its potential to minimize the environmental costs of farming while securing subsistence livelihoods in the face of scant economic alternatives. The empirical contribution of this study resonates with key themes of interest for the 2019 Conference on Earth System Governance, in particular, with the relationship between structural forces and decision-making across scales (Architecture and Agency), as well as the role of governments and other actors in the transformation of earth systems through a Mexican experience (Socio-environmental impacts of economic globalization in the developing world).

434

International conservation treaties and biodiversity declines: Exploring the fit between formal and informal rule structures to assess treaty robustness

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Studies have consistently confirmed exceptionally high and accelerating species extinction rates that are indicative of a sixth mass extinction event. These are troubling developments from a moral and an anthropocentric perspective because nonhuman species have an intrinsic right to exist and losing them will result in substantial ecological, social, and economic consequences. International conservation treaties play an important role in generating the necessary collective action to foster species conservation efforts. Yet, it remains unclear to what degree treaty rule structures are robust to change and can operate within parameters that foster global conservation efforts. I suggest that a comparative analysis of conservation treaties based on common pool resource (CPR) methods and theories from a coupled infrastructure system perspective may provide a different lens with which to examine international conservation governance and its effect on decision-making processes. Utilizing the institutional grammar tool and the design principles of long-enduring CPR governance systems, I code the treaty texts and relevant resolutions of four wildlife conventions (CITES, CMS, CBD, and the ICRW) (formal rules), as well as key informant interviews and the literature on treaty effectiveness (informal rules). This facilitates an exploration of the written regulatory and generative rule structure which I then compare to the rule perceptions within and across treaty forums to assess: (1) the feedback and fit between the formal and informal rule structures; (2) rule consistency and completeness; and (3) the scope, clustering, and configuration of treaty rules. Preliminary findings suggest that the degree of fit (1) within the
formal generative rules—i.e., the way the original drafters of the treaties envisioned and defined how the world ought to be—and the formal regulatory rules that define the prohibited, required, and permitted actions of member countries; and (2) between the formal and informal rules is an important indicator of treaty robustness. The greater the degree of fit, the more likely the treaty rule structure can cope with change and continue to operate within desirable parameters that foster core conservation objectives. My research provides a complimentary approach to traditional international relations and political science analyses of treaty effectiveness and design. It also offers practical insights into the treaties’ strengths and weaknesses, as well as the effect that formal/informal fit may have on the decision-making of key actors. Finally, a theoretical contribution is made by testing the usefulness of CPR methods to examine rules at the international governance level.

Governance architecture of Brazilian agencies that act against illegal hunting
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Hunting is illegal in Brazil. To control the exploitation of wildlife, environmental laws and public policies were created, the country is a signatory of multilateral environmental agreements and enforcement strategies, especially in protected areas are carried out. However, there are several opportunities for crimes against the fauna to occur with ever greater intensity. Recently, pressures from groups interested in the permission of sport and commercial hunting resurfaced in Brazil and the main argument is the contribution to environmental conservation. Considering that the economic exploitation of a natural resource such as native fauna requires extensive knowledge of species richness and diversity, long-term studies on dynamics, monitoring and population management and an efficient enforcement system, it is relevant to question the viability economic and technical capacity of Brazil to invest in this sector. Despite scientific efforts to estimate the hunting pressure on Brazil’s forests and efforts of actors involved in the detection and punishment of crimes against wildlife in Brazil, the results are not satisfactory regarding the effectiveness of punishment. In the absence of governance on the issue it is fundamental to understand the efficiency of the punishment of environmental crimes before any discussion about release of commercial and sport hunting in Brazil. The study of the architecture of the chain of agencies involved from the enforcement system to the punishment of environmental crime can generate a governance model for the effective punishment of illegal hunting. In this sense, this study intends to answer the questions: what are the deficiencies and difficulties of the agencies of enforcement and punishment to act against the illegal hunting? What are the motivations of the agents? How do agencies work together? What factors undermine the effectiveness of punishment of illegal hunting? What strategies can strengthen them? We believe that understanding which mechanisms provide efficiency to environmental regulations and the articulation of agencies contribute to the field of environmental governance studies.

Panel ID 60
Power, Inclusivity and Public Participation

Civil society and environmental crisis: action of the environmental movement in the process of modernization and urbanization of contemporary China
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The environmental issue assumed decisive importance in political, economic and academic debates at the end of the twentieth century, when it became a global problem and began to
mobilize civil society, organizations and States. In China the environmental problem is internalized belatedly by the government, but since 2012 with the 18th Congress of the Chinese Communist Party, the development of an ecological civilization is one of the pillars of the development of Chinese society for the twenty-first century. The complexity of the environmental issue rests on the fact that it is a new global risk that affects all and without distinction and is a direct product of the changes in the global system and the radicalization of modernity, which is accompanied by the advance of science and technology, economic development and strong industrialization. In addition, uncertainties surround the environmental question, after all we do not know what the exact consequences will be, but undoubtedly there will be great changes in the terrestrial system, and, therefore, a look capable of recognizing the complexity of new social relations, its imbrication with the politics, economics, technology, information, in order to find answers capable of responding to the challenges of 21st century society. We will present a historical reconstruction of the performance of civil society from non-governmental organizations (NGOs), reflecting on the changes experienced by China in recent decades and how these changes have impacted the environment. From the analysis of the formative elements of contemporary China, one seeks to understand how they impact the environment and what responses emerge from that impact. We will then explore the responses to environmental degradation at the governmental level, but also from the articulation of civil society and NGOs, which change over time. Finally, we will reflect on the environmental degradation as a political element, in addition to presenting the progress made up to 2015. The focus is on the discussion of the transition from government to environmental governance, with the incorporation of several social actors at multiple levels and scales.

Ecotourism has been promoted as a strategy of two common goals: eradication of poverty and conservation of natural resources. In addition, community based ecotourism (CBE) encourages community participation in the management of ecotourism projects, to generate decentralization of natural resource management, which implies redistribution of power, transfer of responsibilities from central governments to rural communities, collaboration, and creation of social capital. This change depends on the networks that are built among different organizations through time to develop CBE. The approach of network governance focuses on the institutional arrangements to enhance the empowerment of communities and could improve the environmental governance. This research presents the characteristics of the networks that have been built around CBE and the role they have played in the instrumentation of this activity. This research was carried out in two locations on the coast of Oaxaca, where community ecotourism projects have been developed. The study period runs from 1996 to 2016. Semi structured interviews were conducted among community authorities, presidents of community cooperatives and representatives of governmental and non-governmental organizations. The data obtained was analyzed through Social Networks Analysis, which allows the identification of nodes and links between actors. The results show that the period from 2005 to 2012 was characterized by the growth of ecotourism in both locations. The community cooperatives already formally constituted, increased their offer and tourist infrastructure. Reforestation, cleaning and protection of species were carried out. Networks highlights the increase of organizations supporting both
cooperatives. The predominant organizations over time were government agencies that operate public policy on environmental conservation. These organizations provide financing, training, operating permits and advice to access government programs. These programs require the formation of community groups to access their benefits. Besides, non-governmental organizations have been vital entities to generate training to offer services to tourists. Also, they built bridges of trust between locals and other organizations. The role of civil organizations acquires special relevance in Ventanilla community, where universities and tour operators have been also collaborated in favor of ecotourism. In contrast, there is little participation of non-governmental organizations in Escobilla community where distrust and imposition of government agencies is perceived.

365

How professional practice influences opportunities for public engagement in water governance in Scotland

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How professional practice influences opportunities for public engagement in water governance in Scotland. Kirsty Holstead, Shona Russell and Kerry Waylen. Scotland is committed to become a ‘Hydro Nation’ or a nation “where water resources are developed so as to bring the maximum benefit to the Scottish economy” (Scottish Government, 2016). Realising this objective largely rests on the mechanisms employed to involve people who have a stake in water (consumers, users and so on). Normative assumptions are made about publics and how their inclusion in decision-making leads to more equitable, economic and environmental outcomes. Yet, unanswered questions remain, such as how and through which mechanisms their inclusion in decision-making contributes to governance, how those charged with the implementation of water governance influence how this engagement takes place and how it is constituted. Research on the inclusion of publics tends to be couched in terms of techniques, strategies and methodologies to carry out, evaluate and encourage participatory processes. Others, caution that participation can exclude, oppress and further embed unequal power relations. Further, scholars focus on the institutional factors which influence attempts to include various stakeholders, with a focus on structures, processes and individual resource usage. However, little is known about the public officials who shape policy development, implementation, evaluation, as well as the everyday delivery of activities relating to water governance. Even less is understood about how these state officials and their diverse practices influence how the public may play a role in these processes. Based on empirical research in public organisations who are responsible for water governance in Scotland, we use a practice approach (Shove, Panzar and Watson, 2012) to explore how ideas and regulatory requirements to include public engagement are working out in practice in flooding, public drinking water and waste water services. By focusing on the everyday actions of public representatives as they carry out their daily work, we show how the multiple and often conflicting meanings, usages and aspirations that are part of creating a ‘Hydro Nation’ are manifested through practice. We also discuss how some aspects of practice may sit in tension and have lasting effects in how people relate to, and use water resources.

390

Rethinking the (dis)empowerment and inclusiveness of sustainability experiments in the Global South.

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In developing countries, initiatives that promote transitions towards sustainability are often
localised and highly contingent, yet the involved actors and practices have influential transnational linkages (Wieczorek 2018). It has been hard to make these both inclusive and scalable. Thus, it is thus crucial to interrogate the nature of these initiatives. Although progress has been made in creating inclusive initiatives, there is a risk to reproduce patterns of inequality inherent to these transnational projects. At the same time, these sustainability experiments may actually help re-configuring pathways of just transitions towards sustainability. In the Global South, sustainability experiments are usually designed by foreign intervening actors to promote system innovation by creating new niches (Ramos-Mejía et al 2018). The creation of alternative socio-technical trajectories in ‘niches’ (Geels 2002) has been associated with issues of power and inclusiveness, i.e. with the creation of pathways to just transitions. In light of this new research agenda for transitions in developing countries, this paper sets out to look at forms of agency in niche experimentation. More specifically, experiments’ actors and practices are looked at by considering empowerment and inclusiveness. The former is seen as the cognitive and discursive (dis)enabling features. The latter helps to uncover the reproduction of patterns of inequality in the proliferation of niche innovations and more broadly on socio-technical transformations, vis-a-vis questions of who will benefit. The paper’s specific approach is to collate the phenomena inherent to experiments as having the ultimate goal to scale up and having the burden of trial-and-error in pilots - since transitions are purposively driven through very contingent practice-based and challenge-led initiatives. In the case study, an action research approach situated within a specific niche and is used to explore actors and practices in an ongoing urban experimentation in Kampala, Uganda. This is accompanied by interviews and document analysis. Keywords: Transnational Niche Experiment; Upscaling; (Dis)empowerment; Inclusiveness; Action Research.

392
The challenges of technology selection for meeting the needs of the poorest farmers: A Case Study of the System of Rice Intensification (SRI)
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The System of Rice Intensification (SRI), is a technology for growing rice that emerged onto the global stage in the early 2000s. SRI has an unconventional innovation history. It was invented by a French Jesuit missionary working with local farmers in Madagascar in the 1980s. SRI consists of a set of practices, including earlier transplanting and wider spacing of seedlings. SRI has the potential to be a “pro-poor” technology because it increases yields while decreasing input costs, including for seeds and irrigation. However, Almost as soon as SRI emerged on the global stage, the technology received virulent pushback from the formal rice research community, including scientists at the International Rice Research Institute (IRRI). The first part of this paper analyzes the controversy surrounding SRI at the transnational level. This section of the paper demonstrates several challenges at the selection stage of innovation systems in prioritizing the needs of the poorest farmers and demonstrates how the established rice research community engaged in boundary-work to protect their own epistemic authority. The second part of the paper grounds the discussion of SRI in a local context (Bihar, India). The paper finds, that while the physical dimensions of the technology have the potential to benefit the poorest farmers, in Bihar, relatively wealthier farmers are benefiting more from SRI than their poorest neighbors because of limited and expensive access to irrigation, but also because the institutional design of the government’s support policy is not well-targeted at the poorest farmers. These findings demonstrate that even when the physical dimensions of a
technology are “pro-poor,” the ability of the poorest farmers to realize these benefits requires reorienting the entire sociotechnical regime undergirding innovation systems towards the needs of the poorest. The paper concludes that actors on both sides of the ‘rice wars’ fell victim to more general challenges in the selection stage of agricultural innovation systems for meeting the needs of the poorest farmers, including 1) propensity for silver bullet thinking; 2) failure to take into account variance and uncertainty in local conditions, where all agricultural technologies are ultimately applied; 3) selection of technology based on institutional incentives not aligned with the needs of the poorest farmers (e.g. political and professional incentives). The paper offers some potential solutions drawn from science and technology studies for overcoming the challenges of technology selection. These solutions include institutionalizing greater reflexivity into innovation systems through greater focus on framing and distribution.

411

Compliant or complicit? Local institutions, RSPO standards and uneven power relations in Ecuador’s palm oil industry
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National institutions play an important role in the local substantiation and implementation of standards as linked to roundtable governance mechanisms. Environmental governance scholars often advocate for a high degree of ‘institutional fit’ or compatibility between the standards and locality for successful institutionalization. For example, in certification mechanisms such as the Roundtable on Sustainable Palm Oil (RSPO), high priority is placed on the compatibility and more importantly, compliance with local laws and regulations for standards entrenchment. Such emphasis rests on the assumption that local institutions properly and fairly represent all social groups evenly. This paper questions whether compatibility or fit between standards and a locality should be a major goal in global sustainability standards adoption. It is argued that in seeking ways to introduce, entrench, and facilitate RSPO standard legitimation in localities, little attention is given to the ways in which pre-existing local institutions underserve and/or exclude vulnerable populations. Furthermore it is argued that in aiming to connect with, and adhere to local institutions, in highly divisive societies, RSPO standards risk being complicit in the reproduction of unequal power relations in environmental governance over time. Drawing on research findings on the interpretation and adoption of RSPO standards in Ecuador, this paper examines how local RSPO legitimization processes connected very well with the existing (unequal) social, environmental, and political landscape of Ecuador’s palm oil industry; unfortunately, this ultimately worked to reinscribe the (long-standing) exclusion of indigenous and Afro-Ecuadorian groups from palm oil decision-making processes. This paper is based on empirical research findings that were collected over 15 months in 2011-2014, and 2017. Over 80 interviews were conducted with palm oil company employees, small-scale farmers, indigenous peoples, Afro-Ecuadorians, representatives from the Ecuadorian government as well as from Ecuador’s National Palm Oil Cultivator’s Association. The paper concludes with the suggestion that roundtable governance mechanisms should be more aware of the local political contexts of legitimizing countries before standards are consulted upon and adopted.
Panel ID 61

Institutional Interplay and Policy Interaction in Climate Governance

383

Warm to the Idea: Do Extreme Weather Events Compel Countries to Implement More Ambitious Climate Mitigation Policies?

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Meteorological research shows that anthropogenic climate change increases the risk and intensity of extreme weather events such as hurricanes, droughts and sea level rise. The economic and social impacts caused by climate extremes are, however, unevenly distributed across the world. Literatures on public policy and natural hazards management discuss the likelihood of external shocks triggering public action. Governments, however, do not always respond to long-term hazards by introducing new policies. Rather they may respond with denial or continue business as usual. A growing body of research has sought to investigate the particular effect of climate impacts on climate policy. It is ambiguous whether national governments consider the often-lethal effects of extreme weather events such hurricanes, heat waves and floods as a necessary impetus to take further action to curb greenhouse gas emissions. The central aim of this paper is to empirically investigate whether climate change-related natural disasters have an effect on countries’ climate change mitigation policy. Previous studies have shown that municipalities and federated states, which are more exposed to climate impacts, are also more likely to implement more ambitious climate policies. While this potential mechanism has been investigated on the level of local governments, there is a research gap on the level of country governments. Moreover, while most research has relied on in-depth case studies, there is a lack of large analyses. Addressing this knowledge gap, the paper asks the question whether countries that have been more significantly affected by extreme weather events are more likely to take on more ambitious climate change mitigation policies. Specifically, the analysis investigates the effect of yearly extreme weather events on the ambition of climate policy by employing data from the EM-DAT international disasters database and Germanwatch’s Climate Change Performance Index (CCPI) on climate change mitigation policies from 2007 to 2015. The results of the paper contribute to the ever-expanding body of literature on comparative climate politics.

421

Governance, climate action and development: building the triangle

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To cope with climate change in the context of multilevel governance, the phenomenon of collective climate action deserves to be explored. On this matter, it can be said that those who are involved in collective climate action consider that joint action is the only way to deal with the common problem that climate change represents. Climate action can address both climate change mitigation and adaptation, and take many different forms. From this, climate action can be defined as any policy, activity or program focused on reducing greenhouse gases emissions, building resilience to climate change, facilitating adaptation or supporting and financing those objectives. All this presents us with a broadly dynamic and diverse concept, encompassing different forms of organization and action. The present work seeks to understand the dynamics through which the application of climate plans, programs, and projects, inscribed in the framework of polycentric and multilevel Earth System Governance, link with human development in Latin America. To address this study, it is necessary to first investigate the links
between the different categories included in this research objective. Firstly, analyze the close relationship between the phenomenon of climate change and development, understanding the latter through a capabilities approach in multidimensional terms. Secondly, it is necessary to understand the particular characteristics of the problem of climate change, which lead to the construction of a global architecture of polycentric and multilevel governance. Finally, we will address the implications of climate change in the context of the global South, and in particular of Latin America, to start drawing the lines that will allow us to establish the link between climate action in the context of earth systems governance and human development in the region. The hypothesis guiding this research is that the implementation of climate plans, programs and projects has a positive impact on human development in communities by promoting dynamics that increase well-being and freedom in terms of capabilities, such as empowerment, social inclusion, improvements in the quality of life, among others.

432

Policy integration for REDD+: insights from Mexico
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Mexico counts with a national strategy for Reducing Emissions from Deforestation and forest Degradation, plus promoting conservation, sustainable forest management, and enhancement of forest carbon stocks (REDD+). REDD+ is a new form of environmental governance aimed at aligning the views of a variety of actors on how to address the problem of deforestation and forest degradation in developing countries and in such way contribute to climate change mitigation, biodiversity conservation and rural development. According to Mexico’s strategy, REDD+ should be implemented as a set of productive and conservation activities directed toward sustainable rural development and should be informed by a landscape approach. The object of this study is the multilevel forest governance in Mexico during the REDD+ readiness process and the implementation of early REDD+ actions in two federal states, Campeche and Jalisco. We evaluate the effectiveness of the current REDD+ design by examining the level of the integration of Mexico’s REDD+ objectives in land use public policies in terms of their objects, goals, actors, structures/procedures and instruments. We are in particular interested in responding to the following questions: How policy integration has been conceptualised and unfolding in Mexico so far? Whether REDD+ has induced changes in policy framing at the federal and state levels in the country? Starting from 2008, when Mexico entered the REDD+ readiness, we analyse 1) normative and organisational characteristics of cross-sectoral and coordinated policy bodies established to promote synergistic institutional interplay between forest and other land use sectors, and 2) if and how the federal and states of Campeche and Jalisco land use policies and programs have been cancelled or reformed to respond to the objectives of REDD+. A set of qualitative research techniques, including document review and semi-structured interviews with key actors, is employed following a multiscale research design.

447

Breaking out of agriculture and energy policy silos to deliver upon common climate objectives for agri-food system sustainability in the United Kingdom
Emilia Noel Ptak, Morten Graversgaard, Tommy Dalgaard
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Climate change is a crosscutting global issue that challenges the traditional sectoral silo approach to governance and management of agri-food systems. As scientific knowledge of climate change advances, the implications of the impacts demonstrate the interdependency and
complexity of interactions taking place within these systems. Thereby, the validity of existent governance models is called into question as being sufficient to adequately address agri-environmental challenges. Policy integration is recognized as a framework to address crosscutting policy issues. The study explores how advancing cross-sectoral policy integration on agriculture-climate-energy (ACE), can lead to a more holistic governance approach that enhances the capacity of agri-food systems to deliver synergistic environmental benefits. In bringing the otherwise disparate sectors of energy and agriculture together, a place for exploring novel governance modes emerges within the political discourse. The study compares three initiatives in the United Kingdom that promote energy-saving practices within the agriculture sector to reduce greenhouse gas emissions on-farm. Taking a practice-led research approach, the initiatives are examined as governance networks that represent sites of policy interplay. Policy integration theory is combined with network analysis, utilizing quantitative survey responses with qualitative in-depth interviews to discern how network structure and relations demonstrate dynamics of policy integration interplay. A comparative approach is taken to address the diversity of the three initiatives, which each feature a distinct structure, actor roles, and relations, in regards to how the network operates and leads to particular policy implementation outcomes. Mapping the social relations and structure of the network of each initiative elucidates a visual model of the governance architecture on integrating energy and agriculture policies to achieve climate targets. The findings highlights that the initiatives represent social innovation on governance, offering practical insights regarding how policy interplay takes place in practice. Further, the comparative cases study identifies constraining and enabling factors of governance capacity to implement energy-saving practices on-farm that achieve climate objectives through policy integration.

Panel ID 62

Private Governance: Policy Interventions and Public Accountability

325

From reactionaries to activists? Corporate lobbying for high ambition SDGs: understanding how and why private sector actors in Earth System Governance evolve over time

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How do private sector actors in Earth System Governance respond to change and evolve over time? Much literature has documented how, over decades, the private sector has exerted influence to frustrate efforts to strengthen public policy and government action on environmental issues. At the same time, a significant literature has also grown exploring how some private sector actors have worked in polycentric governance networks with others to pursue voluntary standards and private governance initiatives to constructively advance Earth System Governance. In recent years, such action has been complemented by a growing number of empirical examples of some private sector actors actively lobbying governments directly for more ambitious public policy interventions to address environmental challenges, often partnering with campaigning NGOs to jointly advocate for stronger government action. How can we account for this transition among private sector actors from apparent reactionaries to apparent activists? What influences how private sector actors’ involvement in Earth System Governance has evolved over time? To explore this question, this paper looks at the empirical case of corporate involvement in the process to develop the SDGs. What was the private sector calling for
governments to include in the SDGs? How can we account for private sector lobbying for high ambition SDGs? What does that tell us about how private sector actors in Earth System Governance respond to change and evolve over time? Using a critical hermeneutics methodology, the paper examines key documents published by the private sector and statements made at meetings between private sector actors and policymakers during the process to develop the SDGs. The paper additionally examines internal documents and meeting transcripts relating to the negotiation and drafting of private sector position statements. Finally, it draws on interviews with several of the private sector actors involved, exploring their accounts of the meanings that informed their contribution to the process to develop the SDGs. The paper discusses the range of public policy interventions that many of the private sector actors involved in the process to develop the SDGs were lobbying governments to include. The paper offers a constructivist reading of how social change influences the thinking and action of private sector actors over time, drawing on the accounts of some of the private sector actors involved. The paper concludes by discussing implications for the design of global governance architecture.

420
Non-State Agents of Environmental Security: Emerging Sources of Legitimacy and Accountability in Global Environmental Governance
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The concept of “environmental security” is rapidly expanding into global policy debates about environmental change and sustainable development. Connecting environmental issues to concerns about security prompts important questions about who can or should provide security in the face of increasingly complex socio-ecological threats, which often transcend state borders and extend beyond traditional risk calculations. While some scholars warn that securitizing environmental issues might unnecessarily militarize global responses, making solutions exclusionary and non-cooperative, others suggest that linking these two concepts encourages collaborative efforts toward overcoming shared ecological challenges. This paper seeks to extend the “environmental security” debate into conversations about sources of legitimacy and accountability in global environmental governance. Specifically, I am interested in identifying environment-security concepts that are “privatized” by the core tenets of ecological modernization and sustainable development through a case analysis of the water, energy, and food (WEF) security nexus—an approach to sustainability that, I argue, shifts authority over security from state-centric institutions toward private sector organizations. My ultimate goal is to understand whether and to what extent this shift away from state-centrism toward private governance elicits new sources of legitimacy and accountability that are otherwise nonexistent in traditional security apparatuses, and how such new security arrangements reorient the citizen-state relationship within the context of environmental change. My conclusion is that an emerging, transboundary political sphere that governs both security and environmental change constitutes new relationships between agents and referents of security, potentially widening the scope of decision-making power among those who are vulnerable to environment risks.

Panel ID 63
Planetary Boundaries: a lens for global environmental governance

290
The Boundaries of the Planetary Boundaries Approach: A Critical Analysis
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This comprehensive paper analyses, from a critical perspective, the most recent conceptual,
analytical and prescriptive work around the proposition of scientifically decided planetary limits to the "operating space" of human societies, and its proposed relevance as a normative guideline for Earth System Governance. We focus on "planetary boundaries" but review also similar terminology that describes the same idea, such as the older concept of "planetary guardrails" and the concept's most recent incarnation as "earth system targets". After a conceptual and historical introduction into this debate, the paper critically assesses the development of this problematic concept of planetary boundaries over time, emphasizing the many branches that the debate has taken, from the proposal of regional boundaries to a variety of additional boundaries that had not been included in the original exposé of 2009. We then elaborate on the different critiques that the concept had to face since 2009. We cover the conceptual critique from earth scientists – for instance, that quantification is not possible or that the concept in general, or the specific determination of some boundaries, is flawed. We also address the more fundamental critique from civil society, social scientists and humanist scholars, including more general social science and humanist criticisms from Science and Technology Studies that object to expert-driven, technocratic attempts at a sort of Platonian world of a "global expertocracy". Related to the critique from the social sciences and the humanities, we then analyse the real-world political impact of the concept of planetary boundaries, which is strongly linked to the science machinery behind the concept. At the 2012 UN Conference on Sustainable Development, the notion of planetary boundaries became marginalized in the final documents, and the concept has not found entry into the 2015 Sustainable Development Goals as well. Even more, as we argue, the overall integrated and balanced structure of the Sustainable Development Goals is exactly the opposite of what proponents of planetary boundaries had originally proposed. We conclude by a critical assessment of the value and dangers of the planetary boundaries concept, including here the most recent incarnation of this concept in the form of "earth systems targets" or "science-based targets for earth" as they are promoted by the powerful global research alliance "Future Earth" – of which the Earth System Governance Project has become part.

387

**Linking gaps in international environmental law, planetary boundaries and Earth System Governance**

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The report of the United Nations Secretary-General A/73/419 of 30 November 2018 points out a series of important gaps in international environmental law, including the lack of clarity, judicial consensus and recognition in legally binding instruments of environmental principles, the fragmentation of multilateral environmental agreements (MEAs) and institutions, the lack of coherence and synergy among a large body of sectoral regulatory frameworks, the heterogeneity of actors, important coherence and coordination challenges in the governance structure, and the problematic articulation of MEAs and environment-related instruments. The main solution proposed in the report for addressing most of these gaps is the adoption of a single overarching normative framework that sets out the rules and principles of general application in international environmental law. We argue that the gaps report presents itself a major gap: the absence of an Earth system approach that considers the planet as "a single complex system" (W. Steffen). Such an approach, based on the planetary boundaries framework, would present a series of advantages for addressing most of the gaps related to governance. In this paper we contribute to the study of Earth System Governance at the international level by: 1) identifying the essential
elements of the planetary boundaries framework; 2) Analyzing how these elements relate to Earth System Governance and might be useful for addressing the governance-related gaps identified in the Secretary-General’s report: fragmentation and lack of coherence, synergy and collaboration between sectoral legal regimes, institutions and multiple other actors.

Panel ID 64

Market-based Climate Policy

206

The evolution of markets for water pollution allowances in China, a case study of Jiaxing city

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One of the modes of governance, which may be used to combat pollution, is market governance. An example of this is the market for water pollution allowances. The literature suggests that there is a relationship between the institutional design of these markets and their performance. Most studies on the institutional design and performance of markets are cross-sectional, and fail to grasp the dynamics of institutional design. The central question of this paper is how we can understand the evolution of markets for water pollution allowances. To answer this research question we employed a case study strategy. We made an in-depth study of the development of markets for water pollution allowances in Jiaxing, China. The Chinese government embraced market governance as a means to combat environmental pollution, and Jiaxing was one of the first cities in China experimenting with markets for water pollution allowances, and has more than 11 years of experience with these markets. We have made a longitudinal analysis and investigated how the city has responded to observed market failures and external developments, such as changes in national or provincial legal and policy frameworks. Interestingly, Jiaxing city allowed the seven counties within the city to set up their own markets, within the general framework developed by the city. This polycentric structure can be conceived of as an experimental setting, in which various institutional designs are tested. Our research was informed by institutional-economic theory, and the literature on institutional change. To investigate changes in the design and performance of the markets for water pollution allowances in Jiaxing city over time, and to learn more about the key factors which may explain these changes, we have made an analysis of legal and policy documents, and carried out semi-structured interviews with Chinese scholars, government officials and business entrepreneurs who have traded water pollution allowances. The main conclusion of the paper is that market design is a continuous learning process. It took more than a decade to develop well-functioning markets in Jiaxing city, and the design of the markets has been adjusted continuously to solve issues, such as low market participation, and unclear market demarcation. In addition, Jiaxing city responded to changes in national and provincial legislation. As some counties have been more successful in improving market performance than others, there is room for learning across the counties within Jiaxing city.

333

Adopting the Mexican Carbon Tax – Between International and Domestic, Economic and Environmental Influences

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In 2013, Mexico adopted a national carbon tax on oil and coal. The Mexican adoption of a carbon tax is puzzling to the literature that would expect it to be driven by international agreements to address the global problem of climate change, and/or direct benefits to key domestic constituencies and hindered by competitiveness concerns. Yet, at the time of adoption, the
country was not subject to international climate commitments (e.g. the Kyoto Protocol or the Paris Agreement), and constituted a very open economy with its largest trading partner (the US) not likely to adopt carbon pricing, while carbon pricing does not provide domestic constituencies with the kind of direct benefits that renewable energy policies do. To address this puzzle, we apply a theoretical framework covering the influence of international and domestic, economic and environmental factors to the policy processes leading to the adoption of the carbon tax. The framework draws on theories of the policy process as well as theories of policy diffusion. On the basis of qualitative interviews and public documents, we find that the adoption of the carbon tax was mainly driven by a domestic, economic factors. More specifically, a small number of officials working within the ministries of environment and finance promoted the tax. These officials, acting as policy entrepreneurs, shared an educational background in economics, and framed climate change as an economic problem requiring an economic instrument, e.g. a tax. They managed include the carbon tax in the broader policy package constituting a sweeping fiscal reform. The fiscal –rather than environmental – benefits of the carbon tax was key to convincing the rest of government of the advantages of the tax. The carbon tax was adopted by both chambers of the Mexican Congress of the Union, but only after the tax level was lowered and natural gas was exempted due to intense lobbying from the industrial association directed especially at the Chamber of the Deputies. The findings demonstrate the importance of domestic, economic factors as scope conditions for the adoption of carbon taxes. While carbon taxes recently have faced difficulties in industrialised countries, e.g. in France, they are increasingly adopted among emerging economies especially in Latin America. Future research could focus on how respectively economic and environmental factors play out in different types of countries, including developing and industrialised countries.

Panel ID 67

Ocean Governance

134

Flags of convenience pose a problem for international regulation of shipping and, the protection and conservation of the marine environment.

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The flags of convenience refer to flag States with scarce, insufficient or nil maritime regulations on their domestic legislation. The flags of convenience States accomplish neither with the generally accepted international shipping regulations nor standards, such as the United Nations Convention on the Law of the Sea (LOSC) and, the International Maritime Organisation (IMO) regulations and standards. Therefore, flags of convenience have become a threat to the conservation and protection of the marine environment. The flags of convenience pose a multifaceted problem for the international regulation of shipping which concerns economic, safety and security of navigation and, environmental affairs; for example the protection and conservation of the marine environment. This research project highlights the economic implications that flags of convenience present for the shipping industry. In practice, shipowners flagging a flag of convenience obtain economic advantages making their activities more profitable over their competence within the shipping industry, especially, concerning environmental standards and regulations of aged vessels. The allegedly economic benefits of the flags of convenience encourage their practice instead of the compliance with the international regulations and standards of the international regulation of shipping and, the protection and conservation of the marine environment. An increase in international maritime trade and
transport and the search for new resources are now leading to greater human activity at sea, especially, in remote areas. In 2018, it was estimated that only one-eighth of the world’s ocean (thirteen percent), still considered as ‘wilderness,’ is free from the human impact. As shipping increases and, science and technology provide more opportunities to access the seas and oceans, the spectrum of threats to the marine environment increases exponentially. Shipping not only increases the spectrum of threats to the marine environment but also the effects of climate change and global warming into the seas and oceans; which undermines the resilience of the marine environment. Shipping under a flag of convenience is bringing closer the ‘tragedy of the commons’ at sea.

Rising China and Antarctic Futures in the Anthropocene
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This paper examines the question: what will the future of Antarctica look like with a rising China? It first briefly sets out the international legal regime that governs the Antarctic. Next, possible futures of the Antarctic Treaty System (ATS) are examined in the context of China’s rise. The ATS has generally been praised as a success for maintaining peace and security in the Antarctic. Questions have, however, been raised in recent years because no significant new agreement has been concluded under the ATS since the adoption of the Madrid Protocol in 1991. Due to the challenges posed to the Antarctic environment in the Anthropocene, the resilience and the future of the ATS is under increasing scrutiny. The paper thus examines the capacity of the ATS to evolve to respond to global environmental and political change. The paper points out that 2048 and 2052 are critical time points for the future of the ATS. These dates are respectively when the Madrid Protocol’s Mining Ban could potentially be reviewed; and when the duration of the Ross Sea Marine Protected Area comes to an end. The paper then reflects on recent Chinese activities in the Antarctic as well as China’s Antarctic law and policy to determine China’s possible moves in Antarctica, as well as its potential impact on the ATS in the next 30-50 years. China appears to have taken a two-fold approach in Antarctic governance – while China is generally supportive of the ATS, China is also keen to make its mark in shaping future development of the ATS in a manner that promotes China’s interests. The paper thus concludes with an assessment of the capacity of the ATS to address the emerging threats of the Anthropocene in the context of shifting global powers.

Beneficial Institutional Interplay and Institutional Fragmentation
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The prolific literature on the relationship between the trade and environmental regimes suffers from two shortcomings. First, it myopically focuses on multilateral institutions while the vast majority of trade and environmental agreements are bilateral. Second, it examines how the trade and environmental regimes negatively affect each other, leaving aside their potential synergies. Conversely, this article assesses the potential contribution of preferential trade agreements (PTAs) to international environmental law. Several PTAs include a full-fledged chapter devoted to environmental protection and contain detailed commitments on various environmental issue areas. One possible scenario is that countries that are dissatisfied with traditional settings for environmental lawmaking engage in a process of “regime shifting” toward PTAs to move forward on their environmental agenda.
The alternative is that PTAs’ environmental provisions are the result of “tactical linkages” and merely duplicate extant obligations from international environmental law to serve political goals. We shed light on this question by building on two datasets of 690 PTAs and 2342 environmental treaties. We investigate four potential contributions of PTAs to environmental law: the diffusion of multilateral environmental agreements (MEAs), the promotion of existing environmental rules, the design of new environmental rules, and the legal prevalence of MEAs. The article concludes that the trade regime constitutes an echo chamber for international environmental law. It provides to environmental law an image of itself, but not an amplified one.

Institutional benefit pathway: interplay and access dimensions of local institutions in South India’s rainfed agriculture
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This paper furthers theoretical and empirical knowledge on local institutions by examining access to institutionally-mediated benefits in India’s rainfed agriculture. It develops an institutional benefit pathway framework that brings together interplay – the cross-scale institutional interactions and access – the ability to benefit from institutions. Institutional benefit pathways are locations where interplay and access coalesce. They are situations and events where contents, operation and consequences of one institution is affected by another and that determine admission or denial of social groups and individuals to benefits. Using a mix of qualitative and quantitative evidence collected over sixteen months of fieldwork among 212 smallholder households in six villages and over sixty institutions in Telangana, India, I examine the influence of institutional pathways on livelihood and landholdings. I find that the three pathways studied – a state pathway, which is an Initiative for Nutritional Security through Intensive Millets Promotion (INSIMP), a state-civic society pathway providing Integrated Watershed Management Program (IWMP), and an NGO pathway that delivers business services and information, Non-Pesticide Management (NPM) practices and microcredit – generally improved livelihood and landholding conditions. However, these improvements are unevenly distributed even among marginalized social groups. The paper shows that both interplay of local institutions and access to the last-mile institutions are important determinants of benefit access, and livelihood and landholding effects. National level policies strongly affect livelihoods and agro-ecological conditions. However, failure to adequately acknowledge the processes by which target groups access benefits led to social and power relations threatening effective benefit delivery. Civic institutions play supporting roles by filling voids left by public interventions and channel benefits to their constituency. I show how access to benefits unfolds at two levels, at the institutional and at the individual. At the institutional level, interplay mechanisms ranging from cooperation, convergence, competition and coercion determine the range of benefits channeled toward social groups and accountability of institutions. Upon availability of these benefits, I show how new types of access – privileged and marginal, and one new access mechanism – demonstrated interest, determine the ability of individuals to gain institutional benefits. The benefit pathway framework speaks to broader scholarship in environmental governance and sustainability of social-ecological systems by bringing together analysis of cross-scale institutional networks and issues of social relations and power. In this paper, combinations of interplay and access are explained to bolster the framework, identify future research questions, and demonstrate applications in different development projects.
Institutional fragmentation, policy complexity, and the strategies of international organization to address climate risks
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A remarkable trend in recent years is that international organizations (IOs) such as the United Nations Security Council (UNSC) and the World Health Organization (WHO) are increasingly addressing climate risks although their mandates did originally not include climate change. IOs within different issue areas, such as peace and conflict, migration and health, vary extensively to what extent they deal with such risks. This article investigates why IOs within different (traditionally non-climate) issue areas have (or have not) developed strategies to address climate risks over the past decade. To answer this question, the article combines insights from previous literatures on global environmental governance and the population ecology of organizations. These literatures inspire us to argue that IOs are resource-dependent organizations with both principled and strategic preferences to address climate risks. IOs may both seek to solve climate-related problems for the sake of improving the lives of affected people, or because this may increase their own reputation, resources and power if central member states or donors approve. However, IOs face two main constraints to address climate risks: problem complexity and institutional fragmentation. Strategies to overcome these constraints are (a) to collaborate with other global governance institutions to exchange resources (funding, information and power) in mutually beneficial ways, and (b) to (de-)politicize climate risks in relation to their mandates in ways that please central member states or donors who may either prefer IOs to provide technical services or political leadership, trying to gain relevance in governing climate risks globally. The article illustrates this argument by analyzing an original quantitative and qualitative dataset based on an analysis of official documents for United Nations Environment, United Nations High Commissioner for Refugees (UNHCR), and World Health Organization (WHO), as well as 30 qualitative interviews and 61 standardized interviews with staff and member state representatives in these organizations. The analysis contributes to burgeoning literatures on global environmental governance, which have mainly focused on complexity and fragmentation of the global governance architecture, and not on the impacts of institutional environments on individual organizations’ strategies to address climate risks.

Panel ID 77
Agency and Architecture in Earth System Governance

Institutional intermediaries and the commons: an overlooked element of earth systems governance
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Earth systems governance depends on a variety of institutional intermediaries to be effective, yet there is relatively little scholarship exploring how the structure of governance systems impact the work of institutional intermediaries. Institutional intermediaries are those people and organizations that interface between high level governance structures and local people. On the one hand, these actors provide crucial support, translating policy into action and communicating to policy-makers about field challenges. On the other hand, they may subvert policy goals, siphoning off resources to their own goals and consolidating local power systems. We draw from case studies of the management of forests in India and Mexico to develop a typology of types of intermediaries, which differentiates between formal and informal intermediaries, the type of intermediation (i.e. state-market, state-local, market-local), as well as between those
with different sources of financial support and. Our cases show that informal, uncompensated intermediaries frequently play a crucial role in successful earth systems governance, and are frequently uncompensated, or forced to earn compensation through corrupt channels. Greater recognition and support of the role of informal intermediaries in governance could contribute to greater success in policies that aim to support sustainability.

74

The implementation of international agreements: when do treaties matter for domestic environmental legislation?
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While thousands of environment-related treaties have been concluded, it remains unclear whether they have been implemented. This paper investigates the relationship between the conclusion of treaties, namely international environmental agreements (IEAs) and preferential trade agreements (PTAs) that include environmental provisions, and the adoption of domestic environmental legislations. Thanks to datasets that are significantly more comprehensive and fine-grained than those previously used, we can focus on the direct link to environmental legislations rather than the less direct link to environmental outcomes. We are also able to study the relationship between international obligations on specific environmental issue areas and legislation in the same issue areas. As expected, we find a significant and positive relationship between both IEAs and PTAs with domestic legislation. The link between treaties and domestic legislation is more robust for PTAs than for IEAs, more pronounced in developing countries and, in these countries, more pronounced before rather than after entry into force. This relationship can be observed for many specific environmental issue areas, but not all of them. These findings contribute to the literature on environmental regime effectiveness and the domestic impact of treaties.

76

The Performance of Agency in Earth System Governance
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Recognizing agents as “authoritative actors,” we seek to understand how agents enact, conduct and perform agency in Earth System Governance. We acknowledge the iterative and interdependent relationship between becoming authoritative and enacting agency. It is through the process of governing that agents continuously (re-)constitute, secure, maintain and sometimes lose their authority (Heubaum & Biermann, 2015; Orsini, 2012; Partzsch & Ziegler, 2011; Pattberg, 2012). The form of authority that gives rise to agency also enables, shapes or constrains the governance functions and activities that agents can legitimately perform. In this chapter, we foreground what agents do with their authority and how they engage with Earth System Governance through the performance of diverse governance functions. The discussion is based on an analysis of publications in the Earth System Governance-Agency Harvesting Database, a collection of 322 peer-reviewed journal articles published between 2008 and 2016, 254 of which related to the question "How do agents exercise agency?" We identify 20 distinct governance functions performed by agents in Earth System Governance and note that the articles in the Earth System Governance-Agency Harvesting Database have focused most heavily on rule-making and regulation; convening and facilitating participation; and knowledge generation, provision, and sharing. We observe that while the state has remained a central agent in Earth System Governance-Agency scholarship, the functions performed by state agents have diversified, particularly as they engage in partnerships and networks with other types of agents. We
argue that the performance of governance functions is enabled or constrained by structural factors, especially the forms of governance in operation (hierarchies, markets, or networks) as well as the multi-level or multi-scalar dynamics of a particular governance context. We conclude by identifying gaps and areas for future research.

Architectures of Global Governance: A State-of-the-Art Assessment
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The emergence of global governance architectures now constitutes an established phenomenon in world politics. As large web-like structures at the meta-level of governance, architectures shape, enable and at times hinder the functioning of single international institutions as well as clusters of institutions. It is now widely understood that the structure and dynamics of architectures are crucial variables in determining the overall effectiveness of global governance. Therefore, the analytical focus of global governance research is no longer confined to the more limited examination of treaties or regimes and their interaction, but to situations in which an issue area is regulated by multiple institutions and norms in complex settings. Our study presents a state-of-the-art analysis of this new body of literature on architectures of global governance. We first delineate the concept of architecture in the global governance context, and demarcate boundaries between key concepts used to refer to various building blocks of an architecture (e.g., intergovernmental institutions and non-state actors), their key structural features (e.g., regime complexes and fragmentation), as well as policy responses (e.g., integration and orchestration). We then present key findings to the five core research questions presented in the 2009 Science and Implementation Plan of the Earth System Governance Project. These are questions relating to the performance of institutions and governance architectures; overarching or cross-cutting norms that shape the ideational structures of governance architectures; architectural voids or instances of non-governance; the relative performance of different multilevel governance architectures; and interaction between governance architectures from different policy domains. We then continue with a critical reflection of three recent research trends around complexity, dynamics and transformation, as well as associated methodological challenges and advances. We conclude by highlighting the potential political impact that an ‘architecture lens’ invites for a much deeper debate about a new vision on the fundamental restructuring of world politics.

The Earth System: Law and Targets
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Our planet is more than a geographic area spanning 510 million km2. While all planets have a geographic area, only Earth has a unique system intrinsically coupled to the physical planet, capable of sustaining life as we know it. The Earth System is a global and intangible system, that is not recognized by the rigidity of the current international legal system. Planetary Boundaries framework defines the limits that we must not cross if we are to maintain the Earth System in a favorable state - the Safe Operating Space for Humanity. This qualitative and quantitative space is intangible and non-territorial, and constitutes our true global common, existing both across and beyond all borders. The current legal non-existence of the Earth System thus authorizes its unregulated use and the consequent tragedy of the support of life, reduced to the category of externality. A planet outside of this favorable state cannot serve as our ‘Common Home’. Legal
sciences have long recognized the existence of some intangible legal assets as a solution for the protection of certain interests or entities that have become relevant to human societies. UNESCO's intangible cultural heritage, the copyright of intellectual property, or intangible business value are just some examples. The analogy between these intangible legal objects and the Earth System is crucial — not only to represent the global and indivisible functionality of the Earth System in the international community but also to give economic visibility to the real value of the intangible services provided by ecosystems. Just as the legal division between the book and the idea was the fundamental legal concept that underlies the construction of a society based on knowledge, we argue that for the construction of a sustainable society we must build an autonomous legal object capable of representing the Earth System, as support economy capable of giving visibility to the natural intangibles. A system of accounting for positive and negative pressures is needed to change the dominant rule of destruction and consumption as the sole driver of economic growth. And this is only possible if the intangible nature enters into our accounts. For all intents and purposes, what is of vital value to us? The timber or the intangible benefits that forests provide? The objective is to develop a new object of global governance, that will work as a coordination platform where all positive and negative externalities can be aggregated and accounted for.

65

The ethical place of the non-human world in earth system law: pathways of transformation
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Recent trends towards a new conceptualization of law, termed earth system law, are co-evolving with the growth of environmental constitutionalism and changes in environmental rights law. This paper will examine various ways in which the expansion of the ethical community to include the non-human world may inform an emergent earth system law. The paper will survey recent trends in environmental constitutionalism, environmental rights, and case law and evaluate the representation of the non-human in these trends. This paper will argue that if earth system law is something distinct from international and environmental law, then its transformative potential lies at least partially in its ability to articulate alternative approaches to the human-non-human relationship. This is in alignment with the approach of earth jurisprudence and its offshoot of Wild Law, which introduces a novel legality within a unique ethical framework of rights, property and human-earth enhancement within an earth-centric legal philosophy. In accordance with the philosophical approach of earth jurisprudence, earth system law addresses itself to current international law, environmental law and human rights law, which have so far not proved effective in responding to planetary crises. This ineffectiveness demonstrates flaws, gaps and silences which deserve to be addressed. To this end, earth system law may prove more ‘fit for purpose’ than existing anthropocentric law by enhancing justice, adaptability, and sustainability in areas where prevailing regimes of law have failed. The paper will include a comparison of three distinct modes of change toward earth system law: through environmental constitutionalism, through the continued and extended greening of human rights law, and through increasing synergies among diverse regimes of international law. As well, the paper will address philosophical and legal ambiguities arising from these different pathways, including different conceptualizations of ‘personhood’, ‘property’ and legal standing. The pathway of building coherence between diverse regimes of international law is considered to be the most promising, both for addressing the role of the non-human world in law and for instigating transformative changes in development policies
and practices toward improved justice, adaptability and sustainability over time.

A rationale and examples for Earth system targets
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Initiatives to achieve global sustainability paid little attention to the solution space for Earth system components. Although several initiatives have explored the limits and the boundaries of the planet where anthropogenic pressures on the Earth System have reached a scale causing irreversible environmental changes, there is a lack of measures to suitably quantify the biological and physical components of the Earth so that they can continue to provide their life-supporting role for humanity. The solution space for this role has not been approached and large uncertainties exist about the interaction of its elements. These knowledge gaps translate into society by limiting the impact of Earth System Governance, thus threatening human development and sustainability. The interconnections of Earth system components and cycles across scales and their intimate relation with society and the economy call for a complex systems approach to improve the understanding of the overall dynamics. Examples of multi-scale targets on soils, forest cover, freshwater and others are explored and discussed.

Panel ID 79
Climate Change Adaptation at the Local, Regional, and International Levels

Actions and agents in climate change adaptation: evidence from Brazilian cities
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This paper analyzes how Brazilian cities have responded to the climate change challenge in terms of political strategies and institutional arrangements related to adaptation. The main points of analysis are: how the climate adaptation agenda is addressed and framed by these governments; what adaptation strategies are adopted by these cities and how they have been implemented; how adaptation actions merge with other urban strategies; how local level actions interact with other levels of governance (state and national actions); what institutional arrangements have emerged in urban climate governance in these cities and in what ways they act; the role of climate change transnational city-networks; and what can be learned from these experiences in terms of opportunities and barriers to climate change adaptation. This paper's main contribution is to address the knowledge gap on the role of Brazilian cities in climate adaptation governance and on the internalization process of climate adaptation in terms of political strategies and institutional arrangements in Brazilian cities. Brazilian local climate change policies are isolated initiatives within the national context. By 2019, only ten municipalities out of 5,570 had approved their climate policies and only five of them had planned adaptation strategies. We have identified two relevant agents that contributed to adaptation strategies in these cities: the participation in transnational cooperation networks related to climate change, which occurs in all of the cities with climate change policy; and the presence of a municipal climate change forum in these cities, an institutional arrangement that enables the participation of several stakeholders from different segments of society. Our results also showed that most of the local policies focus on the multi-sectoral nature of policy implementation, a relevant characteristic regarding the climate issue since it permeates the different sectors of government action. This point demonstrates a greater understanding of climate change adaptation, which is not strictly related to the environmental issue, but also involves the sectors related to urban
development, built environment, urban infrastructure and services, transport, carbon sequestration, disaster management and health at local level. Most of the identified adaptation actions are related to improvements in infrastructure, mainly regarding urban drainage. Nature-based solutions are still incipient. Barriers regarding climate adaptation include the difficulty to involve other stakeholders in the policy implementation, lack of interaction with other levels of governance and lack of risk and vulnerability studies and climate projections for some areas.

Regional Institutions and Trans-boundary Headwater Governance in Hindu Kush Himalaya: A Transformative Cooperation Framework for Climate Change Adaptation and Disaster Risk Reduction in South Asia
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Hindu Kush Himalaya constitutes headwaters of some of the largest trans-boundary basins of planet that sustain one-fourth global population dependent primarily on subsistence agriculture. Climate change has stressed hydrological regimes of Himalayan headwaters causing substantial decrease in water-availability and increasing frequency of hydrological disasters. This may not only increase proportion of water and food insecure population, but also have enormous regional implications for fundamental human endeavours ranging from poverty alleviation to disaster risk reduction under climate change. A regional institutional cooperation framework is therefore highly imperative not only for adaptation to climate change, but also for peace and security in South Asia. Paper investigates rationale for missing regional cooperation inter-linkages; explore obstructions in initiating effective water diplomacy; and outline regional institutional transformation framework for trans-boundary headwater governance in Himalaya. Comprehensive study of available literature and media reports, interpretation of people’s responses obtained through interviews, interaction with political leadership and government officials across the region formed basis of this study. Study revealed, besides internal and external security threats and long standing conflictual inter-state dynamics; weak regional institutional coordination is important reason for missing regional cooperation in trans-boundary water governance. However, climate change has provided opportunity for transformative role and contributions of regional institutions, such as International Centre for Integrated Mountain Development (ICIMOD); South Asian Association for Regional Cooperation (SAARC); and Asian Development Bank (ADB) in ensuring sustainability, peace and security in South Asia through trans-boundary river-basin cooperation in the era of climate change in Himalaya.

Why do International Organisations Engage with Climate Change Adaptation? The Role of Money, Member States and External Events
Ece Kural
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How and why do intergovernmental organizations (IOs) address climate change adaptation? When does an IO begin conducting adaptation activities (publishing reports, establishing frameworks, working groups, etc.), even if this issue is not a part of its original mandate? These are vital questions as adaptation is calling for global and cross-sectoral responses, with climate impacts having as wide influence areas as economic sectors, human wellbeing and state security. Yet, little is known about climate adaptation architecture and agency beyond UNFCCC. Firstly, to fill this gap, this paper develops a conceptual and analytical framework to measure IO integration with adaptation: constructing a unique dataset across 31 IOs for time period 1990-2017. IOs’ annual reports constitute the base for the content analysis which systematically displays what
these actors have done, with whom, and how much they prioritized climate adaptation. Following this descriptive account, I ask what drives the variations in IO actions, both across actors and across years. Deriving hypotheses from resource exchange, principal-agent theories and theories of power, this study strives to show the factors triggering IO engagement with adaptation. The results reveal substantial variation in institutional change in global climate adaptation governance across issue areas, IOs, and over time. The findings seek to push theories of institutional change, international organizations and fragmentation in global environmental governance forward.

Panel ID 80

Multilateral Environmental Agreements: dynamics of participation and withdrawal

Who is the public in climate change decisions

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IASS POTSDAM, Potsdam, Germany. La Ruta del Clima, San Jose, Costa Rica

Climate Change is a matter of concern for people and organizations from across the world as it affects their well-being, human rights and defines their future. The United Nations Framework Convention on Climate Change (UNFCCC) is under a process of operationalizing Human Rights and the right of the public to participate in decision making has become a relevant issue. The normative framework provided by the UNFCCC is a key factor that defines who can become the public and influences how it emerges, participates and represents. This paper uses a mixed research method (Creswell, 2008, p. 22) to better understand the topic of research and begin to uncover some of its general traits. (Bernard H., 2017, p. 68) A doctrinal research (Duncan & Hutchinson, 2012, pp. 83-119) is conducted on Human Rights Law, UNHRC Resolutions, UNFCCC COP Decisions, Public Participation Regional Treaties, and Climate Change International Treaties. Also, an archival research was conducted regarding the participation records of the NGO’s at the climate conferences and participant observation (Bernard H., 2017, p. 448) of COP23 1, SB48, COP24 2. The paper looks into detail on the legal structures that define the exercise of the right of public participation in the UNFCCC proceedings and contrast this with participant data. There is a need to explore the role of NGOs within the UNFCCC and, tackle the regional unbalanced representation of the global south to strengthen the legitimacy of this deliberative forum. And, to consider the human rights implications of current procedural formats that shape who can participate and represent rightsholders.

60

Fit for transformation? An assessment of the UN climate change regime’s efforts to integrate transnational actors

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This paper assesses how the UN climate change regime has evolved to integrate transnational actors and whether the emerging institutional arrangements are fit for purpose to facilitate and bring about the transformational processes of change that are required to achieve the goals of the Paris Agreement. In so doing, the paper focuses on transnational climate governance initiatives, understood as cross-border alliances of sub-national and non-state actors which explicitly seek to mobilise their members’ climate action potential. The paper pays specific attention to the Marrakech Partnership for Global Climate Action and the Global Climate Action Portal, also known as the Non-State Actor Zone for Climate Action (NAZCA), as structures which seek to link the inter-state with the transnational sphere of engagement within the United Nations Framework Convention on Climate Change (UNFCCC). The aim of the paper is to set out a model of climate change transformations which can
contribute to developing a better understanding of how top-down state-driven interventions may be combined with bottom-up climate action to achieve the fast, deep and systemic changes implied by an effective global response to climate change. In so doing, the paper addresses two key aspects of current debates on global climate governance, namely: (a) the growing recognition of sub-national and non-state actors as central participants and stakeholders in the global effort to address climate change, and (b) the framing of the climate crisis as a transformation challenge. The paper draws on interview and document data as well as observational data collected at the twenty-fourth Conference of the Parties to the UNFCCC in Katowice in December 2018. Building on the concept of transformations and focusing on the architecture of the UN climate change regime, the paper is relevant to the main theme of the 2019 Mexico Conference on Earth System Governance and falls within the ‘Architecture and Agency’ conference stream.

73

Does institutional proliferation undermine cooperation? Evidence from climate change

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Studies of international climate politics have tended to focus on the United Nations-led climate governance process centered at the UNFCCC. Partially as a reaction to this UN-centrism, a budding field of research on transnational climate governance and the intersection of climate change with other issue-areas has emerged. Yet, in building this fuller picture of climate governance, scholars have overlooked the proliferation of climate institutions with state members in recent years. By the time states met in 2015 to negotiate the Paris Agreement on Climate Change, states had created over 65 different international institutions to govern climate change. I create a new dataset of state membership in climate institutions and use it to assess how states use dense institutional environments to support or undermine international cooperation. Theories of international cooperation are divided as to whether the increasing number of international institutions within individual issue-areas facilitates or hinders cooperation. Existing theories argue states create new institutions when they are dissatisfied with outcomes in existing forums. However, the nature of this dissatisfaction remains undertheorized. I argue states may be dissatisfied when cooperation proceeds too slowly as well as when it proceeds too quickly. Both evaluations may lead states to join outside institutions in attempts to alter the trajectory of governance, but different types of states will choose different institutional strategies. I develop a new measure of participation based on state membership in climate institutions using a statistical measurement model to extract both of these motivations. I evaluate this argument by leveraging a unique feature of the Paris Agreement, wherein countries selected their own policy targets. I find that membership in climate institutions designed to facilitate implementation is associated with more ambitious targets, while membership in general is unrelated to the stringency of Paris targets.

108

Withdrawing From Common Goods: Exiting Multilateral Environmental Agreements

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Empirical evidence from a broad sample of multilateral treaties suggests that from 1975 to 2005, one state withdrew from a treaty commitment roughly every ten days (Helfer 2005). Yet, we know little of the general conditions under which states engage in treaty withdrawal, other than suspicions that the costs of remaining in the regime must outweigh the benefits (Helfer 2005) or of treaty exit patterns specific to multilateral environmental agreements. Understanding the rationales behind treaty-withdrawals in the area of international environmental cooperation is especially important given the far-reaching (and trans-national) consequences of non-cooperative environmental outcomes. While states withdraw from international agreements for multiple reasons, including war or supersession by another treaty (Tobin 1967), the primary concern of this paper is withdrawal after notice is given by one or more of the parties. In this paper, we introduce a theoretical framework for understanding international treaty exit and apply it to the case of withdrawal from multilateral environmental agreements. We identify five rationales for treaty withdrawals—cost distribution, success, relevance, inciting new cooperation, and incidental effects. In more detail, we argue that states use withdrawal procedures to leave international treaties when they perceive the distribution of costs as unfair, they believe the treaty will not meet its goals or that they will not meet their obligations under the treaty, they feel the treaty is no longer relevant or its rules have fallen out of favour, they desire to pre-empt a new treaty regime, another treaty withdrawal has incidental withdrawal effects. States may withdraw from a given treaty for one or a combination of several of these reasons. We present an original dataset on treaty withdrawals from multilateral environmental agreements spanning 1945 to 2014 and apply our theoretical explanations to four cases of withdrawal from four multilateral environmental agreements: the Kyoto Protocol, the Paris Agreement, the United Nations Convention to Combat Desertification, and the International Whaling Commission. Our analysis is informed by stakeholder interviews, primary, and secondary sources. By evaluating incidents of states leaving their international treaty commitments, this paper provides an important look at when and why states cease to cooperate.

Panel ID 81

Looking back to MDGs, forward-looking to SDGs

Institutional mechanisms for governing the water-energy-food nexus: mediating competing interests and fostering policy coherence in rural Mexico

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The 2030 Agenda has set an ambitious vision for human development in times of global environmental change and earth system transformation. In the Agenda’s networked system of targets, policy sectors do not stand isolated. Instead, synergies and tradeoffs exist between the SDGs. The proposed paper seeks to contribute to the debate on how governance architectures should be designed and what forms of agency are needed to ensure the coherent implementation of the 2030 Agenda. To do so, it focuses on the Water-Energy-Food (WEF) nexus under conditions of water scarcity and land degradation using Mexico as a case study. Mexico has demonstrated a high level of commitment to the 2030 Agenda - evident through high-level political support and the incorporation of the Agenda’s objectives into the national development framework. Furthermore, Mexico has experience in cross-sectorial coordination mechanisms at sub-national level to deal with water scarcity and land degradation. One example is the National Water Law, which adopted innovative approaches such as sustainable management, integral planning and Basin
Councils as early as 1992. At the same time, 58% of Mexico’s national territory consist of drylands with problems related to water and land resource use, competition and availability posing obstacles to human development and threatening societal peace. Our case study on Mexico provides insights into how trade-offs between the SDGs closely linked to the WEF Nexus (particularly SDG 2, 6, 7, 15 and 16) manifest in the local context and are being dealt with. To this end, Mexico’s existing institutional arrangements, coordinating mechanisms and policy instruments are analyzed both at the national as well as at sub-national level in one of Mexico’s most water scarce and land degraded regions. Drawing on expert interviews and a Social Network Analysis (SNA) of communication between WEF-stakeholders, this paper seeks to answer the question whether and how existing institutional arrangements contribute to promoting a coherent implementation of policies and strategies that are relevant for achieving WEF security and for dealing with the related trade-offs in a sustainable and socially just manner. Specifically, the paper will address the following research questions: Which governance mechanisms of cross-sectoral coordination exist for an integrated implementation of the SDGs at national and sub-national level? How do these mechanisms address the challenge of inter-sectoral and multi-level coordination in provision of WEF-Nexus securities? Can policy coordination and institutional learning between sub-national coordination mechanisms and national SDG implementation arrangements be observed?

Since the establishment of the United Nations Environment Programme (UNEP) in 1972, the United Nations (UN) has been increasing its scope and effort as an orchestrator for all three pillars of sustainable development (economic, social, and environmental). Unfortunately, the significant rise in effort has been accompanied by a simultaneous rise in the world’s ecological footprint, a problem that would make all other economic and social concerns unmanageable due to an unprecedented ecological collapse if it remains unsolved. Given the worldwide increase in awareness and collective action that has taken place since the Millennium Development Goals (MDGs) were launched in 2000, and redoubled by the Sustainable Development Goals (SDGs) in 2015, we should be seeing more tangible results at this point. Yet only partial progress has been made in most areas. The lack of tangible results, or low solution element effectiveness, points to shortcomings in the UN problem-solving process. This situation has not escaped the attention of the UN even at the highest levels, as reflected by repeated calls for reform. However, despite the pervasive feeling that something needs to change, there is little consensus of what a reform would mean in practice. Applying tools widely used in business and engineering, principally formal root cause analysis and model-based analysis, we evaluate the UN’s problem-solving process maturity. The central finding is that the UN is using certain tools in their process which the evidence shows are not working, such as goal setting through Logical Framework Approach and Results Based Management. More appropriate would be the tool of problem-solving process maturity, which has long been known in the business world to be the key driver for solving otherwise impossible-to-solve problems involving large complex systems. This analysis suggests it is possible to apply the tool of problem-solving process maturity to the types of problems the UN tries to solve. In particular, this work concludes that a very small number of crucial changes to the present UN
process are all that is necessary to initiate a mode change from low solution effectiveness to high solution effectiveness. We base this conclusion on how well these tools and formal process maturity management have worked for industry on somewhat similar problems.

84

Process-driven Problem Solving with Root Cause Analysis: Adapting powerful business tools to fit the sustainability problem
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Two of the most powerful tools in the business world are process-driven problem solving and root cause analysis. These tools are routinely used to solve difficult problems of any type, with a track record of astounding success. However, there’s a catch. The tools have only been applied to business and technical problems. They have never been applied to social problems, such as sustainability. This paper serves as a progress report on the research results of Thwink.org, which has been attempting since 2001 to adapt these tools to fit social problems. The result is the System Improvement Process (SIP), a generic process designed from scratch to solve difficult large-scale social problems of any type. At the heart of SIP lies a systematic approach for using root cause analysis to find the main root causes of a problem and the high leverage points for resolving those root causes, using subproblem decomposition, social force diagrams, and system dynamics feedback loop simulation modeling. Solution elements are then designed to push on the high leverage points. The effect is fairly predictable, since the simulation models can roughly predict, on a qualitative or quantitative bases, how the system will respond to focused efforts to push on the high leverage points. Research results consist of SIP, a preliminary analysis, a large body of descriptive material, a paper on Change Resistance as the Crux of the Environmental Sustainability Problem, and just this year, preliminary studies on the effectiveness of portions of a solution element called Politician Truth Ratings. Perhaps the most interesting aspect of this body of work is it represents a new paradigm for achieving successful Earth System Governance. This new way of thinking begins with the premise that “All problems arise from their root causes.” Current problem-solving approaches contain no concept of finding and resolving root causes, which appears to explain the poor results to date on solving difficult systemic problems like climate change and achieving the UN SDGs.

Panel ID 82

Non-State Actors: voluntary Initiatives, Business, Private Governance

18

Exploring the prospect for a sectoral decarbonization club in the steel industry
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Meeting the well below 2°C target adopted in the Paris Agreement requires the decarbonization of global economies and societies early in the second half of the century. Emission intensive industries play a central role in this monumental transformation challenge. The sector merits special attention also in terms of the provision of international governance. First, emission intensive industries are at the core of competitiveness concerns that have historically hampered ambitious climate policies. Second, sustainable alternatives are much less developed than e.g. in the power sector. And third, previous analysis has shown that the potential for international governance to support decarbonization in the sector remains vastly underutilized. A dedicated sectoral vision/roadmap has not been institutionalized with a high degree of authority/legitimacy at the international level, the level of transparency and accountability is low, global governance initiatives on innovation rarely focus
on emission intensive industries, and knowledge creation and dissemination provided by various institutions does not meet the much greater demands e.g. for R&D of decarbonized production technologies or low-carbon alternatives. Given this apparent gap in global climate governance, it is the aim of this study, to explore how and to what extent sectoral decarbonization club(s) can contribute to closing those gaps towards decarbonizing emission intensive industries. Based on a series of interviews with stakeholders from companies, trade associations, (sub-)national governments, and CSOs we will explore different “club goods” that provide an incentive to join a club (e.g. intensification and coordination of cooperation on technology and innovation, risk sharing arrangements for high capex, high risk investments in demonstration plants, coordination on hydrogen infrastructure) and review potential roles for different actors. On that basis we prepare a template for a sectoral decarbonization club.

45

Sustainability leaders in the global south: explaining the rise of “green” tea companies in China and Sri Lanka

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The role of business agency in Earth System Governance is increasingly acknowledged. For example, there is a growing literature identifying micro-level mechanisms within firms explaining the engagement of particular firms in environmentally friendly and socially responsible practices. To date, this literature has largely focused on Northern companies. When Southern companies are considered at all, they tend to be cast as, at best, rule-takers and, at worst, rule-breakers. But our research suggests that some Southern businesses have become strong advocates of sustainability, proactively considering sustainability as not only an upgrading strategy in global value chains, but also a necessary contribution to society and future generations. Based on original interviews with company management and other stakeholders in the Chinese and Sri Lankan tea industries, we compare two companies widely considered to be sustainability leaders in their respective industries. The tea industry has earned itself a bad reputation with many recent studies highlighting poor social and ecological practices amongst its Southern producers. As such, the presence of forward thinking, large-scale producers presents something of a puzzle. Why have these companies become sustainability leaders and to what extent might their experiences inform efforts to create more sustainable business models in fast-growing emerging markets? Through in-depth studies of two companies in very different socio-political and economic contexts, our research inductively identifies the key factors driving the emergence of sustainability strategies and norms in these companies. Drawing on theories from business management and political economy, we unravel the histories of the two companies and unpick the relative influence of internal and external factors. While not completely discounting the role of external pressure and industry structures, we find that ideational change, as opposed to strategic choice, among top managers to embrace sustainability as the core value of their business has been the most critical factor accounting for continuous commitment of these companies to sustainability practices. We therefore suggest that norm change has the most potential to fundamentally transform business practices in emerging markets towards supporting sustainable development goals.

97

Enabling Climate Action Through Catalytic Amplification: When And Why Do Non-State Actors Join Climate Initiatives?

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Climate change is a wicked problem with no simple solution. To address climate change, there is the need for cooperation on the level of communities, industries and entire states to bring about collective climate action. While existing literature in the field has contributed to an understanding of multi-level and bottom-up governance, the role of non-state climate initiatives and their key functions is less well understood. Considering the increasing importance of non-state initiatives in the climate field, understanding on a micro-level how and why non-state actors engage in joint climate actions is of high importance. Indeed, climate action can only be successful if we consider both state and non-state actors as well as their willingness to collaborate and engage in partnerships. However, the question of when and why non-state actors voluntarily join climate initiatives remains open. This paper analyses why non-state actors engage in climate action through joint initiatives in a domestic setting, in the Post-Paris context. In this vein, we draw on a case study of four different Swedish climate initiatives: 1) Fossil Free Sweden, a state-initiated platform which brings together multiple stakeholders with the goal of making Sweden a fossil fuel free nation, 2) the Haga Initiative, which is targeting decarbonisation in the private sector, 3) Klimatkommunerna, an initiative that is fostering climate action by cities and regions and lastly 4) KlimatSverige, which rallies civil society actors around the goal of a fossil-free and sustainable Sweden by 2030. Looking at these initiatives will not only help us to understand how and why such initiatives form, but also which role Sweden as a state plays as a broker, facilitator or orchestrator of climate action. Through a questionnaire and interviews with key stakeholders, we explore strategic and legitimacy-based explanations for why non-state actors participate in these initiatives. The results point to the importance of catalytic amplification as a theoretical phenomenon, in the debate on how climate action works and why non-state actors engage in voluntary initiatives. The conclusions draw out the broader implications of our findings for the effectiveness of non-state actions to contribute to bridging the emissions gap.

101
Influence of private governance schemes for green bond standard on national policy making
Toyo Kawabata
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Literature concerning the shift of authority in climate governance highlights that a growing number of transnational actors play an authoritative role in policy-making of climate change, which was traditionally covered by public authorities such as governments and inter-governmental organizations. While scholarly attention of the private governance has been centered on the creation of voluntary self-regulation schemes, another form of emergent private governance scheme can be a guiding role of private schemes to policy-making of public authority. This paper considers how and why voluntary self-regulation schemes make an influence on the public authority’s policy-making, examining the case of the private and national standards for the green bond. As climate finance flow is still far behind from that is required in the Paris Agreement, there is growing interest in the green bond among actors in climate governance as a potential source to bridge the financing gap. There are several private governance schemes for green bonds, among which two notable schemes include the Green Bond Principles (GBP) developed by the International Capital Market Association (ICMA) and the Climate Bond Standard (CBS) drafted by the Climate Bond Initiatives (CBI). GBP and CBI have been frequently referred to as a benchmark to meet the required level of transparency and integrity of disclosed information that will be reported by issuers to investors and multi-stakeholders, despite that both are only voluntary schemes developed by non-
state actors. Furthermore, those voluntary schemes are used as guidance for the development of national green bond standards in several countries such as Brazil, China, Japan, and EU. Considering this, the paper hypothesizes that transnational voluntary schemes that are adopted by a number of stakeholders could bring a guiding impact on national policy-making. This hypothesis is examined through the paper as follows. Firstly, the theory of private governance schemes is reviewed to depict the analytical framework on the shift of authority. Following that, the paper discusses the institutional interplay between several private governance schemes for green bond, underlining the benign characteristic of global discussion on green bond. Then, a case study illustrates that the outcome of the interplay forms the solid ground for the uptake of the private green bond standard as a guiding standard for national policy-making. The argument gives implication on how to leverage private governance schemes of green bond for exploring not only climate finance flow but also finance flow for the Sustainable Development Goals (SDGs).

Panel ID 83

Problematizing Knowledge/Power Relations, Marketization and Knowledge Production, Capital Space, and the World Politics

36

green international relations: taking sustainability seriously
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This paper proposes a “new” international relations (IR) theory, or rather one that was proposed in the 1990s but abandoned by the side of the IR road for no good reason I can think of, except perhaps a vicious cycle of promoting mainstream theories in graduate schools, journals, and conferences. This new IR theory is informed by Green Political Theory (GPT) and some important challenges from Burke et al.’s (2016) manifesto for “Planet Politics” who rightfully argue that IR has failed to take ecological change seriously. Green IR has four main tenets: it asserts that there is no society without ecological support systems, that non-human nations matter, that the world is radically inter-dependent, and that the Children of Modernity: state system, capitalism, individualization, modern science all carry a heavy price. Green IR is also very critical of blind growth which can undermine the preconditions of human and non-human existence. Another way to put all of this, is that Green IR takes “true” sustainability seriously. Sustainability is “essentially contested” but there are agreed upon core principles, and these principles are systematically ignored by current IR theory. Thus, it is not surprising that the current core social and political systems are also unraveling critical life support systems—such as causing the Sixth Great Extinction and climate change. I will make two broad claims. First, I make an instrumental claim—that GPT explains existential problems facing global populations even though IR has generally treated these problems of sustainability as trivial or specialty areas unremarkable to the general work of IR theory and global governance. I argue here that Earth systems and cycles are elemental to material power, wherever it is held. I will argue that “sustainability” matters to world politics in multiple ways. Second, I will argue that GPT can explain the loss of critical ecological life supports by the fetish of economic growth, rarely questioned in IR theory but often taken for granted as a beneficent element of a strong economy/economies. The general proposition for a Green IR addresses two main themes of the conference: Architecture and Agency, and Democracy and Power. Green IR criticizes the structural arrangement of world politics, argues that there are agents (non-human persons) we should not ignore, and challenges modernity’s privilege out of a hope for a
world that is still “full” with diverse communities and robust systems.

85
Understanding priorities in wetlands’ ecological restoration as a boundary object for environmental policies
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Wetlands provide numerous ecosystem services such as flood control, water purification, habitat provision for a wide range of species and recreational opportunities but over the past century they have faced drastic decrease worldwide. In the province of Quebec, Saint-Laurent lowlands have lost 19% of their wetlands between 1990 and 2011. The No Net Loss principle, which emerged at the end of the 1980s in the United States, ensures that the impacts on biodiversity caused by a development project are outweighed by measures taken to avoid and minimise the project’s impacts, to undertake on-site restoration and finally to offset the residual impacts, so that no loss remains. In 2018, the Quebec National Assembly has introduced an offset policy concerning wetlands and streams through the mean of a financial contribution paid by developers. The amounts received contribute to a fund for the restoration or creation of similar ecosystems. Within this framework, we aim to analyse stakeholders’ roles and better understand the implications of their decisions on wetlands’ management. In order to study this complex socio-ecological system and to look into dynamic, multi-scales, multi-stakeholders decision-making processes, we investigate stakeholders’ perceptions through the fuzzy cognitive mapping approach. We conduct semi-structured interviews among various stakeholders related to integrated water management (municipalities, indigenous communities, NGOs, enterprises, farmers, etc.) in two distinct watersheds. This survey should highlight the different parameters that they take into account when selecting sites for restoration. These criteria may be linked to different socio-ecological characteristics (type of wetlands, ecological functions or ecosystem services provided, degree of impact, type of pressures, land prices, restoration techniques’ costs, demographic characteristics of nearby populations, existing environmental consultancies or enterprises, etc.). Sites’ selection is influenced by complex networks across sectors, scales and decision-making arenas. Priorities in wetlands’ ecological restoration will be the result of the implementation of related environmental policies such as conservation programs, biodiversity offsetting policy, sustainable development plan. This regulatory evolution questions current visions of territorial development and unveils power disparities among agents.

100
Power/knowledge in socio-ecological systems: A case study on the ecovillage discourse in Senegal
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The governance of socio-ecological systems is often conceived as the quest for the institutional setting most suited to restore and sustain its resilience over time. Indeed, resilience thinking has grown into a dominant paradigm to study human-nature interactions, but questions have been raised concerning its lack of concern for power dynamics. However, without power analysis, it takes the risk of remaining apolitical, ahistorical and highly normative, leading to simplified institutional prescriptions to multi-dimensional problems. To answer this gap, this paper explores how the work of Michel Foucault on power/knowledge and discursive power can contribute to socio-ecological governance and resilience theory. First, building upon evolutionary governance theory and transition theory, a conceptual framework is developed to study discourses and power in socio-ecological systems. The framework is composed of several core analytical units: an epistemic landscape,
actor/institution configurations, and components of natural capital. The agents of the social system are interconnected by discursive flows, while the social-ecological interaction is conceptualized as a bi-directional flow of contributions (nature’s contributions to people; and people’s contributions to nature). Actors are further situated along a niche-regime continuum depending on the type of power they exercise in the system (innovative, reinforcing or transformative power). Second, through a case study approach based on an operationalization protocol, the framework is applied to the ecovillage discourse in Senegal. Throughout Sub-Saharan Africa, ecovillages are emerging as new sites of politics, where creative adaptation to climate change and regenerative cultures are being experimented. The ecovillage discourse is structured as a global epistemic community focused on establishing communal and ecological solutions from the ‘bottom-up’. These innovative structures are implemented in Senegal through multiple institutions: a governmental agency, environmental NGOs, and religious communities; thereby creating complex forms of agency and governance of ecovillage implementation. Through ethnographic and qualitative analysis, the framework application to the ecovillage discourse exposes divergent uses of the ecovillage concept and strategies of implementation by diverse actors. Comparing 4 social-ecological practices in 3 different ecovillages (agroecology, reforestation, waste management and renewable energies), the analysis demonstrates how discursive divergence lead to contrasting impacts upon people’s livelihoods. Based on the results, the discussion section explores insights on power/knowledge configurations in socio-ecological systems, such as factors affecting learning and adaptation processes and the governance of (dis)empowerment. Finally, methodological and theoretical recommendations for future research are formulated, based on the framework achievements and drawbacks throughout the research process.

106

A Wilderness, If You Can Keep It: Natural Capital and the Reproduction of Neoliberal Space

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The growth of neoliberalism as an economic ideology has been accompanied by a radical restructuring of both public and private spaces. Around the globe, the expansion of the neoliberal project has led to the creation of new spaces of capital in natural environments. Such a process dramatically alters the relationship between people and the land, erasing the cultural and environmental dimensions of this relationship and recreating it as purely a source of natural capital. This reinterpretation of land and natural resources as natural capital is a central part of the capitalist-neoliberal project. This paper traces the role that the neoliberal expansion of municipal water supplies plays in the recreation of capitalist spaces. It situates this process within a historical context of premodern, imperial infrastructure projects and popular imaginings of wild spaces, drawing on both as a means of better understanding the contemporary relationship of capital to the natural environment. Further, it examines the role of two contemporary processes—marketization and knowledge production—in sustaining and perpetuating the terms of this relationship through the particular terms of their engagement with the landscape. Finally, this paper examines the dialectic between large cities and their peripheries through the proxies of development and wilderness, in which cities are simultaneously dependent on the resources that they extract from their peripheries, even as they incorporate these regions into themselves through urban growth.
Panel ID 84

Flood Risk Management

114

Understanding inter-municipal conflict and cooperation on urban flood risk policies in the Metropolitan City of Milan
Corinne Vitale, Sander Meijerink
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Because floodplain occupancy and climate change have increased flood risk in many cities around the globe, flood risk management policies aim at enhancing urban flood resilience. Urban resilience to river flooding often requires coordination of policies between upstream and downstream municipalities within a river basin. As an example, the realization of a retention basin within a municipality, which is situated in the upstream part of a river basin, may enhance flood resilience in a downstream municipality. The central question of this paper is how we can understand the interactions between upstream and downstream municipalities on urban flood risk policies. To answer this research question we employed a case study strategy and made an in-depth study of inter-municipal conflict and cooperation in the Seveso River Basin on the realization of retention basins to reduce the hydraulic risk affecting the Metropolitan City of Milan (Italy). Our analysis was informed by Ostrom’s Institutional Analysis and Development (IAD)-framework and Mirumachi’s Transboundary Waters Interaction NexuS (TWINS)-theory. Whereas the IAD-framework has been helpful in analyzing the characteristics of and rules guiding and regulating the interactions within the relevant action arenas, the TWINS-theory enabled us to study the role of power in understanding patterns of inter-municipal conflict and cooperation. We have carried out a document and media analysis as well as 20 interviews. The qualitative coding of these data aimed at defining relevant action arenas, attributes of the community of actors involved in urban flood risk management, types of rules-in-use, relevant contextual factors, patterns of interaction, and power relations. The main findings of our analysis are that a combination of contextual factors (such as the urban morphology), attributes of the community of actors involved in decision making (for instance the strong inclination towards realizing engineering solutions to flood risks), and institutional factors (such as the authority and financial resources of the region) may explain why retention basins are pushed as the main solution to reduce the hydraulic risk in the city of Milan. The case study illustrates that the downstream city of Milan – with the support of Lombardia Region – imposes this engineering resilience solution on upstream municipalities. This is in accordance with the TWINS-theory, which argues that other sources of power may be more important to understand upstream-downstream interactions than the upstream or downstream position within a river basin.

115

The architecture of collaborative governance regimes in Dutch flood risk management
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The safety standards for flood protection in the Netherlands have been updated recently. It is expected that most flood protection infrastructure will have to be reinforced to meet the new standards. The Dutch government aims at accomplishing this task through innovative integrated projects in which investments in flood safety are coordinated with spatial agendas, nature development or other sectoral objectives. The planning and implementation of such integrated projects is challenging given the sectoral silos and differences in sectoral interests, objectives, and decision making procedures. Establishing collaboration within this polycentric structure requires effective forms of governance architecture and institutional frameworks. The central question of this paper is which factors
promote or hinder cross-sector collaboration in Dutch flood risk management and, more specifically, how governance and institutional arrangements enhance this collaboration. To answer this research question we have employed a case study strategy. One of the large integrated projects within the Dutch Flood Protection Programme is the project Grebbedijk along the river Nederrijn. In this project various alternatives for realizing the new flood risk standards have been explored by concerned agencies. The integrative framework for collaborative governance is used as an analytical tool to study the project Grebbedijk as a collaborative governance regime with the involved formal/informal agents as regime participants. The process performance of Grebbedijk is studied by analysing the principled engagement (behavioural interaction between the regime participants), shared motivation (interpersonal and relational components of interaction process) and capacity for joint action (cross-functional elements of establishing institutional arrangements and consolidating knowledge and resources). The analysis distinguishes between two levels of analysis: (1) the participant level, and (2) the collaborative governance regime level. Supported by an extensive document analysis, observations made during project meetings as well as a series of in depth interviews, we have assessed the overall performance of collaborative governance regime for the project Grebbedijk. The main conclusion of the analysis at the participant level is that participation contributes to the accomplishment of individual goals and missions of participant agencies in varying degrees. The analysis at the regime level demonstrates that in spite of the capacity of the regime to facilitate collaborative dynamics, power asymmetries between the agencies shape the collaborative dynamics of principled engagement and shared motivation. This may explain why the water authority, which seems to prefer straightforward sectoral rather than more complex integrative solutions, is the dominant agency determining the outcomes of this collaborative governance regime.

120

Adaptation to what for whom? A case study of insurance as governance in the USA National Flood Insurance Program and Community Rating System

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Climate change mitigation has been lackluster globally, resulting in significant adaptation needs. Many in the international community are turning to insurance to drive this adaptation. Most of these international calls for insurance to drive adaptation are for insurance provided through public-private partnerships. Because insurance often functions as governance, the impact of insurance as governance can be analyzed by: (1) determining which tools the insurance program uses; (2) examining what adaptations occur for whom with each tool; and, (3) tracking where the risk lodges as a consequence of the insurance tool and ensuing adaptation.

The National Flood Insurance Program [NFIP] in the USA has been impacting riverine and coastal adaptation for over 50 years. Given the long-term impact of this public-private partnership, the NFIP partnership can shed insight into potential governance challenges and strengths of climate change adaptation through international public-private partnership insurance programs. Using an insurance as governance lens I analyze the NFIP and one of its sub-programs, the Community Rating System [CRS], to determine how both have been and are driving coastal adaptation explicitly and implicitly in Fort Myers, Florida. The NFIP and CRS primarily influence coastal adaptation through the insurance tools of premium reductions, physical infrastructure risk reduction, and refusal/requirement to insure. Due to the predominance of these tools, the costs of the NFIP and CRS accrue to the taxpayers and those in lower risk locations, while
the benefits accrue to those who inhabit high-risk locations. The emphasis on these tools cause the NFIP and CRS to support adaptation in place, even for high risk locations. This keeps high risk properties insurable; enables, and maybe even forces, risk displacement within the risk pool; and, sometimes transfers risk outside the risk pool to the greater public. These findings question the purported ability of insurance, in its current form, to drive climate adaptation. In fact, when the findings are compared to the international calls for insurance driven adaptation, the calls appear more similar to a risk protection mechanism for already existing insurance pools than a means to build climate change adaptation for the poorest and most climate vulnerable.

Panel ID 86
Climate Security, Water Governance, and REDD in Mexico
40

Payments for environmental services (PES) in redd ‘policy mix’: interactions with conditional cash transfers (CCT) in the Mexican lacandona rainforest
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Payment for environmental services (PES) mushroomed since the 1990s as a key strategy to curb forest loss and degradation across the Global South. PES typically provides conditional cash or in-kind incentives for forest conservation, often in short-term contracts. Regardless of the setting, PES are bound to operate among pre-existing policy architectures, including: environmental protection ‘carrot and sticks’; social assistance and poverty-alleviation programmes; and public ranching and agricultural support schemes. In this complex ‘policy-mix’, interactions will surely emerge as participants use their agency to adapt, recraft, and tailor policies in ways that fit their needs, thus creating spaces for (un)expected policy conflicts and synergies to emerge. This paper first builds a framework to better understand interactions between PES and other policies at multiple spatial-temporal scales, framed around the notion of the institutional interplay and laying at the interface between agency and structural constraints. Consequently, based on a case study of four communities in the Mexican Lacandona rainforest - a tropical setting with high deforestation and poverty rates - we apply our framework to empirically examine PES’ interactions with ‘Progres/Oportunidades/Prospera’, a Conditional Cash Transfer (CCT) programme disbursing money to ‘poor’ families conditional on medical attendance and school enrollment. Growing on qualitative research from 2013-2019, we show that PES and CCT interact in meaningful ways and at three simultaneous levels (i.e. household, intra-community, intercommunity), though such interactions are unplanned and largely unknown among programme implementing agencies. Household-level interactions emerge due to extensive programme spatial overlap, with over 75% households enrolled in PES also receiving CCT. However, because of large variations in payment characteristics (i.e. amounts, frequency, timing), PES and CCT tend to play complementary but different roles in household economic strategies: CCT amounts are small, received every two months, and thus are mostly spent on short-term household needs; PES amounts are large, received yearly, and thus are used for longer-term farm and off-farm investments. At the intra- and inter-community level, interactions emerge because PES money from communal forests is often used to finance public spending gaps in schooling and health infrastructure. Overall, our results reveal how PES participants think about their livelihoods at broader spatio-temporal scales than individual policies, which allows them to exert some control on the various policy architectures they encounter. Based on
our evidence, we provide some guidance on how to improve institutional coordination and planning to strengthen synergies between PES and other policies.

122

Climate Security as a Legislative Framework: A case study in Mexico
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Current pledges under the Paris Agreement are insufficient to stay below 2 degrees and it is likely temperatures will raise beyond 3 degrees. With this scenario becoming increasingly probable, vulnerable countries should operate under the paradigm of climate security to manage the unavoidable and to avoid the unmanageable. Under these circumstances, in December 2017, the Special Commission on Climate Change of the Senate of Mexico introduced the topic of climate security in the environmental agenda by proposing a set of modifications to more than 15 laws. The objective was to introduce climate security in strategic areas: (1) enhancing sustainable development implementation by using the law to ensure the protection of the critical natural systems beyond the conventional environmental protection laws. This objective would be directed at framing sustainable development as a national security matter, as unmovable strategic locks in Mexican laws to stop current overexploitation of critical natural systems, as a paradigm for the development agenda and (2) to operationalize adaptation to climate change as a national security priority assuming a 2-3 degree temperature increase scenario. As authors of the aforementioned Climate Security strategy proposal in the Senate of Mexico, the aim of this oral presentation is to introduce the case study, its rationale, the strategy applied throughout the Mexican laws to spark innovative thinking in applying the sustainability-security link in government institutions and policies to guarantee governmental action on both environmental protection and adaptation to climate change.

149

After the hydroelectric dams. Territorial planning, adaptive processes and water governance
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The transformation of a river into a reservoir as a consequence of the establishment of a hydroelectric dam, in addition to involving profound social and environmental transformations and disturbances in nearby communities, also implies a territorial reorganization and the emergence of new forms of water governance. The biophysical composition of the reservoirs also constitutes the emergence of new ways of usufruct the water space, generating a reconfiguration economic for the management and use of water resources, an example of this is the commercial fishing that takes place in the reservoirs, which has positioned itself as a new form of sustenance and as an agency activity in the organization of productive, social, political and cultural activities of the riverside communities, this productive dynamism is not isolated, it is a scenario connected to regional and national scales, which also involves the arrival of new actors interested in the exploitation of the fishing activity a condition that generates the social reorganization of the communities, where complex relations of power are imbricated in the struggle to occupy the hydrosocial territory. This article explores such dynamics in the western region of Mexico, in the "El Cajón" dam located in the Santiago river basin in the state of Nayarit. It examines how the inhabitants mitigate the impacts resulting from the establishment of the hydroelectric plant, how they access their material sources of life and how local and external actors interact and operate, building new rules and forms of control and community environmental governance. In order to respond to this objective, a case study and the
use of ethnographic techniques and tools were carried out, such as non-participant observation, semi-structured interviews and focus groups with diverse local actors. Finally, the analysis process was carried out using the methodology of the grounded theory.

424

A computational model to assess socio-hydrological risk in Mexico City Metropolitan Area
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Computational models represent a useful approach to dynamically simulate feedbacks and interactions among socio-ecological system variables while incorporating methodological uncertainties associated to model structure and functional relationships. Here, we present a computer modeling approach applied to assess socio-hydrological risk (SHR) in Mexico City Metropolitan Area (MCMA). In this context, socio-hydrological risk was measured as the probability of flooding and ponding occurrence in a given time and specific location. We dynamically simulate the integrated effects of watershed runoff, rainfall and sewerage capacity on SHR. To incorporate the impact of watershed runoff on SHR we used a water balance model SCS-CN that relates runoff to land cover type, soil conditions and daily precipitation and evapotranspiration inputs. Water infrastructure attributes such as topology of the sewerage network, infrastructure age and total flow were spatially aggregated and used to model sewerage capacity. Statistical techniques were used to estimate SHR as a function of watershed runoff, rainfall and sewerage capacity. Our results suggest that SHR increased in areas within the MCMA where watershed runoff and rainfall events were more intense. Similarly, increasing sewage capacity through infrastructure building and maintenance reduced SHR. This approach sheds light into the mechanisms that explain patterns of vulnerability in Mexico City Metropolitan Area.
In the past few years, it has become obvious that the existing global governance framework is not sufficient to cope with transboundary sustainability challenges. With reference to the concept of planetary boundaries, it can be argued that humanity is at a critical juncture to identify new sustainability paths for the 21st century and beyond. Consequently, structural changes in global sustainability governance are urgently needed both within and outside United Nations institutions. According to various scholars, international environmental bureaucracies are important actors in facilitating the implementation of multilateral agreements and commitments, but they often lack the resources to adequately fulfill their mandates. In this regard, an important process currently underway is that international bureaucracies, to a growing extent, interact with different types of non-governmental organizations (NGOs) to pursue common policy goals. Staff members of international institutions reach out to local and regional governments, civil society organizations, private companies and foundations in order to find support to fulfill their mandates. At the same time, these actors, on their part, approach international institutions and seek to bring in their expertise and resources to tackle environmental problems. Against this backdrop, this paper raises the question of whether the collaboration between international bureaucracies and NGOs enhances or diminishes the democratic deficit of global institutions for sustainable transformations. Building upon recent scholarship on accountability and legitimacy in Earth System Governance, the paper particularly focuses on the institutional interactions of three intergovernmental treaty secretariats (i.e. the climate secretariat, the biodiversity secretariat and the desertification secretariat) with NGOs. Thus, the paper assesses the implications of the interplay between international bureaucracies and non-governmental organizations for the democratic legitimacy of global sustainability policy-making.

Leapfrogging Democratization: meeting sustainability goals through fundamental democratization leaps

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Research results largely demonstrate democracy’s positive effect on sustainability. At the same time, even established democracies are far from reaching internationally agreed-upon targets, such as those set in the Paris Agreement and the Sustainable Development Goals. When taking into account shrinking timeframes for action, incremental democratization is unlikely to improve democracies’ sustainability performance sufficiently. Against this background, this paper introduces the concept of “leapfrogging democratization”. While much of the current effort in democratization research is spent on analyzing transitions along the autocracy-democracy continuum and on democratic innovations at a small scale or as non-viable blueprints, we know little about fundamental democratization leaps of established democracies omitting single...
reform steps. An illustrative example is provided by Thomas Jefferson’s idea that “the earth belongs in usufruct to the living” and thus every law should expire with those who created it. The actual implementation of this proposal might lead to the adoption of numerous sunset clauses for every law related to the use of natural resources. Each generation would then experience democratic self-efficacy in the act of negotiating fundamental laws on whether path dependencies (e.g., the subsidization of fossil fuels, which is still higher than that of renewable energies worldwide), are compatible with the usufruct principle. This form of step-change democratization that goes beyond incremental reform constitutes a conceptual gap in the literature, which “leapfrogging democratization” aims to fill by identifying democratic means potentially able to improve sustainability performance to the extent needed. The concept formation of “leapfrogging democratization” is derived from a theoretical as well as an empirical angle. First, we define possible drivers, conditions and processes of leapfrogging democratization, using, amongst others, literature on democratic transitions, transformative governance and socio-technical as well as economic leapfrogging. Second, we identify rapid increases of democratic quality in order to isolate empirically elements of leapfrogging democratization. Third, we discuss and relate our theoretically and empirically derived insights to formulate the concept of “leapfrogging democratization”. Lastly, we apply the concept to the conditions of the Anthropocene, outlining entry points for democracies coping with the new kind of planetary challenges ahead, while taking possible side effects into account.

70

Against Sustainability? The Democratic Challenge of Climate Populism
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The eruption of the «yellow vests» movement in France has highlighted the risk that climate policies will meet substantial opposition on the part of those who do not believe that global warming exists or think that there are less costly ways of tackling it. As the mobilization has run parallel with that of Belgian students protesting against the lack of political response to the same problem, a new faultline in Western democracies has become apparent: young versus old, urbanites versus suburbanites and country dwellers, cosmopolitans versus nationalists. How does this resistance to climate policies affect the search for sustainability in the Anthropocene? How can an open conception of sustainability, i.e. one that does not prescribes a single solution to unsustainability and tries to reach solutions through deliberation, deal with climate populism? Should a «militant» conception of sustainability be adopted, as if mirroring the concept of a «militant democracy» that defends itself against its enemies? Or should persuasion and dialogue be preferred, so that climate populists are incorporated into the democratic process and joint solutions to unsustainability are looked for? As it happens, populism is not necessarily alien to environmental concerns - landscapes and resources are, after all, symbolic and material components of the nation they defend. The question follows as to how can this different kind of environmental disposition be incorporated into sustainability debate and governance. Can the environmental dimension of populism reinforce the fight against unsustainability, in a way that reconciles the diverging cosmopolitan and nationalists impulses within contemporary politics? If yes, how? This paper will explore these thorny questions, arguing that sustainability will not be achieved unless climate populism is won over and incorporated into a meta-ideological quest for preventing a bad Anthropocene in which the planet becomes uninhabitable. To such end, different ways of seeing socionatural relations and re-arranging them should find a place in the
Confidence among scholars and policy-makers in the ability of democracies to respond effectively to environmental problems has been shaken by recent shifts in political power. This includes the rise of anti-environmental populism across a range of countries, as well as collective failures to mitigate climate change and reverse biodiversity loss. Yet many authors argue that democratic processes remain essential for ensuring input legitimacy, and there is substantial – although contested – evidence that they also enhance output legitimacy, i.e. that democracies perform better on environmental issues than non-democratic countries. Building on previous scholarship on Earth System Governance and the section on ‘democracy and power’ in the new Earth System Governance Project’s Science and Implementation Plan (2018), this paper charts new directions for research on democracy and power along four dimensions, each corresponding to one of the four contextual conditions set out in the Plan: the Anthropocene, transformations, inequalities and diversity. Across each of these dimensions we survey scholarly literature and policy innovations since 2010. Whereas previous work at the intersection of democracy and Earth System Governance (e.g. Dryzek and Stevenson 2011) focused on the global level, our paper spans intersecting democratic processes from the local to the global, as well as foregrounding the nexus between democracy and power. First, we assess the implications of the Anthropocene for democracy and power. Despite calls for technocratic or authoritarian responses to emblematic problems of the Anthropocene, we argue that democracy takes on renewed importance as democratic interactions prove crucial for the societal rethinking needed to change unsustainable practices. Second, we address the transformations needed to respond to the earth system risks that societies now face. We critically review the role of democratic processes in recent literature and practice on sustainability transformations, and outline the associated implications of technological change (e.g. mobilising social movements for and against action on climate change) for democratic legitimacy and sustainability. Third, we explore the role of institutionalised economic and power inequalities in impeding or accelerating democratic transformations towards sustainability, focusing on populist movements (often driven by real or perceived inequalities), including leaders in the US and Brazil, as well as the gilets jaunes movement in France. Finally, we address diversity and show how different visions of democracy – e.g. the Indian concept of ‘ecological swaraj’ (radical ecological democracy) – and diverse knowledge systems can enrich Earth System Governance, while acknowledging the need to agree on collective responses to earth system risks.

Deploying Environmental Access Rights in Mexico: Indigenous Resistance to Mining Industries
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Are democratic processes up to the task of meeting the major sustainability challenges and might some democratic safeguards be overridden to avoid catastrophe? Such notions harken back to the early years of modern environmentalism when some theorists (e.g. Hardin 1968; Ophuls 1977) wrote that the problems were so severe that authoritarian solutions were necessary. One only has to turn to the work of Scott (1998), for example, to recall the dire results throughout
the 20th century when authoritarian states tried devise technological fixes to societal problems. Over the last five decades, most political scientists believe that for states, democratic decision making will bring about the most effective, long-term sustainability solutions. To this end, the most-widely supported norm the international community has devised is the 1992 Principle 10 (P10) of the Rio Declaration, later embodied in the EU’s Aarhus Convention (1998) and the Latin American and Caribbean region’s Escazú Agreement (2018). The three original environmental rights enumerated in P10 are: access to information, participation, and justice, and the recent Escazú Agreement also included the right to safety for environmental defenders. This paper examines the adoption and implementation of environmental access rights in Mexico starting in the early 1990s, as individual nations in the region began to grapple with the dual challenges of democratization and sustainable development. This was also the time that Mexico joined the North American Free Trade Agreement, the first FTA between countries at different levels of economic development and the first FTA with an environmental side agreement. The Mexican case allows us to ask questions such as: 1) what is the role of a supranational organizations (i.e. NAFTA and its Commission on Environmental Cooperation) in promoting adoption of these rights? 2) To what extent did the three P10 rights, access to information, participation, and justice become implemented in Mexico since the mid-1990s? Using process tracing through several presidential administrations, I analyze how these institutions were created and the extent to which they have contributed to expanding democratic quality and sustainability. Finally, I explore these rights in practice in a brief case study of the indigenous Huicholes of northwest Mexico, fighting a coalition of mining companies and state governments to keep extractive activities off of their ancestral lands.

Panel ID 8

Democratic transformations in Earth System Governance (ii)

87

Material Participation, Democratic Transformations, and the Politics of Sustainable Practice
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Environmental movements of practice – the development of local food systems, sustainable fashion, and community energy, for example – are an important and growing area of environmental engagement. Activists in these movements are often motivated by desires for participation and procedural justice. Previous work in environmental democracy has shown that participatory processes that involve local people in meaningful and substantial ways help to promote positive beliefs and actions around a number of sustainability policies. Crucially, however, more recent notions of participation are material in nature, and practice-based. Classic notions of political participation or procedural justice are mainly instrumental – we vote for an specific outcome, participate toward an end, or protest to get a message across and change policy. The idea of participation in these movements of everyday practice, however, is articulated as a demand for material participation; activists repeatedly emphasise the importance of increasing community involvement in the production and flow of the basics of everyday life, including energy. This is not only a demand for classic political participation, but an insistence on a sense of material participation, social inclusion in the very flows of food, energy, or other goods and things through bodies, communities, and lives. Material participation is about doing – literally getting one’s hands dirty installing solar or wind, for example, or managing one’s own energy. Such a sense of material participation exists in these movements alongside more traditional democratic processes of participation and the desire
for procedural justice. This paper examines this shift toward a more material notion of political participation both theoretically and as articulated by movements. It makes the argument that material participation illustrates a very political implementation of the concept of new materialism—a sustainable materialism. And it explores this notion and practice against the accusations that both new materialism and “lifestyle activism” are apolitical or post-political.

173

Rights, Regimes, and Restatements by Consensus: Transformation of Democratic Earth System Governance

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The recognition of a body of rights insulated from popular abridgment by the effective rule of law is absolutely necessary to any ongoing practice of Earth System Governance democracy. Governance processes can transform in the direction of becoming more democratic and more environmentally benign by fostering the establishment of environmental human rights. Human rights, including environmental human rights, should be understood as constituting the bounds of legitimate democratic discourse—continuing, real democracy is always critically dependent on the establishment and maintenance of real human rights. But real, established human rights, including environmental rights, are not and have never been a gift—not from God, or Nature, or philosophers, or judges, or parliaments, or conferences, or constitutional conventions. Legal restatement and international regime formation are two constitutive governance processes that exemplify and render more concrete the characterization of rights narratives as descriptions of areas of normative consensus—of places in the political world where people have adopted a “final vocabulary” in order to terminate the otherwise infinite regress of normative justification. In this paper we review the formation of international environmental regimes and the tradition of legal restatement (to date mostly within domestic legal systems) and analyze their similarities as processes animated by the same desire to establish a broad consensus about legitimate and desirable ends of governance. We extend this analysis by assessing how areas of consensus on global rights can be memorialized through democratic legal and political processes that already exist and are reasonably well understood. The idea and implications of consensus matter. We apply a broadened and enhanced analysis of consensus from the perspectives of history, sociology, and political science to explicate how reimagined versions of the processes of international regime formation and legal restatement can effectively serve the cause of extending both human rights and environmental narratives, such that they complement and reinforce one another and transform democratic governance. We identify major concerns for what must follow in any collective effort of humanity to theorize, experiment, and evaluate what will be necessary to establish the rights foundations of successful democratic Earth System Governance.

248

The Fringes, Legal title and “Standing” in the Anthropocene

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Earth System Governance literature abounds with policy decisions ‘steered’ through participatory, bottom up practices involving people in the management of common pool resources. Climate change is the foremost challenge of the Anthropocene in relation to land as it exacerbates land degradation and desertification. Climate change models contain a strong component of land-based mitigation of climate change, further straining relations surrounding land as biomass, bioenergy, and food production compete for space on Mother Earth. Climate change, and
initiatives to advance climate mitigation and adaptation may encourage land grabbing and elite capture. These developments may further the precariousness of land dwellers on the fringe who are without strong legal title. This paper exposes the precarious voices of those without formal legal title and thus decision-making power. These voices come from smallholder crop farmers in South Asia, Africa, and Latin America, pastoralists, poor and informal urban settlers, dwellers of riverscapes and riparian fringes, as well as holders of Indigenous land rights. In exploring the fringes of legal land, water, and forest title, the democratic landscape of the fringe is explored. In many places, legal title to land, forest or water is a prerequisite to participation in decision making concerning land, water, and the environment. For instance, in water governance in Chile and Argentina, only those with water rights participate in water governance and with very little regulation, land owners determine activities occurring on their land. Water infrastructure decisions such as the building of hydro-electric dams are made by these water rights holders without the participation of, and to the detriment of, dryland pastoralists. Further, although women play a significant role in agriculture, patriarchal structures in many countries prevent women from being landholders and thereby restrict women’s decision making in relation to land and its resources. This paper draws on case studies of formal and informal mechanisms for participation in decision making surrounding land and water, identifying policy and institutional mechanisms that advance participation thereby achieving democratic transformation. Some of these include Indigenous rights, rights of Free Prior Informed Consent, and legal and policy avenues that advance standing in the Anthropocene.

Climate justice activism and the quest for radical democracy: left-wing populism and the demise of collaborative climate governance?

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The US presidential elections in November 2016 coincided with the 22nd UN Climate Change Conference in Marrakech. This was a moment in the history of global climate politics when diplomats were celebrating the recent entry into force of the Paris Agreement. While the election of Donald Trump as the next US president cast a shadow of uncertainty over the new climate regime, it also increased the resolve among many of the delegates gathered in Marrakech. ‘Together now’ became the symbolic language for diplomats, political leaders and non-state observers who tried to show a united international front against the rise of right-wing nationalism, populism and climate denialism symbolized by the new president. However, among the participants present in Marrakech was also a smaller group of climate justice activists that contested mainstream climate policy discourse and the liberal-democratic institutions upon which the Paris Agreement rests. Rather than joining forces with the champions of the new climate regime, they linked up with a broader civil society movement that is protesting the social inequality and exclusions resulting from neoliberal globalization, carbon market expansion and collaborative forms of global governance. Under the label ‘climate justice’ this broad landscape of climate activists is contesting the ‘false solutions’ promoted by global policy elites and mobilizing the grassroots to foster a more eco-centric and just world order. In this paper we critically examine the democratic ideals underpinning this antagonistic counter-movement and the form of left-wing populism it rests upon. We trace the political narratives and strategies used to bring ‘the
politically’ and ‘the people’ back into climate policy discourse and ask what the implications are for the liberal-democratic and multi-stakeholder governance strategies promoted by Paris Agreement. Our analysis is based on more than 30 interviews with activists from environmental NGOs, women’s groups, youth organizations, and indigenous peoples organizations, as well as discourse analysis of policy briefs, and websites of the same organizations.

Panel ID 36

Accountability in Earth System Governance

Performance information and accountability in international climate change financing
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This paper addresses the question of what role performance information plays in the accountability regimes of climate change financing institutions, with a focus on relationships between donors and recipients. As various authors have concluded, the quality of the performance information of projects financed by public and private sources, as well as how that information is used influences decisions made by the various actors in the accountability regimes, including the ability to hold actors to account. In this paper, we develop a framework to analyze information needs specifically for climate change financing accountability regimes. The framework that we propose identifies information needs based on six key dimensions of an accountability regime outlined by Mashaw (2006), the nature of the accountability relationship (as termed by Bovens (2007)), as well as temporal considerations (i.e., ex ante versus ex post information requirements). We apply the framework to a specific set of accountability relationships, namely ‘vertical’ relationships, by comparing the literature that provides suggestions on information needs for accountability purposes with current practices in various institutions involved in international climate change financing. We also discuss challenges to account giving in the case of long accountability chains and complex accountability webs, and how our proposed framework can help minimize information sharing gaps in such environments.

Panel ID 40

Power in Earth System Governance (I):
Decentering Power

The Right to Repair: Democracy, Activism and the Circular Economy
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Until the 1980s, many people in developed countries remained skilled and knowledgeable enough to repair household items, from washing machines and radios to clothes and shoes. Or they could seek out the expertise of repair shops in their neighborhoods. Since then, manufacturers and corporate designers have made their products increasingly difficult to fix, to strengthen their control over intellectual property rights, and to force consumers to buy more products. Such practices of “planned obsolescence” drive the generation of masses of e-waste, discarded textiles and other sorts of “waste” that might otherwise have long useful lives. In response, the “Right to Repair” (R2R) has become a rallying cry that has mobilized very different constellations of actors and diverse strategies. It is now seen as a fundamental building block of circular economies. It is also subversive, seeking to undercut some of the world’s most powerful corporations and empower communities. And it engages democratic institutions and processes. This paper analyzes this emerging movement in OECD countries, how it has appeared in different jurisdictions and political contexts, its impacts, and broader implications. Across the US, Europe, and Australia, a growing number of community groups and networks are
calling for a legally mandated right to repair technologies. Across the US, R2R has manifested itself in the form of ballot measures and legislation. Farmers helped drive this legislative movement. John Deere, for example, stops farmers from being able to change the electronics and programming for its agricultural machines, and to fix them when they break down, something most farmers consider a basic right. In other parts of the world, “fix-it” collectives engage communities, teaching people again how to repair broken goods (and sometimes, “illegally” breaking into laptops, phones and other devices to fix them counter to manufacturers’ requirements). The Swedish government provides tax breaks to citizens who bring goods for repair. In Australia, ‘Men’s Sheds’ have materialized as a reinvigorated community institution and also combat male depression and suicide rates. Beyond recycling and waste prevention, R2R movements across these cases connect with broader political and social issues in the 21st century, challenging corporate intellectual property rights and the privatization of technical knowledge. This paper, therefore, considers how these initiatives add up to a concerted effort to break cycles of disposability and planned obsolescence, while re-building communities and creating a grassroots-based model for sustainable development in OECD countries, with potentially profound implications for broader political/corporate structures.

168

Deterritorialisation, reterritorialisation and reaching for the democratic horizon: becoming-democratic through community energy in the UK

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In this paper we investigate the role of community energy groups in producing ‘energy democracy/ies’, applying and extending existing democracy concepts from an assemblage perspective. Community energy has a wide range of manifestations but broadly including energy generation, purchase and/or conservation initiatives owned or operated by, and benefiting, communities of place or of interest. Community energy is often framed by both practitioners and commentators as a possible route to creating more democratic, decentralised energy systems, an alternative to both privatised and/or centralised state-owned energy systems. However, both the empirical and conceptual implications of adopting a (socio)material conceptualisation of democracy remain currently underexplored. In this paper we begin to explore this, and take as our starting point the concept of assemblage, which emphasises how multiple heterogeneous material and non-material connections are made and remade in the process of acting. Correspondingly our ‘assemblage-democracy’ perspective adds to existing thinking on democracy as developed through civil society literature in three particular ways: it emphasises materiality as central to the concept of democracy; it emphasises connectivity, both in the need to constantly generate new connections to achieve change and also the impossibility of ever becoming entirely disconnected from ‘conjugations’ (connections that stifle free association and change); and it explores the role of scales and networks of assemblages in producing wider movements towards democratic horizons. Each of these facets of assemblage-democracy is subject to territorialising (bounding, homogenising) and deterritorialising (unbounding, heterogenising) tendencies, a tension that can never fully be overcome: hence the term becoming-democratic. In this view democracy is a utopian project, which can only ever be partially realised for fleeting moments. In this paper we take the themes of materiality, connectivity and scale to explore how each of these critical elements of assemblage-democracy manifest in practice. We do so through analysis of data collected through an in-depth qualitative empirical study of community energy projects in the UK. Using the
dialectical frame of (de-)territorialisation we explore the inherent tensions within each of these three democratic themes and explore the fragile, contingent and contested democratic outcomes in different empirical cases. In doing so we begin to sketch out in more detail how issues of power and inequality might be brought further to the fore in assemblage-inflected understandings of democracy, and show how our assemblage-democratic approach opens up new perspectives on democracy as-concept and in-practice.

Direct local democracy and development decisions: emancipatory potentials and legal status in International Law and different constitutional systems
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This paper is based on the premise that the Anthropocene is, at its core, a crisis of democracy; it is a distributive problem concerning the benefits and environmental burdens of social metabolism, and ultimately a matter of allocation of power. Conflicts over mining or oil developments fostered by national governments, in alliance with big corporations, and opposed by local communities are a clear expression of the crisis of democracy. Very often, local populations and authorities use mechanisms of direct democracy, such as referenda or local consultations, to articulate their opposition to extractive industry development projects in their lands. Since these democratic tools tend to give rise to conflicts with high macroeconomic interests of national governments, they are frequently prevented, repressed or ignored by higher authorities through either legal or political strategies, which sometimes are violently implemented. Whereas similar claims from indigenous peoples find legal protection in international law, primarily on the grounds of free, prior and informed consent, international legal protection for non-indigenous populations claiming direct say in public decisions remains very vague. Furthermore, whereas the Aarhus Convention and the Escazu Convention grant participatory democracy related rights in environmental and development decision-making processes, international protection of local demands for mechanisms of direct democracy is still an unsettled legal issue. This paper has three main goals. From a theoretical perspective, I will first explore in what sense and to what extent a form of democracy with deep liberal roots, such as one of direct democracy mechanisms, may be a powerful tool to address current environmental conflicts and power imbalances, not without taking into account the risks they imply. Second, I will assess how these mechanisms are protected by international norms, courts and agencies. Third, I will examine different forms in which a few states are granting protection to local direct democracy mechanisms regarding development decisions.

Water Governance in context of scarcity in Metropolitan São Paulo – what needs for adaptation?
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Water governance in several Latin American countries has been gradually moving from conventional centralized model towards a decentralized participatory and adaptive approach. In early 2015, a water crisis took place in the Metropolitan Region of São Paulo, one of the largest metropolis in Latin America. During the crisis, focus was given mainly by media and government on unusual meteorological conditions. But it is known that inadequacies of the management of water resources and low levels of sewage treatment with its contaminating impact in reservoirs and waterways and reduced watershed conservation have a great impact. São Paulo experimented the water crisis that indicated inadequate management practices of water management for many decades, and the whole institutional setting based on decentralized water basin
committees. Decisions during the crisis were not transparent and the participatory arenas were excluded from discussions and decision making. So negotiation and decisions to address the water crisis did not take place within formal participatory institutions, and decisions took place outside the formal system. The interplay between water security and water governance is the issue to be addressed, emphasizing decentralisation, transparency, and participation, as components of an adaptive logic. While examining the relationship between water governance and water security in the context of the 2013-15 water crisis in the São Paulo Metropolitan Region, we discuss how the conventional process of governance shaped the dynamic of the drought and its outcomes and limited responses that promote participation and civil society engagement. The drought problem was seen mainly as linked to infrastructure, and measures taken by state government to guarantee water security emphasized the hydraulic paradigm over a more complex approach of water governance, maintaining the mainstream logic. So the underlying drivers of the crisis were not affected, strengthening centralized power and reducing the possibility of other initiatives based on a new culture of water governance. The text proposes the need of a reflexive and adaptiveness and implies the adoption of another strategy of governance, that considers society as an effective protagonist in decision making process as well in the social control, thus demanding cooperation and co-responsibility to guarantee access to common resources as water. There is a need of enlarging dialogues on water scarcity as systemic in the region, and the vulnerabilities and uncertainty inherent to the existing unsustainable model. This stimulates the discussion of two issues: the role of organized initiatives and the fragility of the governance model.

Mexico presents a unique case where governance of some 60% of the nation’s forests were placed in the hands of communities, in successive degrees of actual control, stretching from the 1930s to the 1990s, as a little-noticed result of the Mexican Revolution (1911-1917). This massive decentralization of forest management created Mexico’s democratically-managed common property forest sector, in both temperate and tropical areas, at a scale and level of maturity unmatched anywhere else in the world. It is thus a national laboratory for studying the social, economic and ecological benefits of delivering forests to local communities and providing them with the five capitals necessary to engage in collective action to organize community forest enterprises (CFEs). This paper critiques common property theory with an examination of how State policy provided much of the hierarchy of rules around forest and harvest governance and defined many of the rights that provided the foundation for collective action around CFEs. This imposition from above reduced institutional choice, but also reduced the transaction costs in creating governance rules. Further, rules and organizations from above did not “crowd-out” collective action around forest governance because of a significant market incentive in relatively high and stable prices for their timber. Thus, common property models need to be extended in three ways to help explain the Mexican case: 1) the historic role of State policy in in creating the enabling institutions for territorial governance, the platform for democratically-managed community firms, and for establishing clear rules and regulations around forest harvests and most aspects of forest management. 2) the role of markets and
price in providing economic incentives for collective action to organize market-oriented firms that overcome the crowding out effects of rules imposition from above. The fact that they are firms also requires an examination of the role of the “five capitals”: financial, physical, human, social, and natural, and the varying government role in providing them, and 3) the role of different kinds of pre-existing communities, that range from social networks without a territory until very recent times to indigenous peoples with millennial ties to a territory. State policy, markets, and community responses have created a national sector that is resilient to climate change and is a model for a “good anthropocene”, a path towards positive human-managed futures for forest communities in the developing world.

Panel ID 41

Power in Earth System Governance (II): Shifting Configuration of Power

Exploring Core-Periphery Subjectivities: Transnational Advocacy Networks and Environmental NGOs in India
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This paper critically assesses the role of transnational advocacy networks in Indian environmental movements. It identifies the opportunities and challenges for domestic NGO activists as they make transnational linkages with international ‘norm entrepreneurs’ to influence desired policies in the state. Deploying a postcolonial lens, the paper questions India’s postcolonial anxieties about neocolonial forms of control and expansion as it represses NGO activists under the garb of ‘neo-colonialism and anti-nationalism’, but also uses the very same oppressive posture by heavily encouraging foreign capital investments in the state. The paper also investigates the growing challenge of transnational coalitions covertly ascribing to Western-liberal, Eurocentric ideals that, in turn, dictate the democratic space and domestic particularisms of local activists in terms of their indigenous aspirations and environmental goals. What does the past and present of Indian environmentalism say about its future? The qualitative research used in the study will be drawn from primary and secondary sources such as interviews, historical documents and archives that tease out the role of state and non-state actors in critical IR theory. Finally, it uses an eclectic approach to present the case for a subaltern transnational framework by using local knowledge systems to manage resources and whereby improve environmental standards.

183

Powershifts: an empirical assessment of the growing impact of energy decentralisation on political power structures across 36 countries
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As global energy systems transform, a turbulent shift in energy governance is underway. Sociotechnical developments have enabled the emergence of decentralised electricity production owned by new energy system actors. Community or co-operative groups, termed ‘CE’ here, differ from traditional energy players in that they are not driven primarily by shareholder returns. The explosion of CE across the developed world has implications for energy governance processes and outcomes, and democracy in general. Significant scholarship on ‘energy democracy’ and transitions anticipates that, as these actors capture increasing market share, they will destabilise the long standing political and economic relationships associated with centralised energy systems. Political power struggles between CE and incumbent industries are already on the rise as CE builds institutional capacity and claims a more active governance role. Policy makers are struggling to keep up with the rapid pace of change, and with the ever-increasing
number of voices in policy debates. There is potential for a vast improvement in the quality of previously captured energy governance, but also for a re-entrenchment of the status quo. This paper presents results from the first multi-country comparative study into the political consequences of increasing decentralisation of energy. The project, grounded in theory on power, institutions, governance, and transitions, sought to answer three questions: a) if shifts in political power are indeed occurring with decentralization of electricity, b) through which mechanisms power shifts are occurring, and c) what the implications of these shifts are for energy governance. Data was collected through three in-depth case studies and an online survey of policy-makers across 36 OECD countries. Findings reveal that decentralisation is indeed shifting political power. The mechanisms vary but there is an overall increase in the political capacity of CE actors, buoyed by public support for low carbon initiatives and local economic development. There is also a clear trend toward coalition and partnership building with municipalities and local non-profit institutions. The most supportive jurisdictions are those with well-articulated devolved governance strategies that reduce complexity for central decision-makers, while retaining clear pathways of accountability. The predicted larger impacts on energy policy outputs are emerging in some locations. Impacts on governance outcomes and democratic quality are in early stages but some jurisdictions (e.g., Netherlands, New York state) are demonstrating potential for larger shifts in political power structures. The paper links strongly with conference themes of power structures and asymmetries in resource governance, and implications for transformations to sustainability.

Pipeline activism in North America has become a focal point for local, regional and transnational environmental movements. Campaigns have targeted pipeline companies with a range of strategies including direct action and blockades. However, according to social movement literature, pipeline companies make unexpected targets of activism for two reasons: pipeline companies do not have high profile reputations or high brand value, and demand for fossil fuels is inelastic in the short run. This paper addresses this puzzle by explaining the choice of movement target by activists and environmental non-governmental organizations (ENGOs). This paper argues that characteristics of pipeline infrastructure, a growing awareness of climate change in the United States and growing legal and political empowerment of Indigenous peoples in Canada have helped catalyze powerful waves of pipeline activism in North America. These conditions generate unique dynamics with important implications for our understanding of social movements. First, pipeline activism begins to close the distance – a concept developed by Clapp in the context of global food politics (2014; 2014) – between production and consumption decisions of fossil fuels through place-based activism and networks, thus affecting the distribution of power in oil governance. Second, while pipeline campaigns are composed of several groups of actors, with varied motivations and interests, they do not employ market solutions to environmental protection. Pipeline protests are thus a break from liberal environmentalism – a concept developed by Bernstein (2001; 2002) used to describe the driving force behind environmental movements in North America (Dauvergne 2016). This paper draws on interviews with social movement actors engaged in campaigns against oil pipelines in and through Canada.

Oil Pipeline Activism in North America: Implications for Social Movements
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The Mutual Supportiveness of SDGs and International Law: The Case of Energy Transition Subsidy Policies

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Energy subsidies play a dual role in the ongoing transition to sustainable energy sources. Growing recognition of this in recent years has led to the widespread subsidization of renewables and calls for and efforts to phase out fossil fuel subsidies. While these two policies (jointly referred here as 'energy transition subsidy policies') are fundamental to making the energy transition happen, countries face both legal and political challenges in subsidizing renewables (e.g. WTO disputes) and phasing out fossil fuel subsidies (e.g. public protests against fossil fuel subsidy reforms). The lack of a coherent and comprehensive legal framework at the international level that provides the necessary legal ground for these policies further compound the challenge. This paper will first examine whether and to what extent the SDGs provide legal grounds for subsidizing renewable energy sources and phasing out fossil fuel subsidies. Here, it will argue that SDG Targets 7.2 and 12.C provide the necessary legal foundation for subsidizing renewables and eliminating fossil fuel subsidies. Having answered the first question in the positive, the paper then considers whether the current international legal framework governing energy transition subsidy policies support or hinder the implementation of such policies. The cross-cutting nature of energy issues means that answering this second question will require looking into the various area of international law. For the sake of convenience, the paper will focus on the three regimes of public international law that are of paramount importance to global energy governance: international energy law, international environmental law and international trade law.

Seeing like a system: Exploring the power dimensions of regime shifts in natural resource management

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The concept of regime shifts, has been used to analyze persistent, substantial reorganizations of social-ecological systems. Power relations and power differentials are key forces influencing processes of change in social-ecological systems but, for the most part, these forces have been missing in the analysis and identification of drivers, thresholds and impacts of regime shifts. In this article, we propose a typology of power and use it to characterize a regime shift from traditional to conventional agriculture in indigenous plantain communities in the Bribri Indigenous Territory in Costa Rica. Based on interviews with Indigenous farmers and key informants, our analysis reveals how different forms of power interact to establish a feedback loop pushing the advancement of conventional agriculture in the territory. The advancement of conventional agriculture increases the amount of non-Indigenous influences in the territory and it brings a series of health and environmental risks. An understanding of underlying power dynamics adds nuance to trade-offs in resource management, shows winners and losers from management decisions, and highlights leverage points that could challenge existing inequalities. Our typology of power can easily be applied to other cases in natural resource management and should assist in the identification and analysis of social-ecological regime shifts.
Panel ID 42

Democracy in the Anthropocene: Global and Intertemporal Dimensions

Representing future generations in environmental governance: Democracy, technocracy and commitment devices

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Political theorists have long identified the tendency for democratic decision making to prioritise immediate over longer term interests. Often referred to as a problem of time consistency, political myopia or present term bias, this is particularly acute in environmental governance, where decision makers must balance the desire of current generations to benefit from exploitation of natural resources now with the need to preserve and enhance those resources for future generations. Politically independent institutions may be used to better reflect the interests of future generations in decision making. However, removing decision making roles from democratically-elected representatives risks new pitfalls of less accountable and more technocratic processes. The aim of this paper is to show how New Zealand policymakers have negotiated tensions between democratic and technocratic decision making in designing institutions for environmental governance. The paper analyses policy development in two recent examples of newly established independent institutions for environmental governance in New Zealand: an independent panel used to inform development of a combined land use and environmental management plan for New Zealand’s largest city (the Auckland Unitary Plan Independent Hearings Panel); and an independent Climate Change Commission to propose national greenhouse gas emissions budgets. Drawing on the literature on democratic theory and environmental regulation, a framework is developed to describe technocratic and democratic elements of institutions for environmental governance. Policy documents recommending the design features of these institutions are then assessed using this framework. The paper finds New Zealand policymakers have used “commitment devices” to balance technocratic and democratic benefits and risks in institutional design and better represent the interests of future generations in decision making. Commitment devices are institutions that constrain future choices to those that reflect long term goals. While in the case of both the Auckland Unitary Plan Independent Hearings Panel and the independent Climate Change Commission, final decision making power on policy matters remains with democratically-elected representatives, institutional design makes it costly for these representatives to depart from a technocratic process that accounts for future interests. The framework and results in this paper should inform further international comparative analysis of institutions for environmental governance, and in particular, the use of commitment devices to better represent future generations in decision making.

278


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Democratic societies have traditionally relied on national constitutions and law to the aim of stabilizing its reproduction and strengthening the fight against power immunities. Nevertheless, globalization and advanced capitalism have intensified processes of transnational legal ordering based on functional differentiation within the Centre-Periphery world-society structure. This intensification, in turn, has also brought a dangerous disruption between social systems and Earth System. The financialization of the economic system has driven pathological growth-without-limits imperatives, leading to cyclical...
economic crises and boosting the ecological degradation and instability of the Anthropocene. In other words, there is a free market constitutionalism in place in which carbon-democracy grants to private property rights, contract autonomy as well as free capital flows the condition of Grund(norms of the rule of law and of global governance. However, it has been convincingly considered that the current legal order to be unsuitable for navigating the Anthropocene. Drawing on the Earth System approach, it is argued instead in favour of a global material constitutionalism and law recognizant of eco-systemic boundaries and socio-environmental impacts. This calls for a new understanding of the role of law in the global realm in order to deal effectively with the complexity’s challenges of the Anthropocene: ecological instability, just transition, contingency, uncertainty and intergenerational interdependence. Emerging from an active dialogue between Earth System Science and Earth System Governance, Earth System Law (ESL) seems compelling in that regard, as it addresses the structural need of communication between the legal discipline and the social and natural sciences. In this way, it enables the compatibility assessment between democracy’s models, legal orders and the Earth System and expresses a new, alternative Grundnorm, along with a constitutional bounding between the worldwide reproduction of social systems and the sustainability of eco-systems that provide the material basis for those processes. As a result, ESL should allow the stabilization of social reproduction, making compatible its governance and production structures with the Earth System. Finally, examples are exposed beyond ESL as a global law; in effect, ESL is being operationalized in regional, state and sub-state normative orders through eco-consistent laws and administrative decisions, as well as outstanding court rulings resulting from environmental and climate litigation strategies. To sum up, this allows to glimpse new forms of democracy.

284
Is there a global ‘demos’? Democracy and constitution in the Anthropocene
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The Earth System paradigm has a transdisciplinary impact to the extent it describes a planetary ecosocial complex where traditional divisions between natural and social are blurred. According to this, it demands a new approach in the constitutional architecture of society. The constitution has had a fundamental role in governance of human communities since the first liberal revolutions. In this context, it has been conceived as the expression of the sovereign power of a national community, allowing the deployment of a democratic system, but shaping also the limits of democracy. The mutual interdependence between democracy and constitution, as well as the tensions attached to it, have defined the legal framework for the formal decision-making processes in modern political communities. As the narrative of the Anthropocene is gaining acceptance, the need to define governance processes at a global scale is progressively becoming peremptory. Consequently, how to project at global level the traditional regulatory fundamental concepts of democracy and constitution is obviously challenging. But, as far as democracy is defined by the government of the people, by the people and for the people, as famously coined by Abraham Lincoln in the Gettysburg address, the apparent lack of a global ‘demos’ raises fundamental doubts about global democracy and about global constitutionalism as well. It seems that a global sovereign creating a global constitution in the traditional formal sense is not existing and is not even desirable. So, the existence of a global polity derived from the Earth System paradigm and the narrative of the Anthropocene does not imply necessarily a global ‘demos’ nor a global constitution embedded in a single text. The goal of this paper is to explore how to build a constitutional framework adapted to the
conditions defined by the geological transition as well as explore how this reshapes the hegemonic ideas about democracy. I start from the necessity to define a constitutional framework as an anchoring point to reshape legal semantics for a significant social reaction to the implications of the Anthropocene. Hence, I propose to see the constitution as an open normative field where social conflicts find (provisional) solutions. There should be room for pluralism, rethinking democracy in a polycentric fashion. The final aim is to open the traditional constitutional discourse to a more complex and evolving political development where democracy is also reshaped to confront the challenges raised by the geological transition.

316

The Incongruence of Climate, Democratic and Populist Temporalities

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The emergence of populism almost worldwide in recent years drives skepticism against climate change and international cooperation. It is largely argued that this is due to populists pushing nationalist agendas with the aim of putting their country first (e.g. “America First”). While academic and political reactions on how to respond to this thread are still in the making, this paper argues that current research largely neglects the temporal incongruence of climate change, democracy and populism explaining populist behavior against climate policies. Democracies are dilatory and incremental, largely focused on election terms preferring current actions over future demands. They are consequently at odds with the large time scales of climate change and other long-term planetary challenges. With numerous and yet largely fruitless attempts to include generations of the far future, it is obvious that democracies are not only in need to develop better international – and thus spacial – forms of cooperation, but particularly generational – and thus temporal – cooperation. Against this already existing incongruence of democratic and climate time frames, populism’s “Great Again” policies refer to a romanticized fossil fuel past in which climate change is inexisten. Populists recur to cyclic understandings of world affairs, aiming to reinvent the past in the present where possible alternative futures and the long-term developments of climate change have no place. To develop this new explanatory temporal factor of populist’s (anti-)climate policies, the paper proceeds in four steps. First, democracy’s temporal immaturity is elaborated, focusing on the far future, but contextualizing it within larger sets of time-centered challenges (e.g. desynchronization of social and natural times in general). Second, populist time concepts are explained, particular focusing on “Great Again” policies, which recur to cyclical and restorative historical images of the conservative revolution and authoritarian regimes of the interwar period. A third section contrasts democratic and populist temporalities with those of climate change, demonstrating their overall incongruence with each other. Fourthly, it is concluded that while the relation between temporalities of democracy and climate are incongruent, but repairable, in particular populist’s conceptions of time make it impossible to accept problems like climate change as a new kind of challenges in the Anthropocene. A possible way out, for which more time-centered research is needed, can be seen in the democratization of time through temporally mature societies, being aware and able to deal with different arrangements of time.
Polycentricity and Coherence: democratic possibilities and constraints

Can Sustainable Development Goals Make Foreign Policy More Inclusive: Water (SDG 6) as a Case in Point

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Sustainable Development Goal 6 – clean water and sanitation – is perhaps one of the most critical goals that the United Nations (UN) has recognised as a priority through its initiatives such as the World Water Day campaign 2019 on Leaving No One Behind. Most often, it is the marginalised and vulnerable communities, including women, refugees and migrants, indigenous peoples, and children among others who are affected most by the lack of safe and sustainable access to clean water and dignified sanitation. SDG 6 is also gaining traction in foreign policy and diplomatic discourses, as multilateralism is considered the key to achieving this goal. Water diplomacy is one such entry point; but there are several other frameworks and cases that are increasingly being used to ascertain the interlinkages. For instance, virtual water is at the core of international trade, and by extension, foreign policy, and despite the enormity of the problem, very little has been done to address it, leaving water-scarce countries (and communities) even more vulnerable. Without taking into consideration the geopolitics and geoeconomics of water, finding solutions to escalating water stress as well as inequity in the distribution of this resource, will thus, be almost impossible. Foreign policy has traditionally been a state-centric and elite platform, with little or no room for non-state or private actors, which continues to be so in the majority of countries. However, in a highly interconnected world, the ‘local’ cannot be disconnected from the ‘international’. Therefore, the pool of necessary partners in foreign policy has enlarged significantly. In this context, this paper will explore whether SDGs provide an opportunity to not only integrate these goals into foreign policy, but also transform it into a much more inclusive process, by integrating the marginalised communities into the discourses and processes, concerning the planning and implementation of SDGs, specifically water, through foreign policy and diplomacy. The paper will provide an overview of theoretical foundations of foreign policy from an International Relations perspective, and how it has evolved over time at both conceptual and practical levels. It will analyse the interlinkages between foreign policy and SDGs using scientific and policy literature, with a special focus on SDG 6 (water). The paper, by providing a critical evaluation of the role of marginalised communities in foreign policy discourses, will also make a modest attempt at identifying avenues of enhancing inclusivity in this process, using the case of water.

"There are 17 sustainable development goals, but we have 20 bosses": Implementing SDG7 and its Interlinkages in Fragmented Lebanon

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In light of the Paris Agreement and the 2030 Agenda for Sustainable Development, many countries in the Middle East and North Africa (MENA) region are addressing the diffusion and implementation of low-carbon energy technologies, which have become technically feasible and economically viable. The differences among the ongoing reconfigurations of energy systems across the region, however, cannot be explained by a mere focus on technical and economic factors but by stressing the geographical, social, and political contexts in which energy systems are embedded. Lebanon, in contrast to other countries in the region where authoritarianism or semi-authoritarianism shapes policy-making,
enjoys a certain level of democratic political life due to power-sharing arrangements. However, a chronically weak and divided government has hindered efforts for transforming the energy sector and led to a polarization in the way such a transformation is imagined and anticipated. This paper is based on two weeks of fieldwork in Lebanon in early 2019; it aims to understand the perspectives of main stakeholders on the current transitions’ trajectories and whether and how such trajectories are considered good development pathways aligned with the aspiration of the sustainable development goals (SDGs). The data were mainly obtained from 20 semi-structured interviews conducted with a wide range of stakeholders working on issues related to energy from the government, the private sector, donor agencies, academia, and civil society. The findings suggest that an outdated power-sharing system and sectarian fragmentation inherited from a 15-year civil war have been impeding various attempts to reconfigure Lebanon’s energy system. Further, while the absence of fossil-fuel based infrastructures creates opportunities to get on a sustainable path, such opportunities are often missed due to the current governance arrangements shaped by the long-standing political sectarianism. The paper argues that more attention should be paid to such local-specific aspects of path dependence that maintain the status quo and influence the social and political processes of sustainable transformation. Overall, this paper contributes to the literature on the under-researched MENA region by focusing on the implementation of the 2030 Agenda at the national and local levels.

311

Policy Coherence for Sustainable Development as a governance tool: Recent operationalisation, implementation and impacts on (de)politicization

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The merger of the global and sustainable development agendas in the UN 2030 Agenda has led to the spill-over and upgrade of some concepts and tools with a previously limited use in the area of international development, disregarding their success and applicability to the broader area of global governance. The concept of Policy Coherence for Development (PCD), more promoted than implemented by some individual Western donors, the European Union and the OECD particularly, is a perfect example of this. This is also reflected in research with the main focus on policy coherence by development studies while environmental studies have focused more on the concept of policy integration, for example. Since its transformation into the SDG target 17.14 to “enhance Policy Coherence for Sustainable Development”, PCSD is now being operationalised by some actors as a sustainable development check “at all stages of domestic and international policy making”. Academic literature shows that the implementation of PCD, limited to the effects of the Northern policies on the global South, was not a success, not least because of its complexity. Yet PCSD encompasses many more dimensions than PCD by including, inter alia, a long-term perspective, environmental aspects and policy making at national level in the global South. By drawing on the critical appraisal of PCD and by analysing empirical evidence from the first years of the PCSD operationalisation and implementation, the goal of this paper is to assess the latest developments in the PCSD agenda as promoted by selected national, regional and international actors from a particular perspective of its impacts on (de)politicisation. In spite of the many preconditions for its potential success, PCSD presents itself a new, extremely ambitious type of governance that aims at mainstreaming sustainability, but that also comes with the risk of transforming crucial political conflicts over policies affecting sustainable development into technical fixes and thus maintain the status quo.
Polycentric governance has come to occupy a place of prominence within Earth Systems Governance. It is commonly identified with the presence of multiple centers of decision-making comprising state and nonstate actors that are nevertheless linked via a plurality of relationships undergirded by constitutional, collective-choice, and operational rules. This contribution identifies and responds to a puzzling coincidence in the literature on global environmental and climate governance: the ascendance of polycentric governance has been accompanied by the frequent references to fragmented governance, and at least in the context of global climate governance, the common refrain about lack of ambition and effectiveness. Fragmentation and lack of ambition both create potential for significant governance gaps amidst a flurry of activities in the realm of transnational and global governance. It is likely that the burdens of these gaps are likely to fall disproportionately on those most affected and least capable of responding to global environmental and climate change. It is in this context that this research seeks to map the conditions under which polycentric governance facilitates provision of public goods without triggering conflicts or producing negative social and environmental externalities. This paper is organized into two parts. The first part contains a survey of the foundational writings on polycentricity to distill the key features of robust polycentric governance for the provision of public goods. Drawing on V. Ostrom et al. (1961), V. Ostrom (1972), Ostrom (2009, 2010) and others, we show that the application of polycentric governance in the context of earth systems governance requires 1) a clear identification of relevant ‘public/s’ and means of appropriate political representation, which are prerequisite for making decisions regarding the provision of public goods; and, 2) formulating a general system of rules of engagement among actors with a plurality of endowments and interests, especially in the presence of deep and entrenched political and economic inequalities. This aspect of polycentric governance requires greater attention within earth systems governance, as evident from the inclusion within the new Earth System Governance Science Plan the contextual condition of inequality and the research lenses of ‘democracy and power’. The second part of the paper applies these insights to two specific areas of earth systems governance: 1) global governance of nature conservation; 2) the nascent discussions about international governance of solar geoengineering. We conclude with a research agenda for polycentric earth systems governance in an unequal world.

Decentralization and Adaptive Governance at the US-Mexico Border
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Environmental justice, bioregionalism, and resilience theories often agree that greater local control of resources through democratic engagement, deliberation, and participation can result in superior ecological outcomes. In the Latin American context, decentralization is also associated with powerful narratives of decolonization, democratization, and indigenous autonomy. Many of these theories, however, rely on assumptions which do not hold in binational contexts like San Diego-Tijuana, chief amongst them a common framework of national politics, and, at the most basic level, a common language for deliberation. In the context of fading national leadership on environmental issues in the ‘developed’ world, traditional reliance on national policy strategies will need to be modified at the
border to emphasize an overarching binational identity and the institutionalization of collective forums for regional deliberation. This is necessary in the binational region in order to incorporate the broad range of perspectives in the shared bioregion, divided as it is by political sovereignty, physical barriers, and linguistic difference. In order to guard against national parochialism, I argue here that places at the edges of national sovereignty, where community identities are simultaneously shared and divided in messy, overlapping ways, provide interesting and more globally-representative lessons, ones that complicate tidy visions of nested institutions built on national decentralization programs. This analysis thus challenges decentralization narratives to begin imagining new nested forms of regional and local institutions which balance the need for more meaningful power to deliberate and decide with a focus on cross-scale political and ecological factors. The urgency of such medium and small-scale answers is accentuated both by continued degradation of global ecosystems and their effect on regional inequality.

Panel ID 44
Hidden and Asymmetrical Power: Geopolitics and Vested Interests

231
Hidden and invisible power in environmental governance: The case of the Auckland Unitary Plan
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In an era of rapid and large-scale environmental change, understanding the real-world operation of the institutions that govern human behaviour is urgent. Research on where power lies, and how it is exercised, helps make sense of why democratic societies can fail to adequately respond to the challenges of sustainable development. Towards this goal, the work of Steven Lukes provides a useful framework for analysis. Power is understood to have three distinct and mutually enforcing dimensions: in one, some interests are advanced over others in conflicts or decision-making processes, in another, power operates to determine what issues are excluded from debate, and in the third, power works by shaping people’s cognitions such that the powerless are complicit in their domination by the powerful. The aim of this paper is to analyse the power dynamics at play in the creation of a combined land use and environmental management plan for New Zealand’s largest urban area, the Auckland Unitary Plan. Policy papers, media statements, submissions on the plan, and the plan itself, are analysed to determine what interests were represented in the democratic processes surrounding the plan, and how those interests are reflected in decisions. Applying the three-dimensional conception of power to the case study of the Auckland Unitary Plan shows that despite the incorporation of participatory processes, the subtle machinations of power are discernible in who engaged in the planning process, who benefited from regulatory decisions, and the absence of discussion of more radical changes. Lukes’ ideas help elucidate how democratic processes function to include or exclude the interests of different social groups in using scarce resources, and the interest of future generations in preserving those resources. This perspective is vital to understanding how power inequalities are sustained through democratic processes and the effects of such inequalities on environmental management. Protecting against the hidden and invisible ways power conspires to perpetuate the status quo is a vital function for collective decision-making at every level of earth systems governance.

243
Power asymmetry in the global governance of the ocean
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Problem: There is a clear power asymmetry in the global governance of the ocean and South
American countries are in a disadvantageous position within this network of agents. Such reality affects governance in many ways. Therefore, the following questions arise: How asymmetric is the ocean network? How does this asymmetry affect the environmental management in high seas and Antarctica in particular?

Method: To examine the ocean network with the highest degree of relevance to South America, we map out the main countries - global and technological powers - in five types of institutional initiatives, namely: the UNCLOS, ISA, Antarctica, BBNJ-ILBI, and RFMOs. We then investigate how South American countries are placed in this specific network.

From an international relations perspective, key questions are: Which are the main countries in the ocean governance network? How are they organized? Are they the traditional UN environmental leaders? Are they also frequently in the UN Security Council? How are they connected to science, technology and innovation (STI) indexes? Where are South American countries positioned in the network? What are South American common interests and were they successfully promoted?

Argument: First, the “ocean powers” are the ones in the center of the global economy, technology and security agenda, so it is not a coincidence that they participate more effectively than the other countries in the cases above. We argue that the “ocean powers network” is composed of only a few countries and has traditionally been asymmetric. Second, previous research and modelling has shown that the recent UN-led environmental treaties mention the seas/ocean more frequently than in the past, but they do not apply to sovereignty-free spaces (Mazzega et al, 2018). Hence, the high seas and Antarctica activities are still poorly regulated (Dodds et al, 2017; OECD, 2016, 2019; Tiller et al, 2019). Third, despite the Mercosul, ZOPACAS and OTCA, there is no significant South American environmental or ocean governance (Boulet et al, 2016; Barros-Platiau et al, 2019). Hence, we argue that South-America is incapable of collectively promoting regional interests in Antarctica and the high seas, that are sovereignty-free spaces. Expected results: we aim at discussing the implications of strong power asymmetries within the ocean governance network. The prevailing geopolitical and STI approach of the ocean powers and the “consumptive juggernaut of industrialized societies” (Young, 2017) leads to slow transformations towards sustainability, particularly regarding Antarctica and ABNJ, that are contrary to South American interests.

260 Intersectoral environmental governance: Examining coral reef conservation in the Philippines
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Coral reef conservation efforts have been shaped by more than 30 years of advocacy and institutional experimentation, which have led to the establishment of more than 2,000 marine protected areas (MPAs) around the world. Despite the progress made, coral reefs are still threatened by fishing, sedimentation, and pollution due to the sustained demand for goods and services, and rapid development. Hence, environmental policies have been developed and amended to address gaps and improve efforts to reduce threats to coral reefs. Although these policies are seen to provide opportunities to enhance initiatives, scholars recognise the need to understand the relationships of different sectors and their policies because these can have different effects on MPA governance. Using the municipality of El Nido in Palawan province, Philippines as a case study, I will first describe the different sectors directly and indirectly affecting coral reef conservation outcomes, and then focus on describing the policies underpinning different sectors such as biodiversity conservation, fisheries and sustainable development with respect to MPA establishment and management. Second, I will then describe the relationships of such policies and how they are interpreted and
implemented by different government institutions in El Nido. Third, I will then present power asymmetries across the governance landscape in El Nido, and how these affect decision-making and management of the El Nido-Taytay Managed Resource Protected Area. By using intersectorality as an analytical lens, I present questions that need attention in order to improve existing structures and linkages related to coral reef conservation, and the need to consider policy relationships and jurisdictional issues across government institutions. I argue that the lessons from this analysis should be considered to facilitate policy and structural reforms, which can help improve implementation of coral reef conservation initiatives in the Philippines and other countries with similar contexts.

Fossil Fuel Bailouts: Explaining State Finance for ‘Unbankable’ Infrastructure Projects
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Neoliberal economic policies have been a mainstay for major political parties in Canada and Australia since the 1980s. A fundamental tenet of neoliberalism is that governments should not ‘pick winners’ but instead should ‘let the market decide’ whether private sector investments succeed or fail. Although this principle has never been applied consistently to the fossil fuel sector, which has always received extensive (but largely hidden) public subsidies in both countries, it has been more noticeably eschewed in recent years. A financing gap has opened up as private banks have begun to shy away from providing support to certain types of fossil fuel projects. This is the result of pressure that has been put on banks by the divestment movement as well as the reality of stranded asset risk in the sector (i.e. as the price of renewable energy falls and demand for fossil fuels weakens, many assets in the sector will become liabilities). The financing gap is particularly pronounced in the case of fossil fuel transport infrastructure (e.g. pipelines, rail lines, ports) where increased on-the-ground resistance from social movements and indigenous groups has rendered many projects ‘unbankable’. Rather than letting these infrastructure projects fail, governments in Canada and Australia have stepped in to offer highly visible public bailouts to their proponents. This paper seeks to explain why neoliberal governments are willing to back projects that are perceived as unbankable by the private sector, even in the face of overwhelming public opposition to the use of taxpayer funds. This is explored through case studies of two proposed infrastructure projects: a rail line to service the Adani/Carmichael coal mine in Australia and the Kinder Morgan/Trans Mountain oil pipeline in Canada.

The Transformative Potential of Democratic Liberation and Inclusion
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Stakeholder participation in decision-making has been widely lauded as a method for improving outcomes in environmental management, international development, democratic governance, and sustainability science, among other areas. While there are normative reasons to encourage more inclusive decision-making processes, costly and time-intensive group decision-making processes are often justified on the grounds that they may also improve outcomes. Deliberative discussion, in particular, is believed to be more transformative than a mere aggregation of individual preferences. Empirical work confirms that deliberation results in shifts of opinion, but it has had little to say about the quality of the resulting decisions, which are understandably difficult to assess in a field setting. This research involves controlled laboratory experiments conducted in
Nairobi, and it examines the hypothesis that deliberative discussion leads to better decision-making regarding the creation of a collective good. I find that participation in group decision-making involving deliberation (but not a simple majority vote) does result in more successful collective good production. This effect is not achieved through greater effort exerted, but rather through better strategic decision-making that minimizes the costs associated with contributions. Deliberation is also associated with changes in preferences, greater levels of agreement with decision outcomes, and greater perceived fairness. This research sheds some light on the relationship between deliberative democracy and decisions related to sustainability and governance of collective goods.

32

Reimagining Governance: forms of self-governance from the grassroots

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Across the world, there are a number of processes by communities, organisations, government bodies, movements, and business that are trying to challenge the issues of unsustainability, inequity, and injustice. Many of these processes are challenging the fundamental and structural issues such as capitalism, statism, patriarchy, and other inequities like race, class, caste, ethnic, etc. But many are also dealing only with the symptoms rather than bringing in radical or transformative changes. In addition, they might be fundamentally challenging one dimension of transformation but might be negatively impacting other dimensions of transformations. This paper through four case studies attempts to understand how the process of direct and delegated democracy emerge from the grassroots by documenting processes, initiatives and pathways to autonomous, downwardly accountable, and participatory institutions in three states in India. In addition, it aims to understand how the attempts to establish radical forms of democracy establish or enhance links to the other spheres of transformations i.e. Ecological integrity and resilience, Social wellbeing and justice, Direct and delegated democracy, Economic democracy, Cultural diversity and knowledge democracy. This paper is located into understanding the myriad attempts at generating and practicing radical forms of direct democracy that could not only challenge the dominant ‘development’ paradigm but provide viable pathways for human wellbeing that are ecologically sustainable and socio-economically equitable. The four case examples located in different geographic locations in India namely, Tosa Maidan (Jammu and Kashmir) and Bhuj City (Gujarat), Korchi, (Maharashtra), and Ladakh (Jammu and Kashmir) document and examine the local processes to establish forms of direct democracy and their links to just, equitable and ecologically wise paradigms.

1.In Korchi, communities, along with resisting state-sponsored mining, are actively engaged in reconstructing collectives and local governance institutions. These collectives are emerging as a platform to resist mining, form rules and regulations for forest management and conservation, localise control over their livelihoods, revisit cultural identity, and assert direct and engendered democracy (authors- Neema Pathak Shrishtee Bajpai and Mukesh Shende). 2.Tosa Maidan example focuses on local collectivisation process to reclaim the control of communities on the meadow that was leased out to Indian military to use as a firing range. The locals have now started working towards conservation and revival of local livelihoods. (authors- Shrishtee Bajpai and Ashish Kothari). 3.The collectivisation of civil societies, issue-based collectives and citizens to ensure decentralisation of governance and slum re-development, equity and environment conducive for development in Bhuj city. (authors-Shrishtee Bajpai and Ashish Kothari). 4.The Ladakh Autonomous Development Hill Council (LADHC) in Leh, Ladakh came about in 1995 after
a long struggle of claiming autonomy in Ladakh, however, available literature suggest that the local autonomy within the structural system of representative democracy plays out more like appeasement. The study attempts to dig deeper on how ‘autonomous’ LADHC via-vis the State and Central government; the process of internal democracy, accountability, and transparency. (authors- Shrishtee Bajpai, Ashish Kothari and Sujatha Padmanabhan) Keywords: Democracy, alternatives, transformations, radical democracy, and autonomy.

Intersectionality and Climate Policies of Government Agencies: Is a socially inclusive and sustainable climate policy possible?
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Climate issues are salient on the political agenda and governmental institutions are deeply involved in developing policies with significant distributive effects for the future. Government agencies play an important role in producing policies for climate action. A key problem is the prevalent focus on technical innovations and economic incentives, and the lack of attention to social dimensions. Research shows how greenhouse gas emissions, vulnerability to impacts and political participation vary across the population, according to gender, race, class, age and other intersectional factors (Kajser & Kronsell 2014; IPC C 2014; Djoudi et al 2016). Recognition of social differences needs to inform climate policy. If such differences are not recognized, climate policy risks being both ineffective (by focusing on the wrong targets) and reinforcing inequalities. In a previous study, we showed that the diversity of the public and the various needs and behaviour patterns of different groups have not been sufficiently recognized (Magnusdottir & Kronsell 2015 and 2016). This non-recognition risks undermining action on climate change and conflict with other sustainability goals. Our focus is on Swedish climate policy where there are notable shortcomings in this respect. This paper explores how policy makers articulate the significance of social differences for climate policy making in an effort to better understand why social differences have not been fully recognized in climate relevant policies. The empirical base are the existing climate policy documents of four Swedish agencies working with climate policy. The material is analyzed through critical policy analysis (Bacchi and Eveline 2010, Fairclough 2013) combined with intersectional methodology that poses critical questions to the material, such as: What types of knowledge and what kinds of subjects are recognized? What norms are important for (non-)recognition of climate relevant social differences? (as outlined in Kajser & Kronsell 2014). These questions serve to identify and analyze assumptions about social groups, ideals and legitimacy that are embedded in institutions and manifested in their practices and policies. The critical policy analysis will help us demonstrate whether and how intersectional aspects have been taken into account, but also point out which ideas influence the policies and possibly shed light on path-dependencies in government agencies. It will help us identify areas to address in the subsequent work, and provide insights and examples of intersectional aspects that can be useful in the interaction with policy makers.

How far can a transnational city network go in fostering climate transformations in the South?
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From Brazil to South Africa transnational city networks are acting to promote the climate agenda and foster mitigation and adaptation actions. However, how far can these efforts go into contexts that are diverse and challenging in terms of economic and social conditions? Questioning the assumption that a local reality can
easily be transformed by exogenous actors, the paper will look at Brazilian and South Africa cities to track the impact of transnational city networks in the creation, design, and implementation of climate policies. To do so, this paper assembles contributions, taking a critical stance on both practical and theoretical aspects of transnational climate governance. Investigating the role of transnational city networks operating in Brazil and South Africa, matters of accountability and the functionality of accountability mechanisms are important procedural aspects, while questions of power, deliberation, and representation are theoretically puzzling. Furthermore, local, regional, and national realities represent lenses that shape the implementation, interpretation, and instrumentalization of transnational climate governance. Conducting a sound empirical investigation on the impact that the networks have on the climate responses of cities in Brazil and South Africa allows us to address these issues and further problematize the theoretical concepts in use.

443

Scaling up grassroots social innovations for transformative action

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Risks to the Earth’s life systems are accelerating, pushing planetary boundaries towards collapse and threatening the very existence of life on Earth. Despite this critical juncture in the planet’s history, decades of international attention, and the urgent need to transition towards a sustainable future, efforts are falling far short. More recent scholarship suggests that global governance of Earth’s systems is not achieving the rapid, transformative change required, signalling the need for a concerted shift towards polycentric zones of influence and action, such as is being played out in cities, regions and local communities. At the local and community scale, grassroots innovations play a role in testing new forms of technological, political, economic, environmental, cultural and social sustainability that are often locked out of mainstream experimentation. Deliberative processes play a critical role in grassroots social innovations. For the most part they consist of community based groups where members develop both individual and collective agency through taking action towards their group’s sustainability goal. Although small, localised and with little power, the deliberative systemic turn in democracy studies highlights the possibilities for these sites of partisan politics to contribute to enhanced democratic governance of entrenched complex global issues. In this way, grassroots social innovations could be harnessed to destabilise and/or destroy entrenched, powerful and path-dependent hegemonies that ingrain unsustainability. This paper explores the theoretical and empirical foundations for community-led social innovations in the power, politics, agency and governance of sustainability with a view to determine the critical factors that would lead to scaling up these innovations to achieve wider scale transformative change. Case studies in the areas of food waste avoidance, sustainable fashion and community energy systems in Sydney, Australia will be drawn upon in order to determine: Who are the different actors in grassroots social innovations? How are these actors engaged in deliberation? How might their deliberative practices contribute to democratic governance and transformative social change?

266

The potential of pluralizing participation for the earth system: Guatemala’s Consultations of Good Faith

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The Latin-American region has gone through key democratic transition processes upon which participatory forms of political experimentation have attempted to address the gaps and failures
of representative democratic regimes. The region’s current receding political landscape and the frequent collision between sustainable development and democratic decision-making leave space to examine, in primis, the capability of Latin-America’s representative governments to improve democratic qualities by institutionalizing and pluralizing policy-making processes. Moreover, they put into question whether participation constitutes not only an end in itself but also a potential means to address planetary challenges. Against these empirical queries, we use a contrasting comparison with different degrees of plural participation and map their respective influence on sustainability performance. This allows us to contribute not only to the conceptual debate on the enabling conditions for pluralizing participation, but also hypothesize about its potential impacts depending on its quality. With the aim of addressing this conceptual gap, we will use Guatemala’s Consultation of Good Faith in Santa María Cahabón, Alta Verapaz, as a case study. The unique dispute over the Oxec Hydroelectric Project and the participatory processes that followed avoid, on the one hand, the instrumentalization of the civil society that comes with legally-binding participatory processes. On the other, it lets us analyze participation within different levels of institutionalization, since the consultation was carried out two times: one by local indigenous leaders, and one by governmental officials following a ruling by the Constitutional Court. Furthermore, this case gives space to assess plural transformations of sustainability solutions due to its interconnectedness between the local and the global, indigenous and scientific knowledge, and imperfectly institutionalized procedures and CSO-led processes. This paper will first define pluralized participation and develop a corresponding analytical scheme to evaluate the quality of pluralized participation processes. Secondly, it will delineate sustainable parameters based on the interlinkages of Sustainable Development Goal (SDG) 7 on affordable and clean energy with other SDGs and compare them with the results of the consultations. Based on a process-tracing method, we will map its meeting points. Results demonstrate that democratically embedded and genuinely plural participation has the potential to constitute a sine qua non driver for improving democratic quality and sustainability performance at the same time.

Panel ID 46
Democratising the Governance of the Risk and Uncertainty
204
How can we Tame the Uncertainties of the World? Towards Cosmopolitan Governance and Democracy
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The journey of humankind has always been an odyssey encountering uncertainty, experiencing perils and attempting to understand and master them. This paper draws attention to questions addressed in a book project of how humankind engenders new global uncertainties shaping a world of uncertainty and how we can domesticate these uncertainties through the development of cosmopolitan governance and democracy. Global environmental change, terrorism, financial crises, globalization, digitalization, social inequality, failure of democratic projects, post-truth, and the rise of new populism, extremism, radicalism and fascism are perceived and experienced as phenomena being highly problematic, destabilizing and uncertain. They produce uneasiness, anxiety, insecurity, disorder and confusion. In this light, a social science perspective on uncertainty suggests a categorization with three distinctive views on uncertainty and concerning items. First, ontological uncertainty arises when the assurance and cohesion of the usual and expected conditions and state of being become challenged, when general living conditions and generic human developments and
accomplishments of civilization become undermined and thwarted. Second, epistemological uncertainty refers to issues in knowledge production that go beyond natural and technological systems that represent uncertainty as mathematical measures of probability, possibility and plausibility. To identify that it is uncertain what properties phenomena have is to say that there are issues of knowledge gaps, vagueness, incompleteness or fragmentariness, ignorance, non-knowing, inconsistency, obscurity, nescience, and contradictions. It points to the limits of knowledge, scepticism that certain knowledge is impossible, the fallibility of mankind to acquire complete knowledge, and the proportionality of knowing. Third, teleological uncertainty focuses on the relationship between uncertainty in terms of being and knowledge and uncertainty in the science of prediction and projection of practical action. It relates to the beliefs humans produce about reality and courses of eventuation in future, about the ends they are striving for, action and policies to be chosen, necessities to be acquired, and harmful things to be obviated. This categorization is a heuristic that helps conceptualize a transfiguration towards cosmopolitan governance and democracy that is based upon a polyarchic network and self-governing structure. The network has a steering logic without a center and succeeds by means of distributed and differentiated responsibilities and authorities. While scientific experts of epistemic institutions deal with epistemological uncertainties and challenges, associational policy making groups address ontological uncertainties, and the global multitude discusses the teleological challenges in transnational public spheres and thus unfolds appropriate entities for democratic agency across national boundaries.

With the spread of information and communication technologies urban water governance may undergo prominent changes, especially in terms of knowledge exchange and processes and outcomes of public participation. Some authors even argue that web-based tools have great potential to improve democracy. It is however unclear under which socio-technical and political conditions web-based tools may enhance participatory initiatives in urban water governance. This paper addresses this knowledge gap by systematically comparing the experiences with web-based tools in Leicester, Milton Keynes, Sabadell and Jerusalem. We first compare the characteristics of the tools using a typology developed by Mukhtarov et al (2018) and next reflect on their potential to raise awareness, provide useful knowledge, contribute to continuous learning processes and stakeholder engagement. The paper is based on an analysis of policy documents and 72 in-depth interviews with the major stakeholders in the four case study areas. Our preliminary findings indicate that web based tools do have potential in awareness raising and knowledge exchange. The tools may allow a large number of citizens to be better informed and co-produce water services with a government. They have a potential to help in efficiency and effectiveness of urban water service provision, provided that they are well embedded in the local governance context and address specific water governance issues at hand. However, we found that web based tools provide few opportunities for higher modes of discussion and deliberation, and grant limited authority to participants to influence decision-making processes. We therefore conclude that web based tools should mainly have a supplementary role in urban water governance. They can’t replace existing formal decision-making procedures.

Enhancing urban water governance by using web based tools: Lessons from four case study areas
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Reflexive Modernisation and Risk Society in differential Eco space through the Lenses of Commons

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Six long decades of planned development and application of science and technologies on coastal commons for industrial extraction and production of economic wealth has transformed ecosystems and agrarian and fishing communities. Technological modernisation, as opposed to offering control and predictability, created irreversible externalities and raised the environmental economic and social costs of local communities and enterprises. It is clear now that sustainable development in future would not be an easy task without addressing the nature of risks and uncertainties of reflexive modernisation and their impact on different eco-spaces such as rural, peri-urban and urban commons. Although the impacts of globalisation on various ecosystems and eco spaces had been the subject matter of inquiries in the past, the analysis of risks and uncertainties of modernisation on commons in developing countries is essential especially in the context of the failure of the industrial society and national states to resolve problems. The rural coastal commons, the peri urban agrarian commons and urban commons has differential dynamics in its resource management. These ecospaces are used extensively for industrial extraction such as fishery, agriculture, aquaculture, horticulture, urbanisation etc. The production of wealth by selling environmental quality using diverse products has also been attempted by the state and private enterprises during recent years. Despite resistance from local communities, the state pushed its development agenda through oppressive strategies. It is feared whether the present ecological, economic and social risks and vulnerabilities could be resolved within the existing capacities of state, markets and democratic institutions. The commons continue to show signs of degradation and instability while commoners struggle hard to adapt to risks and uncertainties of modernisation. Resolving these issues is vital especially when the nation aspires towards a second revolution for food security. In this context, the paper attempts to investigate the challenges of reflexive modernisation of coastal commons. The paper raises the following questions: What are the major characteristics of risks generated due to the reflexive modernisation in differential ecospaces in India? How do communities, enterprises and farmers respond to risks and uncertainties of science and technological modernisation? How women in particular address the risk of modernisation of commons?

Water governance in Mexican drylands. Case study Guadalupe Valley, Baja California, Mexico.

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Mexico faces challenges in the institutional, environmental and population spheres for the implementation and fulfillment of the Sustainable Development Goals and the Principles of Water Governance (OECD) at local or community levels due to: inequalities in the capacities of the government at the institutional and administrative level; the generation of data and information with quality, accessibility and relevance from national to community level; decentralization; strengthening and establishing mechanisms for citizen participation and inclusion and accountability; and coherence among public policy instruments. This is relevant for the arid or semi-arid zones of Mexico (65% of its territory), where 66 million people lived (60% of its population) in 2010. In this work the Guadalupe Valley, Baja California, Mexico and its aquifer is analyzed through the Twelve Principles of Water Governance and its indicators in order to evaluate their implementation at the local level. This aquifer supplies the wine region that produces 90% of Mexican wine, four rural communities and the
tourism sector associated with winemaking. The analysis has two phases; first the documentation was analyzed to determine the existence of the government, economy and social dimensions in the 36 indicators of water governance. Then, experts were consulted to investigate the functionality of the indicators. In the second stage, the National Waters Law and the Groundwater Technical Committee (COTAS in Spanish) of Guadalupe Valley were analyzed. The results show that at a local level there are references in all dimensions (government, economy and society). Also, the rules that favor the applicability in the government dimension are identified, such as: the Law on Transparency and Access to Public Information and LGEEPA. In addition, it was found that the COTAS are the institutional arrangement that favors the implementation of governance in the Guadalupe Valley. However, the functionality of the indicators is influenced by the political cycles, budget allocation, the fragmentation that exists between the groups of interest, low transparency and lack of accountability. In summary, the integral management of water in Mexico at the local level has more instruments of governability than of governance, such as COTAS. In other words, governance is understood only as the arrangement of actors that promote and coordinate actions for the efficient use of water and the preservation of the aquifer.

Panel ID 47
Power, Conflict and Peace-building
117
Conflict-sensitive water management. Avoiding conflict or securing peace?

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Governing water for human consumption requires policy-makers to engage with stakeholders not only from industry or agriculture, but also those within urban and peri-urban contexts. Often the development and management of water supply aims to avoid and preempt conflicts, e.g. with regard to securing water access and allocation. But in practice water management often contributes to conflicts and marginalization of groups. Conflict-sensitive water management aims to mitigate these negative externalities and engages considerations regarding equity, resource distribution and human security, while maintaining water sustainability at the core of these discussions. But a theoretical question remains – should conflict-sensitive water management focus on avoiding conflict or on securing peace? Or can both outcomes be achieved through sequencing? We take two theoretical approaches – conflict resolution and environmental peacebuilding – and engage in a dialogue between these perspectives. We offer insights from our earlier work in Nepal and Mexico to highlight how different approaches to managing water-related conflict can be conducive to a more sustainable and durable solution.

272
Challenges for REDD+ implementation in post-conflict areas of Colombia
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REDD+ constitutes a global strategy against climate change by reducing deforestation and forest degradation in the tropics. In a nutshell, REDD+ creates a financial value for protecting the carbon stored in trees and therefore seeks to make standing forests more valuable than if cut down. Our study analyses the implementation of the REDD+ in the department of Guaviare in the Colombian Amazon. In particular, research discusses main challenges and effectiveness with respect to how the program tackles drivers of deforestation. Our study spells out the complexities that this result-based conservation intervention faces at the local level with respect to changing development policies, strong inequalities, obscure economic/political powers, illegal crops
and the recent peace treaty and makes a plea for focusing more on large-scale deforestation drivers than on farmers. Most likely the goal of reaching net-zero-deforestation in the Colombian Amazon, however, there is still time to re-adjust in order to have greater impact on deforestation.

Linking Science Diplomacy with Environmental Peacebuilding
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The role of science in environmental diplomacy, whether it is in terms of fostering research collaborations between countries or communities, or in terms of its role in environmental treaty-making, has been under deliberation for a long time. However, how can science contribute to peacebuilding between nations and communities that are at war with each other or are simply hostile with each other through environmental cooperation? This is a question that needs to be addressed more seriously and urgently at a time when environmental security challenges and climate-fragility risks are posing threat to peace and stability in many parts of the world. At the same time, it is also critical to explore ways in which science could engender or advance diplomatic initiatives in the environmental arena, by acting as a preventive diplomacy tool, which then contributes to international peace. Science, being often labelled a double-edged sword, needs to be attuned to a conflict-sensitive approach for better results in peacebuilding, which is also a part of responsible research and innovation in a world that is witnessing the effects of a dramatically changed environmental and climate. Similarly, environmental peacebuilding efforts could also have backdraft effects, if the mitigation and adaptation initiatives are not scientifically, socio-economically and politically sound. In this context, the paper will attempt to identify interlinkages between two concepts – “environmental peacebuilding” and “science diplomacy” – through empirical observations from different regions. The two conceptual frameworks, at the outset, seem to have common goals; and therefore, the question is – if they are aligned with each other, can they provide better solutions to the problems of the 21st century? The other objectives of the paper are the following: to explore the role of science in environmental peacebuilding; to analyse the interplay between science diplomacy and issues such as conflict sensitivity and conflict prevention; and to identify the institutions and stakeholders at international, regional and local levels that could operationalise science diplomacy-environmental peacebuilding interface. The paper will be based on discussions held during a webinar series on this theme (focussing on polar regions, marine/maritime and Cyprus) that the author is organising in April-May 2019. Some of the common sub-elements that are expected to be addressed through this webinar series include: responsible research and innovation, interdisciplinary studies, partnership-building, communication and stakeholder engagement, conflict sensitivity, capacity-building, gender sensitivity and conflict prevention among others.
Concepts of Planetary Justice: How Do We Clarify and Conceptualize Planetary Justice?

Theorising planetary justice requires bringing together two distinctive perspectives which seldom directly interact. First, there is the perspective afforded by Earth system science which conceives of the planet as a closed system of energy and material transfer, composed of overlapping open systems and processes, and responsive to both positive and negative feedbacks. Concerns with overuse and degradation, expressed for instance within ‘planetary boundaries’ or ‘ecological footprint’ conceptions, begin from this perspective, and imply a distinctive ontology of the Earth. Second, there are designations of user rights to aspects of the Earth system, which are conventionally recognised through law and economics. This again implies a distinctive ontology, which overlaps with some aspects of the first view but does not coincide with it. The problem, however, is that conventional designations of user rights over ‘natural resources’ apply to only some aspects of the Earth system, while being blind to many others. This means that resource use cannot avoid producing externalities somewhere in the Earth system, because only some parts of it are considered (often in isolation), while other parts are presupposed as infinite or unchanging. And this seems to raise further problems for thinking about just entitlements to use the Earth, especially those arising between generations. Recent debates about natural resource justice try to accommodate the picture of Earth systems, departing from that of a perpetually accruing bounty presupposed by earlier political theorists. Yet we remain stuck with an unsystematic, mixed ontology of natural resources, with no clear connections between conventional designations of user rights and the Earth system. The first step to conceiving of planetary justice seems to be the development of a coherent ontological conception of the planet we actually inhabit, and not merely those aspects of it we have been concerned with in the past. In this paper, I provide an outline of such a view, which posits natural resources as fundamentally relational objects embedded within larger systems, and within the entire Earth system.

Radical urban ecologies: A postcolonial, feminist perspective on just urban transformations

Justice and transformation are concepts featuring at the center of current sustainability debates. This reflects the urgent need both for accelerated action to prevent irreversible changes of earth system functions, and strategies that address widespread and pervasive inequalities. In this paper we ask: how can sustainability interventions advance just urban transformations? The query is set against a backdrop of decades of sustainability efforts that have propelled incremental improvements and resulted in a discourse paralyzed by mainstream appropriation. To answer this question, we set out to explore the history of sustainability theory and practice. We center on sustainability thinking in cities, which we see as the main battleground for
ecological integrity and dignified living conditions. We rely on a systematic review of policy documents and academic studies on urban sustainability policy, complemented with analysis of a database of 400 sustainability interventions implemented over multiple decades in cities around the world. Our examination draws attention to two main underlying distortions. First, as postcolonial theorists long have pointed out, sustainable development thinking is inherently fixed in Western worldviews and associated ideals of anthropocentrism, rationalism and notions of modernity, while sustainability interventions often serve to reproduce historic patterns of power and economic exploitation. Second, feminist readings of sustainability reveal approaches to nature that are characterized by mastery, instrumentalism, and domination, and agendas that perpetuate the oppression of the non-human and subordinated ‘others.’ We argue that urban sustainability programs fail to realize transformations (fundamental re-configurations of agency and power, technological and material systems, institutions and practices), because they are designed and implemented within the boundaries of these dominant rationalities. We propose the following starting points to activate urban just transformations through explicit engagement with these forms of oppression. First, urban sustainability programs need to challenge the dominant logic of progress and economic development. This may, for example, be realized by drawing on notions of wellbeing decoupled from material wealth or questioning the underlying intent of sustainability programs. Second, sustainability thought needs to break free from long-standing human-nature dualisms. This requires engagement with multiple forms of relations with the environment and recognition of frequently overlooked ontologies and worldviews. Third, sustainability projects need to abandon their universalist and managerial aspirations and re-connect with the struggles of people’s lives, which implies seeking the roots of transformation within the impulses of resistance of individuals and communities. This proposal is an effort to reclaim sustainability as an emancipatory discourse.

102

Planetary justice and the new ocean regime for areas beyond national jurisdiction - a case for an ocean justice framework
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Planetary justice and the new ocean regime for areas beyond national jurisdiction - a case for an ocean justice framework. Oceans cover 70% of the planet’s surface and contain about 97% of the planet’s surface water. The new challenge to protect and to equitably use the biological resources in areas beyond national jurisdiction (ABNJ) is one of the consequences of the Anthropocene (Vidas et al. 2015)- humanity now has the technology and power to enter and to profoundly alter deep sea oceanic life and ecosystems. The international community now must develop a legal and governance regime to manage the twofold challenge: use (equitable) and conservation for present and future generations. First the paper develops a planetary justice lens using Plato’s principle of justice- “give to each his due”-, as well as the more recent principles of environmental justice from national environmental justice movements. Second the paper builds an ocean justice framework using the norms and principles relevant for equitable ocean governance. It draws on emerging norms since the 1972 Stockholm Conference to the present UN negotiations for a new regime for the ABNJ. Third, it examines whether and how planetary justice is or is not part of the debates on the legal and institutional framework of the emerging regime. Orchestrating change in international ocean law is complex: states are sovereign and in principle equal. However, there are also geo-political inequalities, alliances and tensions, particular state interests and the growing
influence of a range of non-state actors that are all shaping governance outcomes: conservationist, scientists, the private sector. The paper shows how many of the positions of developing states in the ABNJ negotiations are in keeping with planetary justice principles but the challenges in implementing an ocean justice framework in international law.

187

Conceptualizing Planetary Justice As If Institutions and Political Economy Mattered
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The concept of planetary justice evokes two key elements with potentially competing tendencies: a planetary-scale unity of purpose coupled with the goals of securing justice for planetary stakeholders disadvantaged in the institutional status quo. This research adopts a realist political economy perspective, which underscores the important role of global and transnational institutional arrangements in mediating efforts to conceptualize and crystalize the norms of planetary justice. For the purposes of empirical analysis, this research focuses on the nearly two-decade-long process of civil society mobilization aimed to secure climate justice in the context of United Nations Framework Convention on Climate Change (UNFCCC). Building on the 2018 Earth System Governance Science and Implementation Plan, this project situates planetary justice at the intersection of two contextual conditions, Transformation and Inequality; and one set of research lenses: Justice & Allocation. Going beyond seeing global justice movements as contentious actors who challenge the formal institutional negotiations dominated by national delegations, the realist political economy approach developed here takes a broader view of the role of climate justice movements within the formal institutional spaces that the UNFCCC has opened up to non-state actors (NSAs) in recent history. This enables us to investigate the extent to which climate justice movements have benefited from the allocation of political spaces and decision-making powers to NSAs within UNFCCC. This article contributes three main insights: One, analysis of the conceptualization and the transformation over time of the concept of global climate justice shows that the design of institutional engagements played a crucial role in shaping the emerging understanding of global climate justice. Two, we show that the UNFCCC-centered global climate justice movement resulted from conscious efforts to address transnational inequalities in the access to global climate negotiations, which is especially relevant to the ongoing efforts to promote a just planetary transition at a moment of unprecedented global inequalities. Three, the analysis shows that despite not having any voting powers, they influenced the institutional architecture of UNFCCC significantly. We discuss three key aspects of these institutional transformations: i) the development of the system of NSA constituencies within UNFCCC; ii) the institutionalization of conflicts of interest policies for NSAs within UNFCCC; and iii) the development of ‘local communities and indigenous peoples platform’. We leverage these research findings to draw implications for the debates about the conceptualization of planetary justice and to build new bridges between the conventional notions of realism and new research on planetary governance.

304

Planetary Justice: A Definition Towards an Agenda for the Integration of Global Justice, Environmentalism, and Institutional Cosmopolitanism
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What is the added value of using the term ‘planetary justice’ instead of ‘environmental justice’, ‘social justice’ or even ‘climate justice’? The argument presented in this paper is that utilizing ‘planetary’ – due to the term’s associations with three intimately interconnected parts of the
wider Earth System, namely; geological planet Earth, technological human civilization, and the biological biosphere, where humanity is also part – carries with it the potential to unite formerly disparate discourses into a coherent agenda for desirable change at the level of world politics. The holistic ‘planetary justice agenda’ that could result from this fusion of interrelated concerns further implies a pivot towards creating steadily more integrated forms of institutional cosmopolitanism as a means of facilitating its political realization – which could allow for the eventual democratic self-governance of planetary civilization, where humanity manages to govern the Earth with the collective interests of all human beings at heart. ‘The planetary’ is in recent scholarly discourse increasingly employed as a concept meant to capture an idea distinct from the older notion of ‘the global’. Bruno Latour claims ‘the globe’ signifies modernization while ‘the planet’ emphasizes the fragile nature of the Earth System, understood as a series of interconnected spheres, such as the atmosphere and the biosphere. ‘Global justice’, understood in the modernization sense, is a program for elevating the poorest parts of the world populace, primarily in the global ‘South’ to the economic level of the richest part of the world populace, primarily located in the global ‘North’. Dipesh Chakrabarty, however, notes that if we move from ‘the global’ concern with modernization to ‘the planetary’ concern with maintaining some measure of human habitat normalcy – where ‘normalcy’ is understood as the prevalent climatic conditions since the dawn of civilization thousands of years ago – then the justified elevation of the entire human population to the material level of the currently richest parts of human civilization becomes an impossibility. The hard truth is therefore that material ‘global justice’ is an undesirable prospect even for the populations of the South. The practically available form of planetary justice therefore lies in leveling the life conditions of the two hemispheres by means of Northern material sacrifice and a focus on elevating Southern populations to parity in terms of health, education and wellbeing. The achievement of planetary justice, here conceived of as necessarily based on hard compromise, needs effective cosmopolitan institutions before it becomes a realistic prospect.

356

Forest, capitalism and competing notions of justice, How Indigenous Peoples practices can help us to transform forest market oriented narratives?

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Forest, capitalism and competing notions of justice. Which values, of whom, managed forest before capitalism? What principles facilitate multiworldview dialogues about alternative futures and transitions towards the a more ethical, inclusive and sustainable forest management? How Indigenous Peoples practices can help us to transform forest market oriented narratives? On one side, zero Deforestation policies narratives are difficult to achieve for forest dependent people. From another side also commodification of carbon market narratives lies on a virtual invention with no practical evidence. Traditionally capitalistic forest management conceived the territory as a place of impersonal relations, where resources should accumulate. State or corporate actors have seen forests as a place of exploitation developing profits or investments. While native inhabitants of the forest territories have cohabited with the territory follow cultural beliefs, based on a collectively responsible management for maintaining the traditional cycles and uses of the territory, in accordance with the laws of their ancestors. There are many areas around the world where the practices of some indigenous peoples and local communities have maintained a natural balance in the forest. Remote sensing has confirmed that indigenous territories hold 80 percent of the planet biodiversity
worldwide. Scientists and practitioners need to discuss more on the competing worldviews and value systems (recognition), the various costs and benefits they bring (distribution) and who gets to decide and through what structures (procedure). Recent studies reveal that market-oriented intensification may generate poverty reduction, it also exacerbated marginalisation and poverty through various forms of land tenure insecurity. Furthermore many actor of climate governance around forest have recognized the key role of indigenous peoples as stewards of their own forests. There are missing pieces in relation to land use after and before the Antropocene. This presentation compares recognition, distribution and procedures around forest management present in social practices at the local level in Colombia, Mexico and Brazil addressing how they could can lead toward a collaborative perspective of values on human-nature, but also to broader ways of using traditional knowledge for a sustainable resource management in order to solve contemporary problems related to forestry management.

Panel ID 4

Diverse epistemologies for the protection of biodiversity

119

Knowing biodiversity: diverse knowledge systems, pluralism, and the problem of ontology

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Calls for the decolonization of science, methodologies and the university are increasingly prominent in environmental social science and humanities scholarship. In addition to promoting greater recognition and visibility of non-western, non-white and non-male scholars in research, citation, and teaching practices, these calls also problematize science as a form of (post)colonial imperialism. This refers to science’s claim to universality as well as to its privileged position in policy and decision making. These criticisms resonate with wider developments towards participation and inclusiveness in knowledge production, as promoted through concepts such as transdisciplinarity and coproduction. Yet, while these concepts and associated practices have been criticized for reproducing existing power inequalities between science and other knowledge systems and promoting technocratic practices, the decolonization agenda takes a more radical and explicitly political perspective that addresses the political and ontological implications of science. In this paper, I use the example of IPBES (the Intergovernmental Platform on Biodiversity and Ecosystem Services) to discuss the challenges of inclusiveness and diverse epistemologies in biodiversity knowledge production. I will focus on the tension between the desire to respect diverse knowledge systems on one hand and the ambition to integrate or combine them in order to provide a consensus representation of a singular biodiversity on the other. The conceptual argument that I will develop problematizes the possibility of being inclusive of diverse epistemologies without letting go of the idea of a singular nature, biodiversity or reality. I suggest that taking seriously the call for decolonization of science requires environmental and biodiversity knowledge making practices to move from recognizing diverse epistemologies to allowing for a multiplicity of ontologies to be represented, performed, and contested.

359

Community forest management without local knowledge? Epistemological exclusion in Mexican forest policy

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Forest management is a land use that can maintain significant conservation values while supporting land-based livelihoods. Mexico is a bioculturally diverse country and a reference of community forestry, where strikingly, local knowledge is largely ignored by forest policies and management plans. Based on literature and our experience as Mexican scholars/practitioners, we explored technical, epistemological, political, and contextual dimensions associated with the lack of official recognition of local knowledge, values, and norms in forest management in Mexico. Our argument is based on two elements: 1) A diachronic analysis of forest policies in Mexico to inform how the domain of conventional forest management has evolved in Mexico; 2) Situated examples of forest management, including those where: a) local knowledge is excluded from conventional forest management, b) local knowledge sustain forests in spite an excluding policy context. Our analysis indicates that official regulations and conventional forestry have somewhat expanded from their historic domains (e.g. timber management in large-scale temperate forests) to incipiently include previously neglected systems such as tropical dry forests, non-timber forest products, forest-agriculture interfaces, and small-scale operations. Official recognition of these previously neglected systems has been partial, and with a narrow focus on regulation. Regulation often occurs without considering scientific evidence, and more importantly without the recognizing the distinct context in which they are immersed, including the local knowledge, values, and norms that have shaped and maintain those systems over time. Traditional ecological knowledge in Mexico is commonly associated with diversified production systems in agriculture-forest interfaces, including a wide gamut of agroforestry systems and small-scale forest management in mosaic landscapes. Such systems challenge nature-society dichotomies that characterize conventional approaches to conservation and forest management. Albeit an unaccommodating policy context, communities conduct management practices based on their knowledge, beyond the script of conventional forestry, even when official management plans exist. Management practices based on local knowledge include for example selection of tree species retained, diversified sequential agro-forestry uses in small plots, practices based on moon phases, and horse skidding. In Mexico, forest policy, markets, and conventional forestry practice tend to ignore local knowledge, values, and norms, especially excluding small-scale managers commonly pushing them to illegality. We make a call for wider recognition of the vast local knowledge hold by Mexican forest communities which, in spite of been marginalized, persist and innovate.

Performing fundamental values as an emancipatory mechanism to fostering inclusive participation in environmental governance

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Inclusive participation in decision-making has been a constant challenge on environmental governance in rural communities in the Global South, reflecting power structures that exclude people on the basis of the intersection of economic status, ethnicity, education level, age and gender. Environmental governance and how it plays out in practice is fundamentally determined by the value frames, emotions and relationships of those involved. However, value judgements of those most affected by environmental decisions are rarely shared and discussed. For decision-making to be genuinely inclusive it is necessary that those who are usually excluded are able to express and make visible
their values. Only in this way, decisions regarding the natural resources on which they critically depend can reflect their worldviews. To address this challenge, new approaches that enable those in the lowest positions of power to reflect, share and make their values visible are needed. Art-based methods, and more specifically performance-based methods, provide alternative means of communicating and sharing which can be particularly relevant in the context of marginalized communities. A critical performance enables people to identify issues, bring hidden narratives to consciousness and activate different solutions or responses. This allows the implementation of reflexivity or meta-reflections to create debates about the distribution of power in environmental policy and cultivate shared values frames, emotions and affects. In this paper, we present the preliminary results of applying one of such performance-based techniques, Forum Theatre, in two rural communities in Chiapas (Mexico). By activating and cultivating reflexivity, Forum Theatre can act as an emancipatory mechanism that ultimately has the capacity to foster inclusive participation and induce broader social transformations for more sustainable, effective and just natural resource management.

442

Nature in the city: written stories about the migration of the monarch butterfly
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The most common representation of the cities found in public discourse usually shows the urban as opposed to nature. While the city appears as a synonym of modernity, nature is often associated with the rural and the backward; and when nature is considered as part of the city landscape, it is approached through scientific knowledge and technical mastery. Faced with the emergence of increasing environmental problems in cities, some hybrid disciplines have challenged the traditional dichotomies city-countryside, rural-industrial, modern-traditional, scientific-empirical. At the same time, different citizen projects in many places have overcome these divisions to promote social participation in the rescue of parks, urban rivers, native trees, among other projects that seek to rethink the place of nature in the city. How do the citizens who are involved in these initiatives represent their urban spaces?, What are the ideas about nature do they build through their participation?, How nature is represented in these projects? This paper seeks to propose some answers to such questions through the analysis of a set of texts written by participants of a citizen science program called Correo Real from the perspective critical discourse analysis (CDA). Correo Real is an initiative promoted by a non-governmental organization that invites Mexican citizens to register in writing the migration of the monarch butterfly. Participants are trained to make a scientific report, recording technical aspects of migration, climatic conditions, the predominant vegetation at the site of their observation and the number of butterflies observed through a closed options format that can be sent and shared by email to the leader of the initiative, who in turn uses the data to create a database that is shared with scientists and government agencies. Despite the demand for production of scientific reports, citizens produce documents that move away from this academic format and elaborate written reports that are closer to local narratives and their own stories. The analysis of the linguistic features of their texts related to the decisions that authors make about the use of a particular vocabulary, its formal structure, and phrasing, as well as the presence of intertextual elements allowed to relate these written texts with situated knowledge production. These findings reveal authentic narrative both in the format and in its representation of the city-naturalized that surpasses the common dichotomies science-local knowledge.
Panel ID 6
Rethinking the Role of Indigenous Peoples in Environmental Governance

A Literature Review on Environmental Governance and Indigenous Peoples: Uncovering Mismatches and Searching for New Solutions
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A remarkable trend in recent years is the unprecedented recognition of indigenous peoples’ environmental knowledge and practices in global policy discourses. Relatedly, indigenous-led initiatives for controlling their territories and influencing public environmental decision making have proliferated. Indigenous peoples control large territories and have increasingly gained legal titles. They have engaged in innovative forms of governance such as for example tribal parks, community protocols, monitoring and mapping exercises, and intensive lobbying in domestic and global environmental negotiations. Whereas the integration of indigenous peoples has been studied within different sub-fields of environmental governance (e.g. biodiversity, climate change, forestry), there is still a lack of systematic knowledge of indigenous environmental governance across these policy areas. Against this background, we carried out a systematic literature review, guided by the following questions: When and why does the integration of indigenous knowledge and practices contribute to environmental sustainability and justice? What are the frequent mismatches between global environmental governance approaches and indigenous peoples’ knowledge(s), practices and interests? Under what conditions is it possible to overcome such mismatches? Based on an analysis of 180 scholarly articles from interdisciplinary scholarship, we provide an overview of the opportunities and challenges identified at different scales, geographical locations, and policy-areas, with the purpose of answering our research questions and identifying remaining research gaps. The review covers findings on nine environmental issue areas and multiple scales. It brings together research that draws on diverse theoretical and conceptual approaches from the fields of political ecology, social ecological systems research, global environmental governance and political anthropology. In reviewing these studies, we identify four different types of governance initiatives: (a) collaboration and participation; (b) knowledge governance; (c) incentive-based mechanisms; and (d) indigenous-led initiatives. We outline the principal mismatches identified in the literature on each governance arrangement and the authors’ proposals on how to overcome or govern existing mismatches. In the discussion and conclusion, we first outline the three following chief research gaps; the lack of research on (1) indigenous-led initiatives; (2) cross-scale approaches and (3) cross-sectoral approaches, and then discuss the broader implications of our findings for scholars and practitioners of environmental and sustainability governance. Our findings emphasize that a better understanding of indigenous peoples’ participation in emerging arenas in environmental governance is essential not only for the legitimacy and effectiveness of environmental governance but also for an implementation of the 2030 agenda that ‘leaves no one behind’.

Cultivating Indigenous Spaces of Representation in Global Environmental Governance: Examining the Role of Technology, Maps, and the Built Environment
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Although Indigenous Peoples are central to the production of global environmental governance, scholars and practitioners often assume they are “weak” and thus inconsequential in international
politics. At the same time, however, the global environmental community increasingly recognizes the vital role that Indigenous Peoples play in governing some of the world’s most significant biodiverse landscapes and safeguarding. As stewards of more than 22% of the global land base that houses 85% of remaining biodiversity and 20% of global forest carbon stocks, the contributions of Indigenous Peoples to global environmental governance are critical. Despite the significance of these contributions and the growing presence of Indigenous Peoples in international environmental negotiations, however, scholars direct little attention to the roles and influence of Indigenous Peoples in global environmental governance. Instead, Indigenous Peoples are assumed to be at best co-opted and at worst further marginalized through their engagement at international policy events. Such findings not only demean the significance of Indigenous presence at these events, but further reinforces dominant power hierarchies embedded in mainstream research practices. In this research, we deploy a suite of innovative methods to discover the ways in which sites of global environmental governance are constructed and spatialized to shape their outcomes. Specifically, we ask: how and with what effect do Indigenous Peoples engage the spatializing practices of global environmental governance processes as avenues for representation? Through visual analysis and collaborative event ethnography at two sites of global governance (21st Conference of Parties to the UN Framework Convention on Climate Change and the 2016 World Conservation Congress), our work shows that maps, technology, and built spaces offers means through which Indigenous Peoples can expand and make their voices legible in spaces where Indigenous representation might otherwise be rendered insignificant. Specifically, maps, technology, and built spaces can expand and contract spheres of engagement and representation by (1) operating as avenues for access or absence, (2) providing opportunities for legitimacy or contestation, and (3) hindering ability to exert agency and authority. Through these findings, we draw attention to the critical conditions that render global governance processes more or less inclusive and responsive, demonstrate new modes of influence, and generate more critical understandings of how Indigenous Peoples shape global environmental governance.

194

*Indigenous knowledge systems and sustainability governance: reflecting on knowledge co-production to enhance governance capabilities*

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This paper will discuss the idea of “many worlds-one planet” as a lens to approach how to build capabilities in Earth System Governance, integrating multiple stakeholders in knowledge co-production, for instance, indigenous peoples, whom we consider as more than mere participants in the process, but as agents - knowers who are in truly parity as other agents. At the same time that interdependence and globalization have created a "one-world" market and inter-state system, scholars have been unpacking ways of being and knowing that constitute realities, which stand ontologically as other worlds, even though they interact, conflict and co-constitute each other. Many worlds in one planet mean that human societies are always making worlds, entailing diverse knowledge sub-systems and notions of nature. This is what we call “worlding”. Enhancing capabilities for governance in a complex and technologically driven planet is more likely to succeed if different knowledge systems are acknowledged in processes of co-production. The voice and representation of the people inhabiting those multiple worlds in parity position are key for advancing Earth System Governance processes that are legitimate, socially just and that promote ecological and economic sustainability. We ask how
worlding can promote knowledge co-production among different knowledge systems (e.g. indigenous and academic) and how this knowledge co-production can enhance capabilities in sustainability governance. To answer these questions the paper will address what is worlding, what is knowledge co-production and how have scientists, academicians and Indigenous peoples co-produced knowledge, considering possibilities and limitations of these processes. The methodology used is the description of contextual and theoretical issues based on recent and updated literature of Earth System Governance, worldism and the pluriverse, knowledge co-production and indigenous knowledge systems. The work will contribute to a better understanding of how indigenous ontologies can inform the design and effective implementation of environmental policies and how socioenvironmental rights and pluralism can be integrated in multi-scale environmental governance, thereby contributing to planetary justice. The conclusion highlights ontological, epistemological and methodological implications to the study of Earth System Governance, e.g. critical thinking about mainstream concepts used in research, asymmetries in research and practice capacities, language integration, among other issues.

203

Indigenous Mobilisations and Sustainable Development

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The 1987 Brundtland Commission’s Our Common Future report with its definition of sustainable development as being “the kind of development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland Commission 1987) as well as the more recent Agenda 2030 with its Sustainable Development Goals and principle of ‘leaving no one behind’ have thus far not sufficiently extended their promises to Indigenous Peoples. For example, the Indigenous needs for self-determination, including self-determined holistic development, have largely not been met. This paper reviews literature on (1) the extent to which the values, rights, institutions and worldviews of Indigenous Peoples and local communities have been included or excluded in this context of sustainable development thus far (forms of inclusion/exclusion), (2) the ways in which they have successfully or unsuccessfully mobilised to voice their needs at local, national and international levels (strategies for mobilisation), and (3) the ways in which they can offer solutions toward sustainable, equitable and inclusive development (potential for solutions). Key contributions will include (1) illustrating norm travel, diffusion and negotiation, (2) informing future framings about political mobilisation of social groups, and (3) identifying evidence gaps and areas for future research. We focus here on contexts of climate change and resource extraction as being at the heart of struggles of Indigenous social movements and central to outcomes for development and sustainability. We look in particular at the UNFCCC (United Nations Framework Convention on Climate Change), EITI (Extractive Industries Transparency Initiative) and UNPFII (United Nations Permanent Forum on Indigenous Issues) processes as key forums for strategies and raising voices and interfaces across Indigenous Peoples, national governments and international civil society. Whilst our outlook is global, we apply our framework to three case study countries across three continents (Bolivia, Uganda and Papua New Guinea) as pertinent, diverse examples, and we consider the extent to which the literature covers different subgroups, such as Indigenous women and youth.
Panel ID 27
Just Transitions I: Genealogies, Grievance, Value-systems and the Rules of the Game

Participation is not enough for environmental justice: Recognising value systems in forest conservation in Mexico
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The recognition of diverse value-systems is an integral part of environmental justice, and is therefore an indispensable aspect of biodiversity conservation efforts. Yet, recognition remains scarcely researched in conservation contexts. In this article, we empirically analyse the factors affecting recognition in the governance of conservation efforts in four Mexican forests. The case studies reflect different environmental and social contexts within Mexico but are all characterised by progressive approaches to conservation, including participatory mechanisms and co-management. Despite this, we find that in all cases, local communities’ value-systems fail to be recognised in conservation efforts. The prevalence of the scientific paradigm (particularly in the design of laws and policies), power imbalances (affected by financial resources) and the lack of awareness of diverse cultural norms in participatory processes of decision-making hinder this recognition. Insights from the case studies suggest that achieving the recognition of diverse value-systems requires a profound change in how conservation efforts are designed and implemented. Existing participatory mechanisms must be accompanied by an epistemological transformation in which science is considered only one of various legitimate knowledge systems, and by an increased awareness of the role of the socio-cultural context and power configurations in the communication between local communities and external stakeholders.

Gender and the ILO’s Just Transition – What does it mean to Women from the Global South?
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Women in the Global South have had to bear the burdens of the impact of climate change on their livelihoods due to their placement in the current global neoliberal structure. They face unsurmountable challenges in ensuring stability in their households, community and their societies writ large owing to changes in their surrounding environment. The International Labour Organization (ILO) has adopted the Just Transition Guidelines in 2015 that acknowledges the vulnerability of women and attempts to distribute burdens and benefits fairly during a transition to a green economy. This study examines the micro-processes in the adoption of the Guidelines by the ILO in order to analyze its impact on women in the Global South. It studies the processes to examine if it retains neoliberal notions of growth or whether it facilitates a redesign of the rules of the game. The negotiations by its tripartite membership within the Secretariat of the Office, Governing Body and International Labour Conference provides a narrative of how certain actors are empowered and others are disempowered. This research asks: Who were the main proponents of the Just Transition agenda? And what strategy did they apply when using the term in the meetings of the ILO? What kind of support did the proponents attain to push for the Just Transition agenda? Did they succeed in pushing for a specific type of Just Transition? What kind of pushback did the proponents face after pushing for a specific type of Just Transformation?
A Genealogy of Just Transitions: Varieties of Just Transitions - Varieties of Environmental Justice

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During the last several years the strategy of Just Transition has become increasingly prominent globally, more diverse and more contested. Its inclusion in the Paris Agreement and the Silesia Declaration at COP24 announced its rise to the top of global governance. This paper provides a systematic genealogy of Just Transitions that employs the dimensions of environmental justice while embedding them into social power. The goal is to better understand the dynamic development of JT across time, its contemporary variability, and its promise as a transformative policy. This genealogy will also provide necessary context to current analyses and debates about Just Transition and its promise with respect to the governance of sustainability transitions. By whom and for whom, has JT been promoted over the years? Who is recognized and who is not in various proposals and practices? To what degree are the voices of those affected, particularly the more vulnerable, recognized as their own and not supplanted by those of advocates? Are Just Transition proposals recognizing all those affected, across space and time? Why have JTs been proposed? What are the implications of privileging some environmental and social priorities over others? Do Just Transition proposals ever serve exigencies other than social and environmental justice? How are JTs to take place?

Who participates in the formation of JT policies and how is participation structured? Is participation inclusive of all affected or do they privilege particular people or places within the world political economy? What is the ambition of JT policies? To what degree are they managing, reforming of transforming the global political economy and its governances? Do they go beyond environmental justice to address ecological justice between humanity and nature? The evidence for this genealogy is based on three major sources. The first is primary and secondary material from the late 1980s to the present that I have collected over the last twenty years. The second is access to the personal files of key people from the 1990s and the first decade of this millennium. The third, and more important, are interviews (both regular and life) with people involved in the development of the Just Transition narrative from the late 1980s to the present. Some of those interviews have already been completed and the remaining will be completed during April and May of 2019.

A Just Transition to a Low-Carbon Future: Distinguishing the justifiability of grievances

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Economies around the world are in massive transition. All activities associated with greenhouse gas emissions are to be replaced with low-carbon alternatives, as required by the Paris Agreement (UNFCCC 2015). The sooner this happens, the better the odds that dangerous climate changes are prevented or mitigated (Stern 2015). A key factor in determining the pace of the transition is whether or not measures proposed to this end are perceived as fair by those whose interests are implicated. If unheeded, such grievances may put a brake on the transition. However, while some complaints are morally justified, others may express a status quo
bias or just be unreasonable. There is a need for a systematic investigation of the fairness and legitimacy of grievances raised by the transition to a low-carbon future. While some criticisms of unfair climate policies are easy to justify, others come across as unjustifiable expressions of fear of losing privileges warranted by a system now generally recognised as unsustainable. An example of the latter is Saudi Arabia’s complaint that the transition from fossil fuel is unfair because it counteracts their oil production, which is their main source of national income. There is thus a need to separate the justified from the unjustified claims brought about by large-scale changes of policies, laws and incentive structures related to global energy systems. Because these kinds of transitions involve renegotiating property rights, expectations on the future, investments, capital expenditures, and indeed interpersonal relations, positive social norms are a poor guide to what must be done. What was once permissible, and on the basis of which agents have formed beliefs and expectations, is now impermissible, which leaves a residue of expectations. There is a need to specify what part of this residue is legitimately the responsibility of other agents (e.g. the state or the world community) to compensate for, and what part individual agents just must cope with. This paper presents a study of the transitional fairness of climate policies through an interdisciplinary lens which combines ethics and sustainability studies. Two streams of work are carried out in parallel. In the analytical part, we analyse expressed grievances and seek to formulate a theory of transitional climate justice. In the policy-oriented part, the project participants and a reference group consisting of representatives from industry, politics and civil society exchange ideas on what a fair transition to a low-carbon future could mean in practice.

Panel ID 28

Just Transitions II: energy and mining

77

Debating a Just Energy Transition in Brazil and South Africa

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Both Brazil and South Africa have begun an energy transition toward more use of wind and solar powered electricity. While the two countries share many basic political economy characteristics, not least their striking economic inequality, their electricity systems are very different. In South Africa, a public utility has used coal to generate almost all of the national electricity supply, which still leaves about 20% of the population - mostly Black African and poor - unserved. In Brazil, there is nearly universal electricity provision based on mostly hydropower, with both public and private generation. As this brief summary suggests, the two countries have very different national political economies of electricity, belied by any simple story of renewable energy innovation. This paper asks how those two national political economies of electricity create different just transition dilemmas - who benefits and who pays the costs of energy transition in each? In particular, are historically vulnerable populations protected or are they asked to bear disproportionate transition costs? The paper examines costs and benefits through not just the classic just transition issue - for labor forces - but also for communities that hosted older forms of electricity and those where wind and solar power are sited. It also considers the impact of wind and solar power adoption on the cost, quality, and access to electricity service for consumers. I argue that all of these are potential areas of costs and benefits that create a fuller view of what constitutes a just energy transition. As they are large emerging powers and regional leaders, the experiences of Brazil and South Africa are especially important for understanding the potential
dilemmas of just energy transition in the developing world. The paper is based on extensive fieldwork in the two countries, including more than 90 interviews with various actors in the energy and climate sectors. It is organised around a qualitative structured, focused comparison of two national cases.

163
The rise of renewables and energy transition in Mexico
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Globally market-driven mechanisms have been used to boost renewable energy. This paper investigates the lack of coordination of international, national and local developmental priorities and the inclusion of local needs in the decision making process of renewable energy developments in Mexico. Additionally, it raises concerns regarding what is in principle a much-needed, timely, and legitimate project—the transition to renewable energy sources—and queries whether the transition will result in violations of human rights. Alternative energy schemes requires a geographical analysis beyond territories of energy production. Energy transitions confront space and territory and the implications for existing local/national/international structures of governance that are more important than the mere provision of electricity. This research explores how national government re-thinks political decentralization of energy systems and particularly how renewable energy developments can take place without ignoring indigenous rights.

262
Just transitions in mining for renewable energy: justice and ethical implications of globalised metal trade
Elsa Dominish
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The transition towards a renewable energy and transport system requires a complex mix of metals and minerals, many of which have only previously been mined in small amounts. Demand for these metals—such as copper, cobalt, nickel, rare earths, lithium and silver—is projected to rise dramatically, and new mining developments linked to renewable energy are already underway. There are many examples of where the metals used in renewable energy have led to heavy metal contamination of water and agricultural soils and severe health impacts, and some of these metals are mined in vulnerable communities, where precarious labour conditions and poor environmental standards impact the wellbeing of workers. Using a ‘just transitions’ lens, this presentation will synthesise the justice dimensions of the supply of metals for renewable energy technologies, and will assess which communities and countries are likely to bear the costs and benefits of mining for the transition to a renewable energy system. It draws together the projected metal demand for solar photovoltaics, wind and electric vehicles with data on national reserves, international metal trade and known examples of where mining is already under development. This is linked to a detailed review of the known location-specific environmental and human rights impacts of mining for each metal, and the results of industry interviews on responses and the potential for responsible sourcing approaches. This study will present implications for the governance of renewable energy metals in a way that ensures just and ethical outcomes for communities. Results signify that many of the metals with large projected increases in demand are mined or found in countries with very weak governance structures, where adverse human rights and environmental impacts are likely to be significant. At the same time some manufacturers have responded to this by focusing on securing new supply from industrialised countries, which may reduce economic benefits for mining dependent communities in countries with weaker governance that currently supply the market. Responsible
sourcing approaches need to ensure the potential benefits do not only benefit industrialised countries, but vulnerable communities such as informal miners.

373

Artisanal & Small-scale Gold Mining, Sustainability Transformations and Social Justice
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Artisanal and Small-scale Gold Mining (ASGM) presents a tricky proposition for debates on justice and allocation in earth systems governance. Combining the geological fixity of gold resources with human mobility, ASGM brings questions of justice and resource allocation to the fore while exposing power disparities, inequalities and conflict. Within the context of the global expansion of gold mining economies, an estimated 16 million people are dependent on ASGM. This involves labour intensive, low-tech, gold extraction and processing. Globally, it is associated with a host of negative environmental impacts, including biodiversity loss and ecosystem degradation. Nevertheless in supporting the livelihoods of millions of people, many of whom are living in poverty and eke out an existence in the most marginal environments, its employment and income generating potential can contribute to social justice and fairer allocation of economic resources. Despite this positive socio-economic potential, governance systems and profound power disparities generate critical barriers to sustainability transformations. An impasse prevalent in gold sector interventions reinforces these sustainability barriers: echoing modernization strands of sustainability thinking, governments and international bodies promote change as a matter of miners’ security mineral rights, improving technology, becoming trained, and thus equipped to adopt sustainable practices. There is neither recognition of how mining actors experience sustainability’s contradictions, nor of how dynamic is endogenous technological change in ASGM. This includes forms of innovation that catalyze practices to improve environmental and socio-economic impact. Using as an evidence-base of cross-regional empirical data from a NORFACE/Belmont Forum funded project “Gold Matters: Exploring Sustainability Transformations in ASGM – Transregional and Multi-Actor Perspectives” this paper argues that we need to de-center our assumptions of unsustainability in ASGM and shift the terms of dominant debate in ways that give credence to the potential for positive transformations to arise. This includes acknowledging the voices of marginalized mining actors in articulating visions of more sustainable futures. An agenda is put forward for transdisciplinary engagement on ASGM and issues of justice and allocation within the context of wider consideration of sustainability transformation. Inevitably this brings questions of moral responsibility and political accountability to the fore. In this respect the tricky proposition that ASGM presents for our debates on sustainability transformations in earth systems governance, is not one we can step away from given how integral is the use of gold and other minerals within contemporary lives; significant quantities of these minerals are extracted through artisanal and small-scale techniques.

Panel ID 29
Legal and Institutional Perspectives on Justice and Allocation
124

Law, Society and the Anthropocene
Margot Hurlbert
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Theorizing about law, society and the Anthropocene opens a new frontier. The new frontier begins with a trivalent conceptualization of each component: law, society and the Anthropocene but must evolve to a solid theoretical framework of the components and the interrelationships between law, society and the Anthropocene in
order to advance justice. This paper briefly builds a theoretical foundation for each component of law, society and the Anthropocene, and then a unifying trivalent framework linking the three constituent components. Law is often studied in a jurisprudential positivist manner. Assumptions of people as actors making rational choices with full information frame an ‘official version of the law.’ Often law is envisioned as a closed system free from external influences. Those practicing the law, dispense justice through a completely self-referential process of reviewing statutes, legal decisions and reasoning. There are no outside influences. New science (such as that surrounding climate change) does not exist within the law until a judge determines that it exists and it applies in a particular case. Others do believe law connects to society as it has long been conceived as the most important observable manifestation of the collective consciousness and its transformation. The law is a ‘living law’ that is determined and applied by people in their everyday decisions of how to abide by, invoke, and interpret the law. But how does our view of society and how it operates inform our understanding of how the law operates? Is it a social structure operating, shaping and being shaped by the society in which it operates? Or is it a mere instruments of capital influencing our governments and those passing statue laws? And what are the implications of this for our understanding of how law and society interconnect with the Anthropocene? Which understandings of law, society, and the Anthropocene relate to the new interconnections between people and their world that is relevant for the 21st C? Can we build upon institutional analysis and development framework that interrelates people with common pool resources such as the earth or her conception of the socio-ecological system? This paper builds a framework of law, society and the Anthropocene using a social field vision of society in order to advance justice and open a new research agenda of how to address the complex problems of the Anthropocene.

127
Norm diffusion and legal innovation in Earth System Governance: the case of green courts
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Numerous institutional models have been established in pursuit of justice, rights, and access in Earth System Governance. These include specialized “green” courts that exclusively hear environmental questions. Green courts have proliferated across countries and governmental levels, and they may enhance domestic capacity to interpret environmental laws and to implement international environmental principles. Nevertheless, the mechanisms supporting rapid green court spread remain poorly understood. This study contributes new insights by (1) identifying the actor classes most engaged in promoting an institutional norm favoring green court establishment, and (2) evaluating how insights from green court promotion can inform broader norm diffusion scholarship. It first reviews existing literature addressing known environmental norm diffusion actor classes. Next, the study generates a detailed qualitative account of the key actor classes promoting green courts by gathering original data through document review, an expert survey, and depth interviews. It subsequently evaluates the resulting findings, and it emphasizes the importance of judges as norm entrepreneurs, of judicial networks and conferences as catalysts for environmental norm exchange, and of disconnects between judges and legal academics as constraints upon broader norm diffusion. Ultimately, this project advances efforts in Earth System Governance to better understand how norm diffusion actors influence justice and equity when regulating the global environment. Simultaneously, it contributes to broader discourse examining the role of judges
Climate change impacts and their response measures have clear and widely acknowledged human rights implications, especially for countries in Latin America, where climate-vulnerability is a prominent issue. Such implications include, but are not limited to, the violation of the rights of indigenous peoples, tensions between legitimate interests, and the identification of attribution. The Inter-American Human Rights System (IAHRS), comprised by a Commission (IACHR) and a Court (IACtHR), has been a regional norm innovator with international impact, providing victims with a space to attain truth and justice. Plaintiffs have increasingly used the IAHRS to address rights connected to the environment. Yet, so far climate change cases have either been dismissed or not gone beyond the admissibility stage before the IACHR. Since climate change will touch upon every aspect of the lives of all individuals and organizations in the region, it is likely that victims will resort to the IAHRS to seek remedies for human rights violations resulting from climate change. The IAHRS is therefore expected to play a role in this connection, interpreting the rights of those living in the continent in light of new societal challenges and granting appropriate remedies. This paper will provide a prospective analysis of the institutional arrangements and normative production of the IAHRS in the context of cases arising from climate change-related circumstances. By taking stock of relevant environmental decisions and the IACtHR's recent advisory opinion on human rights and the environment, I will deliver a clearer picture of the role of human rights institutions in addressing climate change at present and in future. This will offer a novel and much-needed contribution to academic scholarship and civil society, on the role of human rights law in responding to complex and pressing societal challenges associated with climate change.
creation of new needs. As Illich pointed out, the political debate “must be focused on the various ways that unlimited production” threatens life in Earth. Nonetheless, global environmental destruction, characteristic of modernity, is at the heart of this debate. In Energy and Equity(1974), Illich traces the energy crisis back to a vision of humans perpetually dependent on slaves, in other words, machines are needed to do most of ones work. Therefore, industrial growth relies on a high quanta of energy that degrades social relations “just as inevitably as they destroy the physical milieu (ILLICH, 1974)”. Despite roughly 45 years since these ideas were written, the diagnosis and proposals remain as relevant as today. Illich had written these ideas with the same tone of urgency that Rockström et al. wrote their article. The dilemmas mentioned above require urgent transformations. The characteristic of conviviality is precisely the power to give meaning and translate intentionality through the tool. The convivial tool can guarantee boundaries and control over the social tools as a result of participation in the creation of social life, outside the oracles of experts.

Panel ID 30
Climate Justice
13
Addressing the Plights of the Victims of Climate Change in Bangladesh: An inquiry
Mokbul Ahmad
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Climate Change is undoubtedly an issue involving many spheres having a dire impact upon the future and development of human race: the indomitable spirit for development directed at a Machiavellian goal, the unquenchable thirst for prosperity at the cost of mere mortals, securing what’s convenient for a few by directing a stopper at what is necessary for many etc. All these have given rise to much quoted environmental law principles, and hot cake topics on balancing the interest and liability of the first and the third world. We do not talk about the Climate Change victims so much as we do about Climate Change migrants. Victims of Climate Change have seldom been looked as a subject of Victimology rather than a subject of refugee or migrant studies, or the concepts of beneficiaries of compensation. But if one takes a deeper view, one shall find that the notion of victimization due to Climate Change itself is a diverse and wide concept, due to its distinctiveness, and may be, due to its un-crystallized character. People are generally victims of fellow human beings- perpetrators of crimes. But people can also suffer from Climate Change when the nature is changed by the activities of human being. Various activities of the humans such as excessive industrial wastes, spills, emissions etc. are taking the environmental pollution to such an extent that at present Climate Change has become causal factor to human sufferings. In the passages to come, we are to dissect the concept of victimization and scrutinize its dimensions in the particular context of Climate Change. This Paper would discuss the notion of Climate Change Victimization along with its various dimensions, the linkage between Climate Justice and Climate Change victims, the efficacy of Compensation Scheme for Restorative Justice, State Obligation under National and International legal regime. It concludes with some possible measures for helping the climate victims in Bangladesh.

21
Climate change and climate refugees- The greatest challenges for Earth System Governance and justice-for-all in the Global South?
Dumisani Chirambo
Seeds of Opportunity, Blantyre, Malawi

Climate change is a threat to the achievement of the Sustainable Development Goals (SDGs) since unmitigated climate change will exacerbate inequality within and across countries (UN, 2018; Hallegatte et al., 2016), hence arguably create new forms of social disruptions and conflict for
which many existing institutional and legal frameworks will not be able to contend with. For example, sub-Saharan Africa, South Asia and Latin America could see more than 140 million people undertake national and international migrations attributed to climate change by 2050 (Rigaud et al., 2018). Unfortunately, despite the projected increases in the number of “climate refugees or environmental refugees”, there is no international legal recognition for such a group hence such individuals and groups cannot be guaranteed international protection as a matter of law (Apap, 2018). Consequently, existing international climate change governance architectures such as the United Nations Framework Convention on Climate Change (UNFCCC) and other international regimes for protecting human rights such as the 1951 Refugee Convention are arguably failing to provide access to justice for all. The Paris Agreement and Nationally Determined Contributions (NDCs) framework provides a new innovative global governance framework for improving climate change governance and promoting inclusive development based on individual country’s capabilities and its economic and political context/circumstances, unlike the previous regime of the Kyoto Protocol that was characterised by a Command and Control regulatory framework (Kaku, 2011; Zhang and Pan, 2016). Additionally, NDCs provide a framework to which countries can periodically ratchet-up their climate change ambitions and actions. Arguably, through the NDCs and ratcheting-up concept, there are now new opportunities to which the plight and rights of “climate refugees or environmental refugees” can be gradually introduced and recognised in international law instruments. Consequently, this exploratory study, through analyses of case studies, project reports, policy reviews, policy briefs and academic literature aims to identify the mechanisms and incentives that can enable countries and the global community to eventually provide justice and legal status to “climate refugees or environmental refugees”. The study concluded that the NDCs framework has arguably more potential than the SDGs framework to promote access to justice for “climate refugees or environmental refugees”. Therefore, it was suggested that future climate change policy debates on NDCs should not only focus on strategies for increasing global mitigation ambitions but should also start pursuing strategies for recognising the rights and livelihoods of “climate refugees” in the NDC framework.

68

Adaptation to climate change: Institutionalising (in)justices?

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Climate change is projected to increase the frequency and intensity of extreme weather events such as floods, droughts or heat waves. Societies need to adapt to these aggravating risks. In 2009, developed countries committed to providing annually $100 billion by 2020 to support, among others, developing countries’ adaptation projects. A significant portion of this funding will flow through multilateral funds such as the Adaptation Fund (AF, launched 2007) and the Green Climate Fund (GCF, established 2010). But adaptation projects are not without controversy. Scholars argue that they might actually exacerbate communities’ vulnerabilities to climate change by multiplying societal injustices. As a consequence, they may jeopardize the achievement of several Sustainable Development Goals. Despite growing critical research on climate justice, we have little analytical knowledge of the mechanisms (re)producing injustices. This contribution argues that the multi-level institutional set-up of multi-lateral funds is crucial for explaining the (re)production of injustices as it structures the formulation of adaptation projects. The institutional set-up comprises procedures established by the multi-lateral funds, and formal and informal rules on the national,
regional and local level. In the political debate, it is assumed that the direct-access approach increases adaptation projects’ responsiveness to the local context. This implies that the multi-level interaction of actors, institutions, and discourses differs in projects led by national entities (direct-access) compared to projects led by international intermediaries. But it remains unclear how these institutional set-ups (direct-access, multi-national) influence the project formulation. Hence, this contribution aims to open this black box of formulating multilateral climate adaptation projects. Based on a comparative case study research, this contribution will present first empirical and conceptual insights on how institutional set-ups structure the formulation of adaptation projects of the Adaptation Fund and the Green Climate Fund. The contribution will present a typology of distributional consequences and identify multi-level discursive-institutional pathways reproducing injustices. It is crucial to understand these processes to adjust procedures and assessment frameworks for project formulation that counteract the (re)production of injustices.

446
What is just? Structural transformation between domestic just transition and global climate justice claims
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Climate mitigation efforts under the Paris Agreement have started to induce the discontinuation of unsustainable activities such as coal-based energy generation. A more or less rapid exit from coal leads to structural transformations in energy-producing regions. In an attempt to cushion the adverse effects for workers and communities, the “just transition” concept has recently received considerable attention, both within and beyond the UNFCCC context. Several countries committed to a coal phase out such as Germany or Canada have established task forces to develop pathways for a just transition. However, the just transition concept does not remain uncontested, given the suspicion that it might hinder fast and strong climate action and might benefit mainly fossil-fuel workers and communities. The discrepancy between justice conceptions of just transition and global climate justice advocates points to the fact that the concept of justice itself is elusive. Fragmented academic and activist debates spanning environmental justice, energy justice and planetary justice communities are further proof to that. In this paper, we take the phase-out of carbon-based industries as a point of departure to research the role of justice from the local to the global level. Even if they are not always explicit, justice claims are at the heart of both domestic and international debates. Distributional, procedural justice and justice of recognition are guiding dimensions that help structuring the discussion. In addition to that, scale and time seem useful determinants to make sense of different justice claims. Our research is based on expert interviews with trade union leaders, politicians and activists as well as on content analysis of commission reports and UNFCCC documents. With this contribution, we shed light on the question how a better understanding of justice claims on various levels can help overcome deadlock to necessary transformations towards sustainability.

452
Conceptualizing global climate justice – A critical discourse analysis of the participating countries in the 2017 United Nations Climate Conference (COP 23)
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Equity- and justice-related concerns are becoming increasingly important in climate change governance. Yet little is known how various actors within the global climate regime frame climate justice. This is problematic, since varying justice conceptions can lead to conflicting justice
demands and ultimately to different ways of pursuing justice in practice. This may in turn produce disagreements between countries, and thereby negatively impact actors’ willingness to cooperate, which could decrease the regime’s effectiveness. Accordingly, this paper provides valuable insights in how various negotiating entities in the global climate regime frame climate justice, and which implications this might have for global climate justice and the effectiveness of the climate regime. Conceptually, a climate justice framework was operationalized, which distinguishes five major philosophical traditions: cosmopolitanism, libertarianism, the capability approach, critical perspectives (i.e.: ecofeminism, eco-socialism), and ecocentric spiritual ecology. Empirically, the framework was applied via a critical discourse analysis performed on 107 official country statements issued during the United Nations’ climate conference held in Bonn (Germany) in October 2017. In this process, quantitative as well as qualitative approaches were applied in order to identify and compare the climate justice frames of five different country groups (e.g. developed, developing, and least developed countries as well as countries in transition and small island developing states). The results reveal a remarkable variation of normative conceptions within and across the five different units of analysis. Overall, I found that certain justice notions attract more attention than others, while many subjects, principles, and mechanisms mainly of the more transformative climate justice approaches remain excluded. The global climate regime applies quite shallow, highly anthropocentric, and at times incoherent climate justice framings, while hardly making use of the term ‘justice’ itself. Such normative shortcomings may undermine effective and legitimate climate action, since they exclude certain voices and produce a rather limited action space for tackling climate change. This might have the potential to ignite more ethics-laden disputes in the future – especially between Northern and Southern countries. It also raises strong doubts about the extent to which an explicit, honest, and open discourse about climate justice is actually taking place in the global climate regime.

Panel ID 31

Justice and Allocation: Indigenous People and Community

When Reality Challenges Policy- Applying the Free Prior Informed Consent (FPIC) Principle to Wind Power Projects on Indigenous Lands in the Tehuantepec Isthmus, Mexico

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In 2015 the first ever indigenous consultation process to take place in Mexico was carried out to obtain the consent of locals for the development of the largescale wind power project, Eólica del Sur, as part of the third stage of development of the Wind Corridor of the Oaxacan Tehuantepec Isthmus, in Southwestern Mexico. National and international commitments undertaken by Mexico stipulate that this process must have followed the Free Prior Informed Consent (FPIC) principle, developed within the ILO No. 169 Convention and ratified by the Mexican Government in 1990. This thesis sets out to analyze how this process was carried out and aims at understanding if consent was reached. It further explores what lessons can be learned from this case about applying the FPIC in a context of customary land tenure systems and complex realities. In depth, qualitative interviews with key actors and one participatory mapping exercise will be the complementing methodological approaches applied to answer the research question of: Is the operability of the FPIC burdened by highly complex realities when searching for consent to develop large-scale projects? Results indicate the need for expert designed context-based operative guidelines for applying this principle. This field of knowledge is yet underdeveloped in academia. Policy debate regarding
consultation and participatory approaches to governance and the operability of the FPIC is also a relatively unexamined area, and it is particularly scarce in the Mexican context.

236

ECMPOs’ emergent conservation arrangements for the protection of indigenous seascapes in Chile
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The marine zone of southern Chile is a complex and dynamic territory, subject to multiple economic and political stakes. The neo-extractive economic model, based on the intensive use of commons pool resources for industrial activities, has found in the fjords and inner seas of Patagonia an unique space for the development of the aquaculture industry, including salmon and mussels farms. This economic activity has affected the social and environmental attributes of these territories, impacting the sea bottom and water quality, fish stocks, labor practices and local small-scale economies. Thus, marine conservation has been emerging as a political strategy to confront the expansion of industrial aquaculture by reinterpreting its protection tools beyond biodiversity, as new institutional arrangements oriented to defend the indigenous seascapes and to maintain their local livelihoods. The paper presents the first results of a research in progress conducted at Los Lagos Region, focused on the establishment of Marine Coastal Spaces for Indigenous Peoples (ECMPOs - Espacios Costeros Marinos para Pueblos Originarios) and its effects for the governance of the coastal zone. Based on “Lafkenche Law” (Law 20.249/2008), ECMPOs protect the customary uses and livelihoods of the indigenous communities settled in the coastal zone, which have expanded in the south of Chile over the last years. Currently, ECMPOs concentrate a large part of the marine zone subject - or possible to be it in the coming years - to some protection measures. The first results highlight the multiples roles play by ECMPOs in the context of the socio-ecological transformation of marine systems as i) a contention territorial tool used to stop the expansion of industrial aquaculture activities; ii) a local institutional arrangement with the potential to transform marine and coastal governance system; iii) a collective actions supported on polycentric connections of multiples actors.

352

Hunting for Justice: Self-Determination in Resource Management in the Amazon
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Northeastern Ecuador’s rain forests are widely recognized as some of the most biodiverse forests on the planet. This region has also been inhabited for millennia by the indigenous Cofán Nation, who have continuously adapted their traditional activities to maintain their well-being over time. Beginning in the 1980s, researchers across Amazonia began to argue that indigenous hunters can contribute to overexploitation of game. Moreover, the Cofán are cited as a glaring example of the impact native hunters can have on game populations. Rigorously documented evidence of this process, however, is sparse. At the same time, this controversy ignores indigenous self-determination, or the right of the Cofán to manage their resources in culturally appropriate ways that are essential for both food security and cultural survival. My research leverages a seven year partnership with the Cofán to explore the effectiveness of their strategies for managing añacho (a Cofán word meaning both animals and food), with the ultimate goal of supporting self-determination in resource management within the territory of Zábalo. Residents of Zábalo adhere to se’picho, a set of rules and restrictions that range from prohibited species to limited takes and seasons. Given this context, my research 1) describes how the Cofán adaptively manage wild resources to meet their subsistence
needs, 2) assesses the effectiveness of this management system by monitoring changes in animal populations over time, and 3) evaluates the extent to which residents rely on these resources for their well-being.

379
Fisheries and indigenous peoples in the Colombian Amazon: the historical cost of sustainability and the challenges for governance and environmental justice.

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The Amazon basin contains the greatest richness among the freshwater systems of the planet and, is home of diverse indigenous peoples who have been inhabited in this ecosystem since millennials. Thanks to ancestral knowledge, for long time indigenous peoples have used this ecosystem in a sustainable way, also have developed a culture based on its relationship with the jungle and aquatic systems, as well as an economy supported in the extraction and use of forest resources and water systems. However, the population has been immersed over time in changes from global order, such as the integration to the market economy, and new political organization systems imposed by the State, which has set important changes at socio-economical level. This also has configured a new relationship with nature, but new dialogues between the indigenous population and the new actors of fishing management as State and NGOs. Through artisanal fishing and its management in an indigenous reserve in the Colombian Amazon, this research shows how indigenous population have worked to maintain artisanal fishing practices in the last 50 years. Changes from fishing management and consequences in social organization are pointed, as well as social costs of integration to the market economics. Finally, adaptation strategies that indigenous peoples have developed to maintain artisanal fishing practices as a form of social, political and cultural resistance are presented, at the same time, trying to respond if fishing management efforts are a right tool to increase governance and environmental justice.

385
Social construction of pastureland: Changing rules and resource use rights in China and Kyrgyzstan

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One of the fundamental issues in governing natural resources is how to design institutions and, in particular, property rights regimes that support more sustainable use and management of common property resources. The privatization of natural resources was a widely practiced solution to the “tragedy of the commons” during the 1980s and 1990s. But many such efforts failed to guide the sustainable use of resources, and policymakers are experimenting with new types of policy interventions. In our article we study recent changes in pastoral institutions and their outcome regarding resource use rights and the sustainability of resource use in the two Asian countries of China and Kyrgyzstan. Interpreting the process of changing property rights as one of social construction, we examine the altered rules and rights relations and the ensuing changes in the legal correlates between various actors in the selected illustrative choice settings. The article contributes to the literature regarding the impact of these reforms, and on property rights and their development in the pastoral context.

Panel ID 32

The Political Economy of Justice and Allocation: private philanthropy, markets, capital and livelihood

Climate risk and the cost of capital: a perversion of the polluter pays principle?

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Inequalities in human development are often compounded by environmental change. This is particularly pronounced in the discourse on climate justice, which responds to the mismatch whereby those who contribute least to the causes of anthropogenic climate change are most vulnerable to its consequences. Associated challenges to justice and allocation in Earth System Governance include questions on the distribution of costs and benefits of transformational change. This paper addresses an emergent challenge that results from interdependencies between anticipated impacts of climate change and global financial structures. Recent empirical research traced how vulnerability to climate risks affects the conditions for borrowing on global capital markets. Specifically, assessments of climate vulnerability drive up the cost of sovereign debt for climate vulnerable developing countries. Yet, within the given structures of the global economy, the economic prospects of developing countries depend (among other factors) on access to financial markets at reasonable conditions. The plight of climate vulnerable developing countries is thus compounded by a global financial system that braces itself against the costs of climate risks at the cost of those who are already disproportionally burdened by these risks. This amounts to a perversion of the polluter pays principle that undermines environmental justice, if unintentionally. Multilateral climate governance is increasingly responding to mismatches in global development through the mobilization of climate finance, encouraging divestment from fossil-based industries and developing climate risk insurance schemes. Such distributional efforts are instrumental to addressing challenges of climate justice internationally. They typically rely on the level of issue-specific supply that developed countries are willing to concede. The borrowing of capital, however, is an expression of developing countries’ demand.

Inhibiting their access to capital markets through issue-linkages with climate risks is a further manifestation of inequity resulting from climate change. Yet, multilateral climate governance would be out of its waters to address the underlying fundamental structures of this particular conundrum. Placing this particular empirical challenge in a normative context, this paper seeks to advance a policy-relevant understanding of issue linkages between climate policy, risk management and the global economy. Ultimately, the paper argues for better reflecting global financial structures in multilateral climate policy and to developing strong institutional interlinkages between global climate and global financial governance as a prerequisite to targeting one of the major blind spots of justice and allocation in Earth System Governance.

267

Private foundations and global justice in sustainability governance
Agni Kalfagianni
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Private philanthropic foundations – such as the Bill & Melinda Gates Foundation- have become key political actors in global sustainability governance. Their collective efforts amount to over USD 112 billion for the implementation of the UN’s ambitious plan to deliver on seventeen interconnected Sustainable Development Goals (SDGs). This corresponds to about a quarter of governmental contribution through Official Development Assistance for the same purposes. Many of these foundations implicitly or explicitly aim to foster global justice, through for example, empowering women, reducing inequalities and fostering democracy. But what does this direction of private money into supporting global justice norms really mean? This question deserves scrutiny especially against a context of diverse and contested meanings of justice and because philanthropy -beyond an act of giving- is often an exercise of power. Using
In recent years, market-based instruments (MBIs) have become a major component of environmental governance. These MBIs range widely in focus and scope, but share in common a goal of using economic incentives, either for promoting positive environmental services like habitat preservation or for discouraging negative environmental costs like pollution, in the hopes that the market provides a more efficient, less expensive policy outcome than traditional regulation. MBIs for land-based resources and conservation policy have included subsidies to farmers for refraining from use of sensitive lands, tradable permits and quotas for natural commodities such as fish, and payments for ecosystems services (PES), which provides funding from users of ecosystem services to those who provide soil, water and forest conservation. Such MBIs that include compensation and/or incentives assume that in one way or another, a monetary value can be established for environmental measures, and that this valuation can be used to leverage positive conservation behavior in some form. Yet how MBIs have been applied on lands and resources managed or claimed by Indigenous Peoples (IPs) have not yet been well understood. Many IPs have objected to monetary valuation of natural resources, claiming this violates cultural and ontological beliefs relating nature-human relations, while many scholars and IPs have raised questions about the distributional and equity impacts of MBIs on participating populations. There is little systematic understanding of the factors that influence participation in MBIs by IPs, including eligibility, desire, and ability (such as lack of secure land tenure or sufficient labor), as well as cultural and community factors. To understand how MBIs have affected IPs, we undertook a systematic literature review as well as selected case studies on various MBIs, including PES, REDD+, agro-ecological schemes, biodiversity offsetting, Individual Transferable Quotas for fishing, and certification projects. Through this review, we examined how prevalent MBI approaches are in Indigenous lands and communities; mapped out which Indigenous resources tended to be managed with MBIs versus traditional management arrangements; and examined what the potential impacts have been on IPs, including concerns about privatization of commonly management resources and unequal distribution of benefits. We will present the major findings from this review in this presentation.
environmental protected regimes, urban developments directed to the wealthiest families in Mexico have fenced off the provision of specific ecosystem services; denying access to local original inhabitants. Those patterns of ecosystem services privatization disrupt the local governance traits while representing a risk for the resilience of the whole social-ecological system. The paper uses remote sensing techniques including the use of the Normalized Difference Vegetation Index (NDVI) to identify potential areas of urban growth in Valle de Bravo, and the consequent ecosystem services loss. The areas with the highest provision of ecosystem services are located within high-profile properties, impeding some ecosystem services to reach the population of Valle de Bravo. The paper explores the strategies and resistances, as well as the impediments that privatization and land use change represent for the provision of urban ecosystem services; and the consequences for social-ecological resilience in Valle de Bravo.

Panel ID 33

Discourses, Narratives and Imaginaries: power, inequality and silences

44

Last of the Rakhas: injustice and conservation in forests of lower Indian Himalaya

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The van rakhas (rakha) or forest protectors are a relic of the colonial institutional structure in Himachal Pradesh, India. Linking government to the community at the local level, they were stewards of panchayat’s forests until their abolition in 2011 and continue to have an imprecise role in forest governance. Using semi-structured interviews, focus group interviews and participant observation within a case study method, supplemented by an examination of documents (gazetteers, panchayat records, legal files, appointment letters, and government orders) this paper argues that the role of state – community intermediaries, constituting an important part of development initiatives, needs to be re-examined. We present a case for both science and corrective action: identifying the role of boundary institutions in conservation and correcting historical injustice experienced by marginalized members at the blurred boundary between state and community. We find that boundary institutions, exemplified by rakhas here, possess knowledge of “micro-science and politics” that is important for making community-based efforts of resource management effective and this boundary space needs attention from scholars and practitioners. Based on the findings of this research we find that reparation to match the losses and damages faced by rakhas and offering of sustained future support as amends to historical injustice is inescapable.

64

The undebated issue of justice: silent discourses in Dutch flood risk management

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Flood risk of all types of flooding is projected to increase based on climate change projections and increases in damage potential. These challenges are likely to aggravate issues of justice in flood risk management (hereafter FRM). Based on a discursive institutionalist perspective, this paper explores justice in Dutch FRM: how do institutions allocate the responsibilities and costs for FRM for different types of flooding? What are the underlying conceptions of justice - utilitarianism, egalitarianism, Rawlsian Justice Principle or elitarianism? What are the future challenges with regard to climate change? To address these questions, the research employed mainly qualitative methodologies. The research revealed that a dichotomy is visible in the Dutch approach to FRM: despite an abundance of rules, regulations and resources spent, flood risk or its
management is only marginally discussed in terms of justice. Despite that, the current institutional arrangement has material outcomes that treat particular groups of citizens differently, depending on the type of flooding they are prone to, the area they live in (unembanked/embanked) or category of user (e.g. household, industry, farmer). The paper argues that the debate on justice will (re)emerge, since the differences in distributional outcomes are likely to become increasingly uneven as a result of increasing flood risk. The Netherlands should be prepared for this debate by generating relevant facts and figures. An inclusive debate on the distribution of burdens of FRM could contribute to more effective and legitimate FRM.

193

Trust, Justice, and Global Forest Governance: Evidence from the Field
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What does justice demand? For 30 years, policy makers have sought to redress the concerns of the world’s 1.6 billion forest-dependent poor by introducing rights-based and participatory approaches to conservation. Yet, despite these efforts, practitioners, policy makers, and scholars are increasingly confronted with claims of injustice: assertions of colonization, marginalization and disenfranchisement of forest-dependent peoples, and privatization of common resources are some of the most severe allegations of injustice resulting from globally-driven forest conservation initiatives. At its core, the debate over the future of the world’s forests is fraught with ethical concerns. Policy makers are not only deciding how forests should be governed, but also who will be winners, losers, and who should have a voice in the decision-making processes. This paper seeks to understand why injustices persist despite intense efforts to mitigate and prevent injustice by asking: What are the barriers to delivering justice to forest-dependent communities? Drawing on extensive ethnographic and interview data from five villages across Laos, as well as from four collaborative event ethnographies including the Tenth Conference of Parties to the Convention on Biological Diversity, World Parks Congress, Paris Climate Summit and the World Conservation Congress, this research uncovers the multiple, dynamic meanings of justice held and pursued by diverse stakeholders. The analysis reveals two critical findings. First, from the perspective of local-level forest communities, building and maintaining trust is one critical element for realizing multiple dimensions of justice, including distributive, procedural, and recognitional, as well as transitional justice. Second, trust does not emerge as a central part of the metanormative fabric of global forest governance. Instead, policy-makers and practitioners tend to focus more on technical and design features for advancing justice rather than relational practices that might begin to rebuild trust between local and global forest governance communities. By drawing attention to the tensions between global efforts and local experiences, this research offers new insights into the role of trust for justice in global forest governance.

296

Constructing low-carbon affordable cities? Power and inequality in the making of the modern timber city.
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Cities are increasingly at the heart of efforts to address climate change, and there is a growing awareness of the role of buildings – and the carbon embedded in their materials – can play in this process. “Previewing the world to come: Making the modern timber city”, “Plyscrapers”, “Google’s smart timber city”…, a glance at recent news articles shows that timber buildings are at the heart of an emerging urban imaginary that is both modern and green. An ostensibly lower-
carbon alternative to the building materials that have dominated our urban landscapes in the 20th century, timber is heralded as the material that will ‘green’ our urban environments from the inside out. The social implications of the changing material fabric of our cities are, however, little understood. Drawing on examples from the UK and Canada we show how the ‘timber revolution’ rests on the coalescence of two key narratives. First, we explore the emerging narrative around the need for low-carbon materials. We show how the temporality at which the future is imagined enabled the emissions embedded in building materials to be calculated and made political, and subsequent green material solutions to be devised. We subsequently explore how this narrative of low-carbon urbanisation – with timber at its heart – merged with another, second narrative around the lack of affordable housing in many cities. By focusing on not only the need to provide low-carbon housing, but to do so in a way that is fast and inexpensive, actors have drawn on an imaginary we label ‘historic futurism’: the imaginary of Fordist assembly lines as the construction process of the future, enabling timber towers to be built in a way that is fast and inexpensive. In tracing these two narratives, how they have (e)merged and to what effect, we pay particular attention to key concepts of power and justice. By emphasising which low-carbon urban futures and processes are deemed plausible and desirable and by whom, and how these futures have shaped narratives for change, we highlight not only who or what are included in the imagination and governance of green urbanisation, but also who and what are left out. In doing so we show that the physical and metaphorical construction of the modern timber city risks not only leaves structural inequalities in urban environments unaddressed but also has the potential to create new inequalities in the process.

Panel ID 34

Just Governance of Commons and Resources: Land and Water

The governance of access: persistent drinking water and sanitation insecurities

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Providing drinking water and water supply services in a sustainable fashion raises a number of fundamental issues in relation to access and allocation, not only of water resources but also rights, responsibilities and risks. Much of the provision of water supply services and sanitation is highly uneven across different places as well as in different parts of society. This problem raises questions about the way access and allocation are negotiated and determined in variegated natural and social contexts. Answering the question involves examining the international governance instruments that guide access, property rights ascribing allocation and the scales at which these rights operate, as well as the responsibilities vested to various authorities and stakeholders. Water insecurity, particularly of drinking water and sanitation, are not simply due to natural causes. The paper conducted a literature review of papers on water supply services and sanitation produced by the Earth Systems Governance community and beyond, focusing on the findings from 2008-2018 in particular. Access and allocation were interpreted broadly, thereby covering issues of inclusive development, justice, and sustainability. Our findings suggest that the role of government has been significant in facilitating access and allocation, and failures in such have long-lasting implications. Water security therefore increasingly requires a comprehensive consideration of the different frames, principles,
instruments and norms that operate within water governance institutions in order to promote mutual support for sustainable water governance protecting rights to drinking water and sanitation. A governance framework for inclusive water access and allocation framework is proposed.

Establishing transparency on changes in ecosystem services availability for citizens resulting from land use transformations
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The Anthropocene sees dramatic changes in land use, either intended or unintended. Such changes of land use often affect the access to ecosystem services by local people, and thus also diminish the sustainability of the regional socio-ecological system. This produces a key challenge to governance: How can sustainable development goals or the objectives of environmental legislation be translated into local decision-making? We studied that question in river valleys, which commonly represent most densely populated elements of landscapes, and still undergo profound alterations due to economic development and climate change. There, a multitude of human socio-economic interests compete for a very limited fraction of land surface, but which offers a very broad range of ecosystem services and natural capital, as high food production, fisheries opportunities, drinking water resources, hydropower, easy transport through navigation, recreational opportunities, and others. As space is very there, land use obviously has to be prioritized. For that, we suggest to use non-monetized ecosystem services as a platform to collect data, visualize human benefits, facilitate stakeholder involvement and support transparent decision-making. Thus, the effects of land use transformations on the availability of ecosystem services can be scored and visualized for individual ecosystem services. This allows demonstrating synergies or negative trade among several human uses of ecosystem services. Furthermore, ecosystem services may be summarized to an integrative index, as the ‘River Ecosystem Service Index’ (RESI) (www.resi-project.info) which may be used to compare complex river and floodplain management scenarios. The RESI has been already been implemented in practice in the framework of an official regional planning prioritization procedure for a 80-km section of the Danube River in Bavaria (Germany). It hence may is recommended as a transparent inter-sectoral visualization and decision support tool for inter- and transdisciplinary communication. Thus, this new cross-sectoral approach for the management of landscapes enables the identification of optimized multifunctional and sustainable management options for river and floodplain sections with minimized trade-offs among available ecosystem services. The transparency of the bases and consequences of decision-making enabled by RESI supports the involvement of citizens and NGOs in planning decisions about land use. Hence, the use of RESI may be used for a more effective and equitable implementation of sustainable development goals across societal sectors. This index based on ecosystem service assessments may thus also be implemented as a steering tool to assess justice and fair allocation of resources to regional communities during land use transformations.

Leaving No One Behind: Providing Sustainable and Accountable Access to Land for Marginalized Commons Through A Decentralized Land Governance System.
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Traditionally, Africans owned land collectively through communal land ownership systems; common descent or allegiance to a symbol of authority did not only provide membership to a
community but also a means of securing access to land. Traditional authorities or family heads served as custodians of land for the communities to which they belonged. This system ensured that members of the community had fair and equitable access to land. Strangers were given use-rights to land through traditional authorities or family heads. However, over the past few decades, an increase in demand for land and population proliferations has gradually distorted this system instituted to ensure fair and equitable access to land. In the new global economy, investigations in land continue to be an essential governance issue given its quintessential implication for livelihood and living conditions. Investment in agricultural land is not a new phenomenon; however, the frequency and scale of these investments have distorted land control and rights particularly in developing countries. Regional and global guidelines have been upheld as a recipe to mitigate the negative effects of the new wave of investments in land and its antecedent land governance issues on affected communities. These neoliberal policies designed to address this challenge have rather exacerbated the menace. Drawing from global political ecology, this paper subtly provides an understanding of how vectors of power and politics embedded within the rubrics of contemporary land governance systems fail to address the detrimental effects of the recent land investments in affected communities. Recasting the analytic problem around the optics of state and non-state contestation and representation on land governance, this paper offers a more nuanced engagement with the material politics of equitable access to land, agency, and accountability for rural communities. The paper argues that building on the traditional communal land governance systems practiced in Africa will provide a more sustainable and accountable access to land. Through community land management committees which strongly builds on the traditional land management system in Ghana, coupled with homegrown development theory not only give agency to members of the landowning community but also prevent chiefs from claiming ownership to the land. In traditional societies, chiefs are seldom questioned for their actions; hence, they are asserting themselves as owners of land rather than custodians. This method of land governance gives a legitimate right to the committee set up by the community to demand accountability from traditional authorities and family heads.

405

Drinking water, Human Rights and social exclusion in México City and São Paulo

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The objective of this work is to compare two major metropolitan areas, the Metropolitan Zone of Mexico City, Mexico and the Metropolitan Region of São Paulo, Brazil, from the perspective of the recent water crises, whose results showed the fragility of models of water resource management that did not consider extreme water shortage events. In Mexico, the Central Valley, due to rapid urban growth, is the region with the greatest problems of access to drinking water. In the last ten years (2007-2017), the lack of water has affected the quality of life of citizens living in the outskirts of the city in the metropolitan area. In Brazil, the Southeast region experienced a prolonged drought, with low rainfall indexes starting in 2013 and intensifying during the summer of 2014 and 2015, reaching metropolitan regions, such as São Paulo. The aggravating effects of the water crises in both Mexico and São Paulo could still be felt in later years, with the low volumes of water stored in the reservoirs which have not yet been restored and they produce situations that show the inequalities in access to water, both in quantity and in quality. The comparison is a methodological resource that allows to identify similarities and differences in different social phenomena. Comparative studies
strengthen knowledge bridges between countries with similar realities, regardless of theoretical approaches and analytical perspectives. It was possible to observe that the water crises affected the right of the individuals to the access to the water in the city, both for their survival, and for the improvement in their living conditions. This finding evidences the social construction of water crises, questioning the unsustainable model of water resources management, built historically and that disregarded the fundamental right of citizens in a time of water scarcity: access to water. The water crises go beyond a crisis of availability given by the low rainfall levels and a crisis of the different uses of water. We must consider its social construction, based on historical, cultural, economic and political processes that have produced unequal conditions of access to water. In a time of water scarcity, emergency measures that disregard the social construction of the problem, have little effect in resolving conflicts, perpetuating the conditions of vulnerability of the affected population.

Panel ID 35

Complex Interactions in Justice and Allocation: Peace, Conflict and the SDGs

47

The Nature of Peace – The Dynamics between Post-conflict Peacebuilding and Environmental Justice

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This paper presents first results from a three-year inter-disciplinary research project that scrutinizes the mutual constitution between environmental justice and peacebuilding processes after internal armed conflicts. Such conflicts may entail direct environmental destruction and a deterioration of livelihoods and equity, e.g. through population displacement, land grabbing and illegal extraction of natural resources. On the other hand, internal armed conflicts may provide an unintended protection for forests, wetlands and other ecosystems. This complex interlinkage between peace, justice and the environment has been increasingly recognized in international politics and development research. However, we lack both comprehensive analytical frameworks and systematic comparative empirical analyses on this vital dynamic. Our inter-disciplinary research project provides such an analysis. An integral part of our research design is the difference in timing between our two selected case studies: we ask to what extent certain lessons for environmental justice, positive and negative, can be learnt from Uganda for the Colombian case. In Colombia, peace is within sight for the first time in decades. With the beginning of the peacebuilding process, large tracts of land and resources are now undergoing rapid transformation, with likely devastating consequences for the region’s high biodiversity and local communities. In Uganda, the peace agreement dates back to 2002, but degradation and mismanagement, including species loss inside and outside protected areas, are one of the principal costs resulting from the conflict until present day. We analyse and compare both cases, guided by the following research questions:
1. Taking stock: To which extent are concerns of environmental justice integrated or neglected in the post-conflict peacebuilding process?
2. Causes: What are the major drivers and conditions underlying this integration or neglect?
3. Environmental Consequences: How does the post-conflict peacebuilding process impact the respective country’s natural environment?
4. Social Consequences: Which consequences do the peacebuilding activities and their environmental implications have for the livelihoods and equity concerns of local communities that depend on respective ecosystem services or natural resources?
5. Political Consequences: How do these various developments feed back into the peacebuilding process and, ultimately, affect its objective of sustainable and equitable peace?

6. Responses: Which lessons can we learn from these causes and consequences to safeguard environmental justice in peacebuilding processes? We address these questions with an ambitious mixed methods design that includes policy analysis, legal analysis, interviews & focus groups, spatial analysis & GIS, field work in selected protected areas and buffer zones.

57

Integrating governance of protected areas into regional sustainable development: The case of the National Reserve of Coyhaique, Chile
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Most protected areas follow a strict management model, often called “fortress approach”. It generally restricts activities within these areas to hiking on assigned paths or observing flora and fauna. This often fuels tensions or conflicts over existing strategies of using protected areas, or unaddressed development needs of surrounding populations. Consequently, the legitimacy of protected areas is undermined and thus, biodiversity conservation is at risk. One way of addressing these shortcomings is to integrate the governance of protected areas into the wider field of sustainable regional development and to align it with the principles of environmental justice. Based on the case of the National Reserve Coyhaique (NRC) in Chile, we show how this can be done. The introduced project transformed the NRC into a 100% energy-self-sufficient reserve. It includes retrofitting existing infrastructure, the construction of an energy-efficient model house, and installing renewable energy systems. Alternative models for forest management allow for the creation of jobs, training opportunities for marginalized parts of the population, and opportunities for local businesses. Additionally, the project addresses the need for environmental education by showcasing energy-efficient housing and heating systems to reduce high air pollution in the city. A multi-stakeholder platform accompanies planning, implementation and monitoring of the project’s activities. This triggers new bottom-up institutions that aim to integrate the management of protected areas into the wider field of sustainable regional development.

129

Urban Growth and Increasing Environmental Injustice and Socio-economic Inequalities in High Mountains of Developing World: Empirical Observations from Indian Himalaya
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Himalaya represents one of the tectonically unstable, ecologically fragile, economically underdeveloped, and the most densely populated mountain ecosystems on the planet. During recent years, it has experienced rapid urban growth which is mostly unplanned and unregulated. More recently, comparatively less accessible areas have also come under the process of rapid urbanization mainly owing to extension of road network and resultant improved access to markets, growth of tourism and economic globalization. These changes are making urban ecosystems as well as their peri-urban zones highly vulnerable to a variety of environmental and socio-economic risks, particularly, slope failures, landslides, flash floods, urban-fires and food, livelihood and health insecurity affecting mainly poor and marginalized sections of community. Consequently, there has been tremendous increase in density, intensity and complexity of urban settlements resulting in expansion of urban land use in forests and prime agricultural land. The sprawling urbanization has contributed significantly towards development of
infrastructure and services and creation of employment opportunities on one hand, while on the other increased environmental injustice and widen the socio-economic gap among different sections of urban population. Study aims at interpreting the linkages between urban growth and growing environmental inequalities among urban inhabitants with a case illustration of Kumaon Himalaya. The study employed comprehensive socio-economic survey techniques and empirical field observations methods besides the interpretation of secondary data and information collected from different government agencies and non-government organizations. Results indicated: (i) the urban population increased (30%), and proportion poor population has increased (35%) during 2001-2015; (ii) the proportion of households inhibiting in environmentally unsafe areas, such as slopes vulnerable to flash floods and landslides increased (25%); (iii) the percentage of urban population without access to safe drinking water raised (15%), (iv) the proportion of people with no access to toilet and sanitation increased respectively increased by 27% and 25% during the last 15 years. This clearly indicates that the recent processes and approaches of urban development planning is not based on the fundamental principle of access and equality in the densely populated and rapidly urbanizing mountains in the developing world, and consequently a large proportion of urban population is becoming marginalized in the absence of equity of access. It is therefore highly imperative to integrate the socio-economic equality and environmental justice into urban development policies particularly in view of the emerging threats of climate change.

131

Increasing Gender Inequalities while Attaining Sustainable Development Goals (SDGs) in Marginalized Mountain Environment: Empirical Observations Underline Policy Transformation under Climate Change in Indian Himalaya

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In Himalaya, subsistence agriculture constitutes main source of livelihood for nearly 75% population, consequently large proportion of male youth out-migrates in search of employment. This resulted in feminization of agriculture and natural resource development process. However, due to socially constructed gender relations women do not enjoy ownership of natural resources, equitable access to basic amenities of life and thus excluded from gender mainstreaming and empowerment programmes. Furthermore, depletion of natural resource base under global environmental change and rapidly changing climatic conditions have raised trends of male out-migration, and consequently increased the work-load, responsibilities and vulnerabilities of women. As a result, majority of women’s socio-economic development programmes and gender mainstreaming initiatives could not contribute towards attaining Sustainable Development Goals (SDGs) in terms of ‘gender equity and women’s empowerment’ in Himalaya. Study analyzed impact of various ongoing women’s mainstreaming and empowerment programmes on gender equality. In order to attain this, empirical study of women’s access to primary education, health care services and food and nutrition was carried out covering 2197 families in 62 villages in Kumaon Himalaya, in India using exclusively designed household survey schedules. It was observed women’s mainstreaming and empowerment programmes failed to bring gender equality and make significant changes in quality of life of women as during last 15 years women’s access to primary education, food and nutrition
and health services declined, and female-child mortality rate increased compared to males. This is increasing marginalization and poverty of women and restricting their access to minimum amenities of life. This underlines need of transformative policy using ‘educational empowerment of women’ as strategic tool for reducing gender inequality instead of economic empowerment. This needs a complete policy transformation which could sensitize the whole mountain society, and build a movement for women’s equality and reducing the gender gap. The transformative policy should give utmost priority to the educational empowerment of women, and use this as strategic and effective tool for closing gender gap through mainstreaming of women in the region, instead of economic empowerment. This will increase the level of awareness among women on one hand, and while on the other help in transforming societal attitudes towards gender equality. Furthermore, the knowledge and skills of mountain women; and their contributions towards environmental conservation, sustainable resources development, household wellbeing, community sustainability need to acknowledged and valued and integrated into gender equality policy planning.

216

Integrating renewable energy promotion with other SDGs to scale up collective actions: A case study from an island village in India

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The dual function of renewable energy in mitigating climate change and meeting basic human needs is increasingly appreciated. Achieving SDG7 plays a critical role in addressing both human security and ecological sustainability of many countries in the global south, such as India. Second in world population, eighth in GDP (2010), and the third largest in terms of CO2 emission (Yoshida et al. 2014), India has the highest number of people living in extreme poverty (UN 2015) who are among the 1.4 billion without access to electricity (UNDP 2016). Accompanying the growing economy of the country is a rising inequality. This paper is drawn from a case study that examines a non-state actors’ initiative promoting a hybrid solar-wind energy system in a remote island village of the Sundarbans region in West Bengal, India. Key informant interviews and focus group discussions were the main sources of the empirical material. The results identify community impacts of renewable energy access and elucidate how they are linked closely with other SDGs highlighting the issue of energy equity and social justice. Lessons and insights drawn can hopefully contribute in conceptualizing future strategies for a more effective integration and policy coherence, which is recognized as one of the most daunting challenges of SDG implementation, yet, necessary in the scaling up of collective actions.

Panel ID 66

Valuing Ecosystem Services and Natural Capital

59

Ecosystem Natural Capital Accounting: proof-of-concept development at watershed scale

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Changes to ecosystem functions and derived services are faster than ever in human history, due to the over-consumption of resources among others. Governments and companies do not keep systematic natural capital consumption records. This consumption corresponds to the loss of ecosystems’ ability to provide goods and services and is equivalent to creating ecological debts, to future generations or to countries whose are products manufactured under unsustainable conditions. The accumulation of ecological debts represent economic and political risks
sovereignty. Accounting for natural capital degradation allows adapting available resources to the basic needs of populations and maintaining of life-supporting natural systems on which societies depend on. A range of environmental evaluation tools has been developed with the purpose of integrating the natural capital into economical national accounting frameworks and inform policy-makers on their availability, use, and depletion. Three methodological categories are presently in development: reference value or boundary indicators; ecosystem services valuations; system approach tools. My work concentrated on the system approach methodology, the Ecosystem Natural Capital Accounting (ENCA). ENCA is an extension of the conceptual UN Economic and Environmental Accounting System (SEEA), with the purpose of calculating ecosystem change at different scales. Importantly ENCA targets “no net ecosystem degradation” and ultimately the amortization of the natural capital. The ENCA protocol is based on 3 accounts: bio-carbon, water, and ecosystems infrastructure and biodiversity which require significant data collection and integration, including available satellite imagery, standard coefficients, official statistics, and surveys. Each account is made of tables of quantities: resource stocks and natural flows, the resource accessible without depletion, and the use by economic sectors (including returns after use). Quantitative accounts deliver an index of intensity of use. For each account, an additional table records qualitative elements. These elements are used for making a diagnosis of ecosystem health, summarized in an index. The indexes of the intensity of use and of health are combined altogether to produce the Ecological Capability Unit, in the same units, the three components can be added up to calculate their asset value and its change (Weber, 2014). The objective of this project is to make actionable the Ecosystem Natural Capital Accounts by developing a proof-of-concept tool at the Rhone watershed scale. I will present data on each category of resource account and their subsequent aggregation in ECU. I will discuss the strengths and limitations of ENCA for its optimization and exploitation.

Understanding Farmers’ Valuation of Ecosystem Services: Governance and Institutions in Southern Mexico
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This paper examines how governance and institutions affect farmers’ valuation of environmental services provided by forests. Farmers have been at the center of international forest conservation and environmental sustainability policies, such as Reducing Emissions from Deforestation and forest Degradation (REDD), payments for ecosystem services, and product certification. These policies often assume farmers lack intrinsic motivations to conserve forests, ignoring local benefits from ecosystem services and the influence that institutions, governance and farmers’ own valuation of ecosystem services have on farmers’ conservation behavior. This paper questions these assumptions about farmer motivation and behavior by examining how institutions and governance influence farmers’ valuation of ecosystem services. To answer this question, we interviewed a stratified random sample of 280 farmers from 28 communities in the Calakmul Biosphere Reserve of Southern Mexico in 2007-8 and again in 2014-15. The study finds that secure property rights, political participation and representation influence people’s valuation of ecosystem services. Secure land tenure eliminates incentives to clear the forest to protect their patrimony from government or strangers grabbing. Having the ability of experiencing the natural environment that surrounds their crops without pressure to clear allows farmers to value recreational and spiritual ecosystem services. Political participation at multiple scales in Calakmul has provided most farmers opportunities to enhance
their human and political capital and build livelihoods less dependent on frontier forest clearance, allowing them to act on their valuation. Land owners with greater economic and political opportunities are more likely to appreciate forests’ ecosystem services provision since the most profitable opportunities (such as honey production and tourism) generally involve moving away from forest clearing yet are fully dependent on the forest. Forest conservation is critical for climate change mitigation as well as for biodiversity conservation. While economic instruments, such as REDD and Payments for ecosystem services, can achieve great conservation outcomes, they can only be implemented in a limited area given financial, transaction and management constraints. Relying on farmers’ own valuation of ecosystem services for forest conservation might be an alternative with great potential, particularly in regions where farmers have political rights and economic opportunities. Understanding how governance and institutions can support farmers’ ecosystem service valuation is therefore an important task for environmental governance scholarship and policy.

288
Comanagement of small-scale fisheries and ecosystem services
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Marine ecosystems and their capacity to provide ecosystem services are in global decline. New transformational changes in governance are required to cope with multiple stressors as the world’s coastal population continues to grow. We review the ecosystem services outcomes of a governance transformation system that allocates exclusive territorial user rights to artisanal fisher associations (TURFs) in Chile. We use an evidence-based approach to synthesize more than 25 years of comanagement and rights based management research in Chile. By applying a systematic review protocol we assess the implications of establishing TURFs over the provision of multiple ecosystem services in coastal social-ecological systems. The synthesis showed that there has been a transition in Chile towards more interdisciplinary research covering not only ecological dimensions but also social, economic and environmental dimensions. Research has been focused in the central coast of Chile where the main urban settlements are. Most research has targeted provisioning services, however cultural services have been gaining increasing attention with studies dealing with social relations and the human dimensions of ecosystem services demonstrating that fishers have been empowered with the comanagement experience. Our synthesis provides evidence that there is an enhancement of ecosystem services in TURFs which are well enforced and this is especially true for provisioning and regulating services. Some exceptions can be found for species with specific life history traits which show little response to TURF management. The review shows the importance of TURFs in developing necessary social and ecological enabling conditions for local stewardship.

407
Quality of life, drinking water and sanitation in México and Brazil
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In this document, inequalities are considered to be produced historically and socially. Social and environmental inequalities are mediated by power relations in which economic, social, political and cultural factors intersect. Likewise, the actions and perceptions that social actors have about water resources management are highlighted. Characterizing the trajectories and interrelations of the actors involved highlights the conflicts generated by the lack of inclusive spaces and shared management. In order to
guide this analysis, three questions have been defined: how are water inequalities configured in México and Brazil? What are the characteristics of the drinking water management models in those countries? What are the effects of this inequality on the quality of life of citizens? This proposal is made up of three parts: the social and environmental dimension in the formation of water inequalities in urban contexts; the analysis of the way in which water inequality has been conformed in those countries, as well as its consequences in the models of institutional management and finally, some considerations in each case analyzed. Environmental inequality implies environmental suffering. A family with low economic income living in a peripheral region of the city, in addition to the suffering derived from the conditions of habitation, lack of economic resources or lack of attention of the institutions responsible for guaranteeing basic services, is additionally exposed to different types of risks: floods, landslides, pollution, that is, a situation of unhealthiness and environmental suffering. Environmental inequality is not an ecological catastrophe, but the effect of the thought and practices with which the globalized world and different forms of social life have been constructed and destroyed. In this context, the impact on the quality of life of citizens becomes evident, endangering their access to one of the fundamental rights of man: the right to water and sanitation.

409

The soil governance as an element to move towards the sustainability of socio-ecological systems
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Soils are under increasing pressure of use, and soil governance is an important element to maintain the functions of this resource, prevent its degradation and move towards sustainability within socio-ecological systems. Due to the lack of scarcity of studies on soil governance, it is important to highlight that soils are one of the natural resources whose use and management are of global importance, so it is useful to examine the main drivers, pressures and institutional responses to land use. Considering the diversity of local biophysical, social and cultural environments. In order to operationalize the concept of soil governance within the framework of socio-ecological systems. This document focuses on the soil governance mechanism seen as a collective process in contrast to the theoretical assumption in which landowners have greater incentives to conserve this resource. This analysis synthesizes the opinion of experts from different disciplines, through structured interviews information was obtained about the topics that are needed for operational soil governance. Based on the framework of socio-ecological systems of Elinor Ostrom that links the biophysical, ecological, social, economic, political, socio-institutional environment, economic constraints and decision characteristics; the findings are presented and discussed about how soil governance would contribute to transiting towards sustainability in an adaptable and reflective manner and what are the opportunities, barriers, and compensations that this represents. The main finding is that the data obtained contradict to a large extent the theoretical assumptions, that is, it is not possible to discern a clear relationship between the three parameters of soil quality of arable land, rent price and income ratio. The results obtained show that the most relevant aspects for soil governance are: i) private benefits, public goods, and ecosystem services; ii) development and extension of soil research; iii) soil education; iv) intergenerational equity; v) soil degradation, and vi) conflicts over land. The possible explanations of the contradictions revealed in relation to the state of the research were discussed and the need for future research to better understand the potential of soil governance as a mechanism to move towards the sustainable management
of socio-ecological systems was highlighted. In addition to the above, a unifying scientific narrative is also needed. So in general terms, the transdisciplinary perspective can provide the criteria to determine the role of soil governance on the sustainable management of socio-ecological systems. Key concepts: soil, soil governance, socio-ecological systems, soil sustainability, transdisciplinary.

418

Diverse values at stake: discrepancies between top-down and bottom-up “environmentalities” in a highly biodiverse region of Mexico

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Nowadays, the call for a more inclusive and just environmental governance for local and indigenous communities is sound. Even though, different visions about nature and the environment exist, sometimes creating conflicts around the same territory. Among these different visions, there is the recognition of a sharp dichotomy between top-down and bottom-up logics. These visions have embedded a set of values and the relationship with nature we should pursue, alongside their institutions that articulate those values. These logics have been called by some authors as “environmentalities” that refers to the strategies of governing human action and the creation of subjects. Moreover, in highly biodiverse and biocultural regions a confluence of environmentalities is prominent. Therefore, we examined the underlying logics among the top-down and bottom-up process of environmental governance of a highly biodiverse region inhabited by local and indigenous groups, the South Coast of Jalisco, México, with the aim of finding discrepancies about the management of natural resources. By looking at different previous case studies of natural resource management strategies and valuation by local communities we describe the main peasants’ logic and their values. Then we analyze the main conservation policies and schemas in the same area. We found a complex governance landscape as a result of a combination of environmentalities from different actors, each of them articulating a set of values about nature. Peasants’ logic evinces a highly contextualized traditional ecological knowledge that promotes multifunctionality of the landscape where production and conservation of ecosystems coexist. Also, heterogeneous groups inside communities value aspects of nature differently, and overall diversity of values is found, where relational values are present. This logic clashes with, for example, neoliberal environmentalities in schemas like Payment for Environmental Services that foster mostly instrumental values of nature and clearly separates conservation from production. These programs are becoming more dominant in previous conserved areas inside local communities. Also, we found the presence of sovereign environmentalities in the logic behind Natural Protected Areas where mostly the intrinsic values of nature are favored, again dismantling multifunctionality. We discuss that new forms of governance have to be conceived with an institutional diversity that articulates the plural values in local communities in order to make more visible other human-nature relationships.
Panel ID 1

Imagining the Anthropocene: How political imaginaries and social fantasies affect future earth-building.

28

Autonomous conceptions of our planetary situation

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The “Anthropocene” is a culturally current and scientifically considered naming of our planetary situation characterized by social processes that have driven ecological, biochemical and geological processes toward uncertain feedbacks (Dryzek and Pickering, 2018). The “Anthropocene” understands these social processes as the general expression of human agency. In so doing, the “Anthropocene” reifies the social processes by making them natural expressions of the human being, itself reified as a natural kind (cf. Honneth, 2008). The logic expressed in the concept of the “Anthropocene” is coloniality (Walsh and Mignolo, 2018) – “the dark side of modernity” wherein the multiplicity of worlds within the world is “englobed” by a single world (Mignolo, 2011). Thereby, uneven development and various problematic effects of the social processes of capitalism, industrialism, and colonialism (including racism and patriarchy; de Jong, Icaza, and Rutazibwa, 2019) are “erased” (Dotson, 2017). Against such “totalization,” decoloniality as practice (Walsh, 2018; Naepi, 2019) commits to revealing the social process obfuscations (Bendik-Keymer 2018) of terms such as the “Anthropocene,” thereby exposing ways in which communal autonomy is foreclosed alongside an accurate, non-reified understanding of our planetary situation. How can our planetary situation be understood decolonially such that the worlds within the world are respected according to the axiom of the “equality of intelligence” (Rancière 1991, cf. Freire, 1968; and Scheinfeld et al., 2008)? Acknowledging the twin epistemic demands of being (1) world-focused and (2) non-reifying, I propose an epistemic understanding of anthroponomy grounded in a philosophy of disagreement. Disagreement opens the mystery of the world. It depends on developing good relationships within and between communities. Anthroponomy is the idea of such disagreement related to a planetary situation under many different names and languages, aiming to continuously respect people’s autonomy (cf. Whyte, 2017; Dryzek and Pickering, 2018). Non-dominating (Pettit, 1997), interpersonally accountable (Darwall, 2006, 2013) and self-determining (cf. Coulthard, 2014; Pasternak, 2017), anthroponomy responds to a planetary situation threatening communal autonomy (Gardiner, 2011; Frazier, 2016; Mann and Wainwright, 2018). It is a decolonial response to the “Anthropocene.” Using anthroponomy, how should we approach imagining our planetary situation? Social imaginaries of our planetary situation should be (a) constitutively unsettled. They should be (b) results of disagreement through good relationship, (c) inscribing imaginary openness to the “otherwise” of worlds (Walsh and Mignolo, 2018). And they should be
What kind of fantasies and political desires do the concept of the Anthropocene and the debates surrounding it evoke? The concept of fantasy has thus far been hesitantly applied to environmental studies. In discourse theory, the ‘fantasmatic logic’ explains the direction, speed, and resistance to change. At the individual level, fantasies allow people to become subjects capable of acting on the world. Fantasies also postpone the fulfilment of a broad range of desires and serve to prevent immediate outbursts of both aggression and enjoyment, allowing for cooperation. Moreover, fantasies structure observation, make identities and ideas ‘natural’, provide the potential for agency, and make cooperation possible. Systematically studying fantasy thus allows a specific understanding of the frame, direction, and/or lack of political and social action in sustainability transitions and global environmental politics and governance. One of the most central fantasies concerning Earth System Governance research is that of humans becoming a significant planetary force and fundamentally transforming the natural cycles at a planetary level. This paper aims to understand this phantasmal dimension of the Anthropocene. Following Haraway, Tsing, and other feminist scholars, we explore the practical identities and relationships that are made natural through the phantasmal. Highlighting the positive role of fantasy in making action and agency possible, we apply the concept to study how fluid identities and the making of human/non-human relations creative new pathways for global action. We, therefore, address the question of what kind of agencies the fantasy of the Anthropocene implies and what kind of identities and affective relations accompany such agencies. To answer this question, we use interview data and text analysis to trace what kind of fantasies artists, scholars, practitioners, and citizens who engage with the concept of the Anthropocene are exposed to and internalize. Using text and multi-modal visual analysis, we explore such social and individual engagement in multiple fields across a broad range of examples, from local art collectives to global forest policy to urban water crises. Our paper explores what gets inscribed into the techno-scientific and institutional arrangements that reflect Anthropocene fantasies and feed into global governance arrangements. We conclude by emphasizing the importance of exploring fiction and fantasy in finding a realistic and actionable answer to the global challenges of Earth System Governance in the Anthropocene.

Anthropocene Objects: Genealogy, Critique, Reconstruction.
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What kind of objects have brought about the Anthropocene, a problematic stage of socionatural relations that actually endangers the future habitability of the planet? And how can we substitute, reimagine, or reorient those objects and the practices and subjectivities associated with them? Such socio-technical operation is a necessity in light of the alarming data provided by earth scientists. Yet whereas massive decarbonization is the only way to prevent a «hothouse Earth» scenario, the way in which the latter has to be achieved remains open to debate and contestation. By focusing on objects that can be counted as key Anthropocene-enablers, I intend to shed light on the kind of perceptions, practices, and agencies that derive from them together shaping an ideology of the Anthropocene common to the main political worldviews of the
past century. Anthropocene objects, it can be said, have produced a particular kind of subjectivity blinded to the material impact of the industrial and post-industrial ways of life. In order to encourage the formation of planetary subjectivities attuned to the challenges of a climatically disturbed Earth, typically anthropocenic objects must be reinterpreted and transformed—so that they are either abandoned, used differently, or technologically improved in a sustainable way. I will focus on three different objects, each own relevant in its own way for the social imagination of the Anthropocene and the practices of future-making that it requires, namely: the car, the burger, and the photograph. Whereas the car is a key factor in emission-control strategies and can be associated to the romantic ideal of personal mobility/autonomy, the burger is related to food habits and incorporates a risk that concerns the economic growth of emerging and poor countries, while also conjuring up images of animal suffering that suggest the need to explore new forms of coexistence with other species. Finally, photographs can be said to be key elements in the process of human alienation from nature, as they separate us from our environment and make the latter and manageable. At the same time, how the Anthropocene is visually represented can make a difference in the way in which it is socially perceived and politically approached. The genealogy and critique of Anthropocene objects, then, end up in the creation of planetary subjectivities and sustainable social practices.

274

The Politics of Planetary Times
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The notion of the Anthropocene has brought the temporal dimension of Earth System Governance to the forefront. Discussions include empirical insights on deep time interdependencies of current actions and future impacts, the Great Acceleration of human influence on the Earth, the transformation of dates into stop signs to end emissions, tipping points in the earth system, Great Again-retrotopias of a romanticized fossil fuel past, and conceptual approaches of transition, in- and exnovation, imagination or anticipation, to name just a few. The recognition of temporal elements was one of the major milestones towards a better understanding of the web of interconnections between humans and the earth system in recent years. While much of the current effort is spend on either analyzing unconnected or explicating still implicit temporal elements, the proposed paper aims at synthesizing an overall concept of the politics of planetary times. To outline entry points for the development of the temporal lens of Earth System Governance, the paper proceeds in five sections a new research perspective needs to address: reasons, definitions, concepts, normativity and recommendations. Accordingly, the first section argues that the usage of time in the Anthropocene is deeply political, but our current conceptions and applications of time are rather a product of chance than deliberate judgment. Second, the diversity of time is approached through a three-fold definition of natural, artificial and planetary times as a result of the interferences of the previous two, complemented with a methodological underpinning. The third section extracts the (power of) time regimes’ actors, structures and processes beyond existing arrangements of current planetary times. These arrangements, which will be called time designs, are made and used: deadlines are set and bypassed, election periods synchronized, time budgets negotiated, windows of opportunity utilized, etc. Having conceptualized the governance of time, a fourth section formulates normative sketches towards “Chronopolitanism” as the temporal supplement to Cosmopolitanism. If the world can be altered through the use of time designs, orientational knowledge needs to be created, considering
among others Hannah Arendt’s notion of natal-
ity. Lastly, avenues for the further exploration
and democratization of planetary times are out-
lined. They include questions on how temporal
literacy about planetary times can be nurtured
towards temporally mature societies. The paper
concludes that approaching a temporal lens
might be as demanding as learning a new lan-
guage at first, but once internalized it allows for
completely new avenues of imagining and fanta-
sizing future earth-building.

Assessment as fantasy: IPBES and the production
of global biodiversity knowledge
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The proposition of the Anthropocene has evoked
contrasting imaginaries in environmental hu-
manities, environmental governance studies as
well as policy institutions and thinktanks. On one
hand, it has strengthened already existing mod-
ernist and imaginaries of global control and plan-
etary management, but at the same time, it has
also served as a provocation; an invitation to
more radically rethink the assumptions of
modernism and the relation between humans
and the environment. To varying extent, these
two contrasting imaginaries have also shaped
the way in which knowledge and relations be-
tween knowledge and governance are conceptu-
alized and organized in practice. In this paper, I
will use the example of IPBES (the Intergovern-
mental Platform on Biodiversity and Ecosystem
Services) to illustrate this. I will focus specifically
on the activity of integrated assessment; the syn-
thesis and integration of existing knowledge to
serve as a basis for policy and governance. I will
discuss how and to what extent the activity of as-
essment within IPBES is shaped by imaginaries
of unified biodiversity, inclusiveness, science-
policy interfaces, and effective policy and gov-
ernance. The argument that I will develop in this
paper is that assessment functions as a

28
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Jeremy Bendik-Keymer
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concept of the “Anthropocene” is coloniality
(Walsh and Mignolo, 2018) – “the dark side of
modernity” wherein the multiplicity of worlds
within the world is “englobed” by a single world
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The Future as a Governance Object in the International Climate Change Regime
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International environmental regimes are future-oriented institutions in the sense that they seek to affect the future trajectory and state of environmental systems, e.g. reducing air pollution, slowing the rate of biodiversity decline or limiting deforestation. Key governance instruments and tools for future-oriented governance include scientific assessment reports with a scenario modeling emphasis, the use of long-term goals (e.g., the climate regime), target years (e.g., the SDGs) or implementation schedules (e.g., the ozone regime), as well as review mechanisms to keep track of progress and goal achievement over time. The future orientation of the climate regime ought to be particularly pronounced given the deep time dimensions of climate change. Global decisions in this decade can affect the state of the planet and conditions for all life on it not merely for centuries, but millennia to come. Initially, these long time horizons were not reflected in the governance structures created under the UNFCCC. However, the Paris Agreement has recently introduced major institutional innovations in this regard. These include the introduction of multiple long-term (i.e., mid- and end-of-century) global goals, the establishment of NDC cycles that require ten to fifteen-year national planning horizons, the requirement to develop mid-century decarbonization strategies, and the conduct of the Talanoa Dialogue, which invited parties to take a 2030 perspective. This paper investigates to what extent negotiation participants have the cognitive capacities to deal with the long time horizons of climate change, i.e., how they think about the future, and to what extent such future-thinking capacities can be developed with the use of a serious game specifically designed for this purpose. Based on survey and interview collected in 2017 and 2018, I first analyze general patterns of future thinking as well as beliefs regarding the long-term goals among negotiation participants (national delegates and non-party stakeholders). Second, I report how a negotiation simulation (serious game) conducted with negotiation participants in 2018 affected their future-thinking patterns.
The Amazon Basin has long been a central element of global debates about the environment, climate change, and transnational resource governance. To what extent, and how, does the Anthropocene represent a cultural paradigm shift in the Amazon Basin region? This paper treats the Amazon Basin as a strategic research site in which to test assumptions that the Anthropocene concept is forging new identities and formative agencies. Drawing on discourse analysis of political stakeholders from four Amazon countries--Brazil, Colombia, Ecuador, and Peru--I show that rising "anti-globalist" and climate-disdainful leaderships offer a counter-narrative to the Anthropocene paradigm that is equally based on anticipation and fantasy, yet focused on a triptych of national sovereignty, theology, and militarization. This counter-narrative harkens back to the military regime period (roughly 1950s to 1980s), projecting a romanticized version of its impact on the region that privileges economic growth and the built environment as the forceful ordering of a wild, "barbaric" space. However, there are variations in these counter-narratives. Under the new far-right government of Jair Bolsonaro (Brazil), the Amazon is presented as a territory coveted by foreign powers and hoarded by indigenous communities that pose hurdles to development. Colombia's Iván Duque, on the other hand, treats the Amazon as a space that harbours guerrillas, drug traffickers and refugees from Venezuela. In contrast, both Peru--governed by centrist Martin Vizcarra--and Ecuador (whose president, Lenin Moreno, has swung towards the right since 2018) have engaged more proactively with the climate change agenda in efforts to build resilience and food security in their respective Amazon areas, although shying away from transnational solutions to the Amazon Basin's challenges. Despite this variation, the overall surge in climate-skeptic discourses around the Amazon Basin over the past two years (part of a broader conservative shift across the continent) has begun to reorient state institutions in ways that clash with the Anthropocene imagination around the Amazon promoted primarily by scientists, researchers, and non-governmental organizations. At a concrete level, the forceful rejection of the idea of a new, human-accelerated geologic age tends to intensify challenges not only to environmental degradation and social protection of vulnerable groups, especially the region's indigenous populations, but also to transnational governance. In the Amazon, rather than presenting a true paradigm shift, the Anthropocene has become an increasingly contested concept.
of digital technologies including the use of biometrics and distributed ledger-technology (e.g. Blockchain, Ethereum) could help in addressing this challenge. In a report from December 2018 the WEF presented research estimating that by 2022 150 million people will have ‘blockchain-based’ digital identities. India has rolled out the ‘Aadhaar’ identification system over the last decade – which is using biometrics almost excessively – for more than 90 percent (more than 1.2 billion enrolled users) of its population by the end of January 2019. While the advent of new digital technologies creates great opportunity in this field on the one hand, significant challenges and risks arise on the other. First, the introduction of increasingly autonomous systems on large scale in very short timeframes produces a setting in which ‘Code is Law’, replacing existing rights and institutional safeguards. Such development potentially enables bias and discrimination which is ‘embedded’ in the new digital infrastructure. Significant disruption of existing governance models might be the consequence. Secondly, human rights such as individual privacy need more profound understanding to successfully transition to the Digital Age. This contribution will explore these aspects by presenting use cases employing either Blockchain (communities in Netherlands, Switzerland) or biometrics (Aadhaar India) to provide formal identification, and conclude with perspectives for Earth System Governance and human dignity in the Digital Age.

Reducing Disaster Risk through Forecast-Based Financing: The Future of ‘Smart Contracts’

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Forecast-based financing is now considered a cutting-edge policy tool that holds the potential to dynamically allocate resources where they are needed the most. Innovative forecast-based financing thus seeks to expand the traditional financial instruments of development cooperation by improving their efficiency, scalability and inclusiveness. Especially when combined with 'smart contracts' that are based on distributed ledger-technology and triggered by evidence-based indicators, forecast-based financing could support new forms of anticipatory governance and development finance. One of the most promising fields of application for innovative forecast-based financing via 'smart contracts' is disaster risk reduction. Anticipatory tools such as climate scenarios, early-warning systems and seasonal weather forecasts are becoming increasingly important to finance early action. Yet, there are still considerable uncertainties when it comes to the automatic release of funds for preventative measures, since anticipatory governance tools cannot always provide reliable information. This may lead to situations where early warnings may go unheeded, either due to a lack of standard operating procedures for forecast-based action or based on concerns that funds will not be allocated optimally. At the same time, there is little discussion about combining forecast-based financing tools with distributed ledger-technology, not only at the pre-disaster stage but also for post-disaster response. Drawing on evidence from Indonesia, this paper thus asks how distributed ledger-technology can be used to render disaster risk management measures more effective and inclusive. In particular, it addresses the challenges of embedding digital tools such as 'smart contracts' in sociopolitical contexts with highly divergent interests. Special consideration is also given to the challenge of developing inclusive indicators for verification and the timely release of funds. Keywords: disaster risk reduction; forecast-based financing; blockchain; distributed ledger; smart contracts; anticipatory governance.
Strange, Wonderful, and Disturbing – using foresights to understand the implications of distributed ledger technology in energy system governance

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There is a growing global effort to reduce greenhouse gas emissions in the electricity sector. From a management perspective, this is not without its challenges, owing to the variable and decentralized nature of many renewable energy sources. Digital approaches are being explored for management of increasingly distributed energy resources. Among these is distributed ledger technology (DLT), with proponents claiming that it provides a digital infrastructure for peer-to-peer exchange, consequently facilitating grid decentralization on a previously unprecedented scale. The prospect of disintermediation and decentralization presents novel opportunities for change; however, it raises questions of actor responsibilities, community organization, regulation, and market-shaping. In short, the prospect of DLT in the electricity sector poses a question of governance, one which has been frequently raised without substantive cross-actor discussion to arrive at a shared vision. We sought to bridge this gap by exploring the potential role of DLT in energy systems change. Futures methods, namely visioning interviews with stakeholders and experts, participatory scenario design, and policy-stress testing workshops, were applied to gather key drivers of systems change, DLT use cases, and futures scenario narratives. We identified modes of governance and evaluated the transformative potential of each narrative based on factors such as envisioned changes in the societal, economic, data/information management, physical energy infrastructure, and digital energy infrastructure domains. Transformative potential of DLT use cases was determined on expected changes in the system process, actors involved, and benefit distribution. For every transformative DLT use case, as many incremental applications were identified which are not expected to contribute to a sustainable energy system. Energy systems scenarios with identifiable DLT use cases varied in their transformative potential. This suggests that distributed ledger technology, lauded by some as a liberator from traditional market models, could as easily be co-opted by the incumbent regime or be confined to niche application areas. We found that governance arrangement is a differentiating factor for the transformative potential of DLT between energy systems futures. To shape a future in which distributed ledger technology is advantageous to an affordable, modern, reliable, and low-carbon energy future, our findings suggest that interactive governance is seen by industry actors and experts as a promising model. This work contributes to the conference stream “Anticipation and Imagination”, as futures methods were applied to investigate systemic factors affecting sustainability-oriented innovation and identify alternative modes of energy system governance.

Leveraging Blockchain Technology for Innovative Climate Finance under the Green Climate Fund

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The rapid development of nascent technologies such as blockchain and distributed ledger-based systems holds transformative potential for the financial sector. Applications of these novel technologies include financial transactions, asset management through smart contracts, as well as peer-to-peer exchange networks. International climate finance, aimed at supporting developing countries’ responses to climate change, stands to benefit in particular ways from the new possibilities in financial technology. Distributed ledger-based systems offer promising solutions...
for common issues in international climate finance, such as ensuring accountability and local-level impact. Yet, distributed ledger-based systems may be at odds with established institutional structures and operational principles, and their technical limitations need to be considered. Based on a range of plausible use cases for innovative mitigation and adaptation finance, we explore how the targeted application of distributed ledger technology may foster effective and transparent climate finance under the Green Climate Fund. We then discuss key political and technical challenges that may arise, for example regarding scalability, standards and safeguards, country ownership, and further capitalization. We conclude our investigation by identifying priority action tracks for innovative mitigation and adaptation finance based on existing use cases of distributed ledger technology.

96

**From Rights of Nature to Rights for Robots**

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The rights of nature movement, with its origins in indigenous traditional knowledge, has realized concrete expression in courts, constitutions, and citizen referenda in several places around the world. Central to this emerging norm is the notion that the Cartesian separation between man and nature is illusory. At the same time, advances in technology have exposed frailties in the concept of legal personhood, and the arrival of the Anthropocene has invited a debate over the boundaries of nature itself. Responding to these developments, I detail how critical environmental law and recent cases pertaining to the rights of nature expand the scope of human rights to non-human, non-animal entities. Starting from the position that the environment should be interpreted broadly to include all forms of life, an argument advanced in critical environmental legal scholarship and writing on law in the Anthropocene, I argue that the collapse of the human/non-human binary opens up the possibility of expanding the scope of human rights. Next, I demonstrate how rights have already been extended to natural non-human entities under the auspices of the rights of nature, which have been adjudicated successfully in courts within Colombia, India, and New Zealand. Finally, from the foregoing evidence I extract elements of modern environmental law that support further widening of the concept of human rights to include artefactual non-human entities that comprise the larger physical environment, such as humanoid robots.

Panel ID 16

**The Role of Anticipation and Imagination in Transformations towards Sustainability**

209

**Understanding the Anticipatory Governance of Climate Futures: Towards an Analytical Framework**

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In a period of accelerating earth system transformations and their potentially disruptive societal and distributional consequences, imagining and governing the future comes to the fore as a core challenge for climate and sustainability research and practice. Numerous social science research communities in the sustainability domain deploy the notion of anticipatory governance, yet it is understood in different ways, with diverse ontological, epistemological and normative starting points and research agendas. Most notably, these understandings vary in their conceptions of the future, including the extent to which the future is knowable and subject to steering. These different understandings have implications for what anticipatory modes of climate governance in the present look like. This article undertakes a detailed review of how diverse perspectives in
the social sciences engage with the notion of anticipatory governance. Research perspectives analysed include those from science and technology studies, social-ecological systems analysis, policy and management studies, environmental governance and future studies. Diverse perspectives are compared across the following dimensions: (a) how the concept of anticipatory governance is defined, if at all; (b) underlying conceptions of the future, particularly its knowability and manageability; (c) anticipation mechanisms and tools deployed, as well as actors seen as legitimate to include; and (d) the impact of conceptions of the future on policy and governance choices in the present. Insights from this comparative analysis allow us to generate an analytical framework, which can be deployed in future research to compare the nature and implications of anticipatory governance practices in diverse climate vulnerable contexts. This paper contributes to the conference stream ‘Anticipation and Imagination’, and the extending of the work of the 2018 Earth System Governance Science and Implementation Plan: Anticipation and Imagination – as well as the Working Group on Anticipatory Governance, under the auspices of the Task Force on Conceptual Foundations of Earth System Governance.

222

Anticipatory climate governance in practice in South Asia: characteristics, functioning and impacts on climate policy
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In dealing with uncertain climate futures, governments and other actors are increasingly using foresight to help imagine and plan for future climate conditions. Developing countries most vulnerable to climate change are using foresight studies to guide adaptation and mitigation planning. However, the potential for foresight as an intervention for improved anticipatory governance of climate challenges is poorly understood. Many existing foresight processes are not sufficiently attuned to complex governance realities and policy cycles, and can imagine futures within a very narrow framing ignoring important drivers of change, while lacking reflexivity. While current climate governance research has generated extensive insights on the nature and effectiveness of fragmented, multilevel, and multi-actor modes and architectures of climate action, a focus on the contested politics and policy challenges associated with anticipatory governance, i.e. the capacity to both imagine and govern pluralistic long-term climate futures, remains in its infancy. This research addresses this timely gap in our understanding and investigates how anticipation practices can contribute to more effective modes of climate governance. It examines the factors that shape anticipatory responses to climate change in five highly vulnerable countries South Asia. By assessing the links between the use of anticipation in the governance of climate change adaptation the paper explores the impact of inclusivity, social equity, environmental justice and local perceptions on effective climate change governance. The research was guided by a case study approach with five cases studied at the national level in each South Asian country, one regional case study; two cases from the 26 were then chosen for more in-depth analysis where detailed interviews were conducted with the country level stakeholders involved. The paper will discuss the regional and governance challenges impacting anticipatory governance in South Asia and better understand if the use of anticipation has helped create more transformative policies and thus contribute to the much needed area of research on the linkages of anticipation and transformation in South Asia. The paper contributes to the conference stream ‘Anticipation and Imagination’, and the work of the 2018 Earth System Governance Science and Implementation Plan: Anticipation and Imagination – as well as the Working Group on Anticipatory Governance, under the auspices of the Task

285

*Imagination for Transformation – An interdisciplinary analysis of the cognitive-social skills for navigating future-making in the Anthropocene*

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Political and scholarly interest in deliberate transformations to sustainability is growing rapidly in global environmental change discourse. The ability of individuals, groups and societies to identify, explore, assess, and pursue alternative possible futures is essential for their ability to deliberately and collectively forge a path into the future, rather than experience unguided or forced change. Therefore, transformation processes inevitably involve and require imagination. In this paper we develop a framework for studying the multiple relationships between imagination and transformation processes, including individual-cognitive, social-communicative, political-institutional, technological, and global governance dimensions. In the specific context of transformation, we refer to imagination as linked cognitive and social processes that create representations of possible future states of the world that can inform and guide public deliberation, policy, decision making and behavior from the individual to the global scale. This definition emphasizes the role of imagination in multi-scale governance and decision-making processes, which have been the focus of transformation research thus far. We contend that imagination is an essential capacity of those groups, actors and decision-makers actively seeking to secure ecological, social, economic, and cultural well-being and prosperity in times of rapid and often unpredictable global change. The existence, lack and development of imagination capacity within current systems of governance and power will play a crucial role in shaping societies’ responses to their current sustainability challenges and ought to be integrated the growing research program on transformations. Assessing and synthesizing recent research on the relationship between imagination and transformation, we sketch a future interdisciplinary research agenda.

371

Understanding anticipatory climate governance in Central America: the links between anticipation and policy

Marieke Veeger 1,2, Karlijn Muidermann 3,4, Alexander Tulloch Lapresa 4

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Anticipation practices, such as participatory scenarios, quantitative scenarios and visioning processes, are increasingly used to imagine how countries will be affected by climate change and to proactively plan climate strategies that preempt major social, economic, environmental and health impacts of climate variability. These anticipatory practices are increasingly used to guide transformative planning processes in vulnerable sectors such as agriculture and livestock. However, these anticipatory processes have not been scrutinized as mechanisms of steering of the future in present planning processes. Anticipatory practices might incorporate framings that unwillingly reinforce inequalities and injustices, particularly in the vulnerable regions of the Global South. Building on half a decade of foresight research and practice in one of the most vulnerable regions to climate change, Central America, this paper bridges the foresight and governance community in order to critically study foresight as a governance intervention. By analyzing 25 cases of anticipation practices and policy formulation in the aforementioned region, we examine the links between anticipation and policy by addressing first-order questions such as; what type of anticipatory practices are used, who initiates and funds these processes,
and who participates? Thereafter, three cases are studied in-depth in order to interrogate more implicit notions of the conception of the future. We analyze how knowable and manageable the future is perceived to be, what the desired end is of engaging with the future and how it is seen to impact policy choices in the present. The analysis in this paper can be used for future research on the role of anticipatory practices in climate change governance and transformation processes. The paper contributes to the Earth System Governance conference stream ‘Anticipation and Imagination’, as well as the Earth System Governance Task Force on Anticipatory Governance.

Panel ID 17

Anticipating the Fate of Governance in the Anthropocene

300

The Fate of Wildness in the Anthropocene
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Humans dominate the Earth. They have mapped the entire planet, unlocked the building blocks of life, and extended their presence into every ecosystem. This has included not only rerouting rivers, converting forests into agricultural lands, overfishing the oceans, and toxifying much of the environment but also anthropogenic climate change, ozone depletion, and cascading biodiversity loss. In the face of this, Earth Systems Governance aims to shape and coordinate the human presence. It seeks to control humanity’s earthly signature in the service of sustainable development. This paper asks about the fate of wildness in Earth System Governance efforts. As humans bring greater institutionalism to their collective affairs, is there a place for the unbidden, unpredictable, and erratic elements of life? Might there be value in not completely conquering the planet with human knowledge and manipulative power? Will it even be possible to restrain the human impulse to mastery as environmental challenges intensify and the need for greater human intervention seems inevitable? And, if so, what would it mean to plan and govern wildness? This paper will assess the wisdom and challenges of preserving wildness in an increasingly humanized world. As the Anthropocene intensifies, humanity will persistently find itself at a crossroads. In one direction will stand greater human manipulation. At the extreme, this will involve geoengineering, de-extinction, and other technological feats that seek to control global ecosystemic dynamics. In the other direction will stand more humility, a more constrained approach to human presence. This will involve efforts to rewild the world by inviting more unpredictability into human life through small-scale production, bioregional communities, wildlife corridors, and the relinquishing of the desire for comfort at all costs. This paper will evaluate the prospects for rewilding as the Anthropocene intensifies. Will it be possible to preserve and, paradoxically, govern wildness as the planet hurls deeper into the Anthropocene?

78

Conservation and Sustainable Development in the Anthropocene: Review of UNESCO’s Man and the Biosphere Programme
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Perhaps there is no better place to recognize the impacts of anthropogenic changes than lands set aside for conservation and sustainable use. With pristine ecosystems and a strive for harmonious coexistence of human and nature, protected areas, such as UNESCO Biosphere Reserves, are especially important to observe in the Anthropocene. This paper provides a discursive analysis of the Man and the Biosphere Programme (MAB) of UNESCO to reveal the ways the Anthropocene may be entering international institutions, global networks, and protected area management to answer: How is the Anthropocene narrative being taken up in global environmental
governance, and what are the implications for human-nature relations, roles of science/technology/knowledge, and institutional adaptation? In this article, I review action plans, management strategies, press releases, online content, biosphere reserve reports, and related documents from reserves to determine whether and how the Anthropocene narrative is being taken up within MAB and how political challenges are confronted as the Anthropocene becomes institutionalized. The Anthropocene does not necessarily negate traditional management strategies focused on conservation and sustainable development but refines the meanings of these antiquated approaches. The driving initiative behind protected areas, and desire for biosphere reserve status, is to hold on to a delicate balance of humans and nature with these pristine landscapes, even as they slowly fall victim to global environmental change. The interplay of sustainable development and conservation blends with, awakens, and informs the Anthropocene as human and nature relations are re-conceptualized; roles of science, technology, and knowledge are re-evaluated in management strategies; and institutions evolve to accommodate new political perspectives and organizational structures. This paper provides a comprehensive view of MAB and illuminates the significance of protected areas as stewards, laboratories, and recognition of rapid environmental change. Moreover, it captures an in-depth snapshot of the impacts of the Anthropocene narrative in decision-making, planning, and experience in biosphere reserves.

The Visual Politics of Anticipation and Imagination

Where are we going towards 2050? An exploration of the anticipatory processes behind low-carbon roadmaps for high-carbon industries.

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Anticipation processes are vital for establishing good governance of anthropogenic climate change, connecting preferred future developments to those of the present. Roadmaps - in which actors present a shared vision of the future and their roles in it - are one common way of doing so. While they can serve multiple functions, roadmaps are often used to inform policy makers on the expected developments and transformative technologies include approaches that could reflect some small amount of sunlight back into space, cooling the Earth, and those that could draw greenhouse gases out of the atmosphere. Certain applications of climate engineering technologies could be beneficial. Climate engineering technologies also, though, present significant environmental, social, and political risks. Policymakers and others concerned with responding to climate change need credible scenarios and models that integrate climate engineering technologies if they are to make reasoned and informed decisions about the future. There is, however, a critical knowledge gap. Existing climate models consider climate engineering technologies in far too limited a fashion. This paper will report on a multi-year, cross-disciplinary project aimed at addressing this gap. The project is a first in bringing together physical scientists, modelers, social scientists, and artists (included science fiction writers) to generate climate change-related models that are more responsive to critical social and policy questions.

Panel ID 21

The Visual Politics of Anticipation and Imagination

67

Generating More Imaginative Climate Models

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A growing number of scientists and policymakers are pointing to a potential role for so-called climate engineering technologies in humanity’s response to climate change. These potentially
considered commitments of state and non-state actors for (European) long-term climate strategies. These processes, are, however, characterised by uneven power relations. Indeed, there is some initial evidence that indicates that participants in road mapping exercises take part to represent their vested interests, not least because the capital-intensiveness of many high-carbon industries ensures that actors seek to maintain current technical assets. As a result, it is suggested that industry roadmaps may reproduce existing norms and technologies rather than opening up spaces for new sociotechnical configurations. To date there has been only little comparative research into how processes of roadmap development and their resulting windows-of-change relate to one another. Hence, in this paper we seek to address the above questions by analysing how long-term low-carbon futures, and the role of stakeholders in realising these futures, are shaped or limited. We do so, through comparing the roadmap-building processes behind a selection of industry roadmaps published between 2015 and 2018, all stipulating low-carbon routes for high-carbon economic sectors towards the 2050 timeframe. These roadmaps represent different industries, but are all part of a recent wave of roadmaps, usually produced in response to national or supranational carbon reduction strategies, such as the European Commission’s Strategy for Long-term EU Greenhouse Gas Emissions Reductions. Through a mixed methods approach, combining desk research, workshops, survey, and interview data, we draw insights on (1) the low-carbon futures anticipated; (2) how such futures are translated into actionable measures; (3) and by and for whom. By comparing roadmaps from different industries we pay particular attention to the role materialities play in mediating between the processes and outcomes of road mapping. In doing so, this research also answers a call from the literature for greater attention to be paid to the multiple forms and roles of sociomaterial incumbency in shaping the potential to imagine and enact radically different futures.

340

Scientific Uncertainty and Tuna RFMO Decision-making

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We ask three related questions about the influence of scientific uncertainty on environmental policy decisions, drawing on evidence from tuna Regional Fisheries Management Organizations (tRFMOs). First, whereas previous research assesses whether or not scientific uncertainty impacts policy choices, we suggest the answer is conditional. Therefore, we ask under what conditions does scientific uncertainty lead policymakers to reject or adhere to scientific advice? Second, we ask under what conditions does scientific advice shift on the basis of scientists’ own uncertainty? Finally, the level of scientific knowledge and uncertainty itself varies over time and across species assessments. This research therefore considers under what conditions does knowledge produced for the policymakers become more and less uncertain? Using an original dataset of stock assessments, scientific policy recommendations, and Commission decisions, we test hypotheses about the interaction between uncertain knowledge and institutional design, scientific community, stock characteristics, and political strategies. A pilot analysis of Atlantic (ICCAT) stocks shows that: 1) on average, reported uncertainty has declined over time for managed stocks (likely indicating improved scientific information); 2) time trends and the level of stock depletion impact scientific advice about management choices; 3) adherence to scientific advice correlates with the interaction between stock price and uncertainty. However, the ICCAT analysis only analyzes these outcomes
within the realm of one particular scientific framework, with specific rules about scientists’ role in the advisory process. This paper, therefore, expands the analysis to include the other four tRFMOs (IATTC, WCPFC, IOTC, and CCSBT), allowing us to also assess whether results are impacted by institutional design, treaty membership, or characteristics of the scientific community.

341
How Water Managers in California Engage in Anticipatory Governance to Navigate Uncertainties
Christopher Gibson
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The UN’s 2018 IPCC report identified water as a major concern for urban population centers as average global temperatures increase. Meanwhile, social science research on environmental governance argues that anticipatory governance, or strategically applying flexible and forward-thinking to decision-making under uncertainty, is urgently needed as climate change forces social, political, and institutional transformations. This paper asks, “How do municipal water organizations understand the future and what does this mean for their resource governance?”. Examination of public water supply agencies in Southern California illuminates the degree to which water directors, that is elected board members of public water institutions, engage in anticipatory governance in the management and delivery of water resources. Using data from interviews with a range of water officials, participant observations, and archival documents, I develop a typology that characterizes the discursive contours of how water managers understand the future—specifically about how formations of the future and time horizons are deployed in water policy programs and the financing of operations and infrastructure. Inductive coding for patterns in interview data suggests the presence of 5 categories of futures: Environmental Futures, Financial Futures, Political Futures, Developmental Futures, and Technical Futures. I argue that for each category, there are unique considerations, constraints, and uncertainties. Furthermore, analyzing these dynamics in light of sociological theories and knowledge on uncertainty, socio-environmental processes, and power, illuminates that constructions of the future are a distinct field in which environmental and economic concerns come to compete for prominence in shaping water policy. This paper applies the concept of anticipatory governance to on-the-ground management of water in an arid environment with a highly engineered regional resource management regime and well-established democratic institutions. The typology of futures and analysis of the categories highlights contradictions, constraints, and tensions that contribute to institutional inertia and the “wicked” problems that hinder environmental reform and climate change adaptation efforts. By focusing on the role of multiple conceptions of the future, I point to methods for preempting inefficiencies and forging promising paths to socially and environmentally sustainable futures within city and regional-level resource management regimes.

397
Imagining the global ecological crisis: Visual politics in the age of Anthropocene
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The experience of the socio-ecological transformations related to the Anthropocene is changing the prevailing understandings of our relation to Earth. The “global ecological crisis” emerges as a concept to reference the discussions, policy actions and social responses that have begun to take place in relation these transformations. This concept is not complete or hegemonic. Indeed, it is a site of political contestation. The awareness of a global ecological crisis takes place at a time when visual images have a particularly
important role in shaping awareness and responses to global scale issues. Images can often create a sense of identification or connection with issues, peoples, species and landscapes in distant geographies, even without having direct experiences with them. Moreover, they can create the awareness that environmental, political and social events taking place around the world are interconnected by their being the result of a common global ecological crisis. In this respect, visual images have a pedagogical role in eliciting the political and social transformations needed to face responses to the global ecological crisis. Yet, different ways of seeing the ecological crisis relates to potentially different political ways of understanding and responding. Responses can include: anticipation as planned action, anticipation without action, conscious or unconscious neglect, etc. However, while the visual representations of the global ecological crisis have different political and social responses, what needs to be understood are the linkages between visual representations and responses. That is, that which makes visual representations of the global ecological crisis political. The aim of this paper is to explore the role of visual politics in shaping the imagination of the global ecological crisis, its related future scenarios and responses. To develop this theme, in the first section I review the main conceptual discussions in the field of visual politics in the International Relations literature, drawing particular attention to their relevance for thinking about global environmental issues. Different visual representations open up, as well as foreclose, potentially different pathways of governance responses. In the second section I offer a typology of visual representations of the global ecological crisis and related responses. In the third section I analyze the interests and power implications of these representations for the main actors of the global environmental politics (institutional, market and social actors) with particular reference to Latin America.

Panel ID 22

Anticipating Urban Futures: Imagining the city

Knowledge System Innovation for Resilient Coastal Cities

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Urbanization in coastal areas is increasing populations and infrastructure at risk to floods, storm surge, and sea level rise. By 2060 an estimated 411 million people worldwide are projected to live within the 100-year floodplain in coastal cities. Strategies are urgently needed to build resilience in an increasingly uncertain future, but this places great demands on the knowledge systems (KS) that decision-makers, infrastructure designers, and citizens use to assess climate risks and make adaptation decisions. KS are the social practices and institutional standards that shape the production, validation, communication, and application of knowledge relevant to policy and decision-making. Many KS used to inform coastal resilience decisions are not anticipatory; they are either outdated or do not incorporate climate projections. Hence, KS innovation is a crucial strategy to build resilience. KS innovation is not just about producing new information, but about analyzing and updating the actor interactions, values, and expectations underlying how knowledge gets made and used. By collectively analyzing semi-structured interviews, participant observations, and documents, I present the results of a KS analysis of the Southeast Florida Regional Climate Change Compact (The Compact). The Compact is an illustrative case of a governance and knowledge innovation for resilience to uncertain coastal hazards and rapidly rising sea levels. This study reveals the Compact’s
actors, values, epistemologies, and knowledge - its knowledge system - as well as outstanding KS gaps that may undermine coastal resilience. This study demonstrates the need for knowledge innovation in flood risk governance, and presents a method that can be used to analyze and upgrade other climate risk KS.

287

A multi-modal approach to framing urban resilience: a Valdivian case study
Lelani Mannetti1, David Iwaniec1, Elizabeth Cook2,3, Tischa Muñoz-Erickson4, Robert Hobbins5
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Finding inclusive ways to plan for just and sustainable urban futures remains challenging. In order to transition to more resilient, sustainable and equitable urban systems, diverse knowledge and perspectives need to be integrated into strategic planning processes. As complex, dynamic, and highly integrated systems, cities continuously need to link social, ecological, and technological solutions, especially in the face of uncertain climate. This poses significant governance challenges, with cities having to navigate these social, ecological and technological complexities while transforming toward a desired “equitable sustainability”. Using the city of Valdivia in Chile as a case study, we assess how city planners, decision-makers, and civic actors envision resilient urban futures when faced with such challenges. We analyse responses to a semi-structured questionnaire, the content of city planning documents pertaining to climate action, and the key goals and strategies co-produced during a participatory scenarios workshop. By collectively analysing data from governance surveys, governance documents, and workshop outputs, the study aims to explore how climate resilience is being framed by different city stakeholders along short, medium and long-term time horizons. The results provide insight into the values assigned to sustainability, equity, and transformation when diverse perspectives are included in envisioning resilient urban futures. The research also highlights approaches to diverse and inclusive ways of envisioning just and sustainable urban futures.

354

Rethinking Knowledge Systems for Urban Resilience: Feminist and Decolonial Contributions to Just Transformations
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Work in urban resilience planning recognizes the importance of knowledge diversity to understanding and acting on climate change, but falls short in adequately situating itself within ongoing historical processes that shape uneven urban playing fields in which planning happens. This paper uses insights from environmental feminist and decolonial knowledge politics to challenge knowledge systems analysis to explicitly question and alter structures of power in environmental knowledge making in North American cities. If knowledge systems analysis can investigate and intervene in governance structures through which environmental decision- and policy-making happen, this necessitates reflection on ontological, epistemological and ethical commitments (or ‘starting points’) as these carry material and discursive weight: they open up and foreclose ways in which resilience is practiced. Given increasing recognition that urban resilience needs to consider issues of justice and equity, in this paper we take cues from feminist and decolonial scholarship that has centered these themes for decades and which offer ‘starting points’ to rethink knowledge systems for resilience. Understanding urbanization as a key
process in the expansion of relations fundamental to the production of anthropocentric climate change, we argue that changing these relations is crucial if urban resilience planning is to contribute to alternative and socially just urban futures. Against tendencies of depoliticization that solutions-oriented work can sometimes exhibit, feminist and decolonial perspectives locate knowledge-making practices squarely within struggles for social justice in the city. We propose three strategies for those working on knowledge systems for resilience to advance their practice: centering justice and transgression, reflexive research practice, and thinking historically. Ultimately, this paper shows that taking seriously critical social sciences furthers fundamentally new ideas for what transitions to urban resilience could mean.

415
Knowing Urban Futures: Mapping Anticipatory Capacities for Resilience and Sustainability Governance
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The prospect of accelerated climate change and more extreme weather events demands that our cities have the capacity of envisioning future pathways and anticipating trade-offs of resilience strategies and solutions. While future-thinking is a common practice in urban planning, the knowledge coming to bear on decisions and actions tends to be risk-based and supported by retrospective data. Instead, we propose that decision-makers need anticipatory-based knowledge systems that factor in high levels of uncertainty, allow them to scan very distant time horizons, and foster the deliberative exploration of unintended social, technological, and ecological consequences of the actions they take today. In this paper, we draw upon comparative governance research we have carried out across multiple US and Latin American cities that are part of the Urban Resilience to Extremes Events Sustainability Research Network (UREx SRN) to map and analyze the knowledge coming to bear on urban resilience visions and actions with the knowledge-action systems analysis (KASA) framework. Using KASA we identified key actors and networks currently envisioning and mobilizing futures in our cities, characterized the knowledge systems and social practices that are shaping these visions, and analyzed the extent to which they enhance anticipatory capacities and governance for urban sustainability transformations. We conclude with research and practice recommendations on knowledge systems upgrades and innovations that can improve how we know and govern resilient and sustainable futures.

Panel ID 23
Imagining Diverse Futures: Scenarios as Site of Anticipation
295
Imagining positive futures for nature in an co-creative process – the new IPBES Scenarios on Nature
IPBES Expert group Scenarios and Models1, Machteld Schoolenberg2,3

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Scenarios are tools for imagining and exploring future directions for governing complex problems. In developing directions for the new, post-2020 Global Framework for Biodiversity under the Convention of Biological Diversity (CBD), scenario-analysis plays an important role in informing parties. Up till now many of the scenarios are developed in the climate change community and are further analyzed for biodiversity. This has certain shortcomings from a nature perspective, including a lack of attention to the positive role nature can play in achieving the SDGs. Therefore,
since 2016, within IPBES an ‘Expert group on Scenarios and Models’ is developing a new set of scenarios for the future of nature. The main objective is to identify alternative pathways towards improving biodiversity and ecosystem services while also achieving other SDGs. The ultimate aim is to establish ‘community scenarios’ for researchers applying scenario methods across a range of disciplines, to provide a common and strengthened basis for future IPBES assessments to inform decision-making on nature. The expert group has been initiating stakeholder co-creation workshops and consultations, in order to capture a spectrum of different visions for nature’s futures. The visions that came out of these are based on promising examples of local initiatives (‘seeds’) that, if extrapolated, would result in positive futures for nature and people. From these visions a triangular value space emerged, encompassing how stakeholders value nature from different perspectives: Nature for nature, where nature is intrinsically valued; Nature as culture, where people consider themselves as part of nature, and nature as part of their culture; and Nature for society, where nature is seen as a useful resource. A next step in this process is to co-create with stakeholders full narratives on what these ‘nature futures’ could look like, considering the continuum of this value space, what options exist to achieve these visions, and to anticipate factors that restrict achieving these visions. The paper will provide an overview of the results of the process so far, identify next steps and reflect of the process. Especially, the politics and power disparities that are emerging in this participatory process in the context of a UN-assessment panel will be addressed, and how this might influence the outcomes of the work. Lastly feedback will be sought on how inputs from Earth System Governance scholars can inform the contents and process design. For this – if possible - a scenario exercise will be organized during the conference.

“Can you tell us which is the most likely scenario?”: Reflections on narrative scenarios as a means to build anticipatory decision-making capacities

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The pace and scale of global environmental change presents fundamental challenges for environmental governance. When decision-making can no longer be based on historical conditions, there is an increased reliance on scientific projections of future change to provide a basis for decision-making. Given the many unknown and unknowable aspects of future social, political, and environmental systems, projections of change are inherently uncertain. Participatory scenario processes are an emerging response to these types of governance challenges. Scenario processes blend knowledge, practical experience, and imagination to provide plausible representations of the future, from which stakeholders discuss options, negotiate trade-offs, and ultimately, develop pathways for action. While scenario processes have been shown to be effective in certain cases, they remain largely isolated from broader decision-making processes. This indicates a need to critically evaluate the role of scenario processes in decision-making and in doing so, identify strategies required to overcome existing barriers to anticipatory action. This paper will reflect on the development and use of an interdisciplinary narrative scenario methodology that was used to climate adaptation in public land management in the United States. This methodology was first piloted in two regions in the Western US and then used in an applied decision-making context in a project that co-produced adaptation strategies with land management agencies. In these cases, we found that scenarios were particularly adept at
revealing unanticipated synergies and disjunctures – findings that were surprising even to participants. However, the research revealed substantial obstacles and challenges to using scenarios within existing decision-making practices within the agencies. Further investigation into these challenges through interviews with agency personnel suggest that the wide-open, expansive nature of narrative-focused scenarios simply did not match the highly institutionalized practices of planning. This was compounded by challenges in utilizing an approach that explicitly embraces uncertainty in ways that do not align with institutional and legal requirements prescribed by US federal law, or decision-making cultures that do not create space for the kind of highly imaginative, speculative, and reflexive thinking embedded in scenario processes. These findings suggest that there is a need to pay more attention to the broader institutional context in which scenario processes are situated, and to design processes in ways to accommodate and directly address current planning priorities, data requirements, decision-making cultures and capacities.

360
Assessing resilience, equity, and sustainability of alternative scenario visions across governance scales
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Current and projected trends in extreme weather events highlight the need for transformative change in order to improve living conditions for urban residents. In the absence of strong international agreements, many municipal governments are leading the efforts to build resilience to climate change in general and to extreme weather events in particular. However, it is notoriously difficult to guide and activate processes of change in complex adaptive systems such as cities. Participatory scenario planning with municipal governments and members of civil society provide an opportunity to co-produce positive visions of the future. However, not all visions are created equal. The purpose of this paper is twofold: First, we introduce a tool for assessing resilience, sustainability and transformative potential of social-ecological-technological systems based on insights from systems thinking (Meadows), social innovation (Westley) and resilience thinking (Holling, Gunderson). Second, we apply the framework to analyze the visions that were created in participatory scenario workshops exploring the impacts of extreme weather events in Phoenix, AZ (USA). Our analysis allows us to compare alternative visions, understand key governance pathways, and potential obstacles, that participants identified in fulfilling their future goals, as well as implicit and explicit tradeoffs. Furthermore, the scenario visions were created at two different spatial and governance scales: the Greater Phoenix Area (regional scale) and South Mountain Village (neighborhood scale), allowing us to understand how people’s hopes and desires might intersect in synergistic or conflicting ways across scales.

419
Anticipatory Governance of Regime Shifts in Social Ecological Systems: Building Resilience to Climate Change in Transboundary Lake Champlain
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Anthropogenic climate change could induce regime shifts from oligotrophic to eutrophic states in shallow bays of the Lake Champlain due to more frequent and more intense flooding events in Lake Champlain Basin (LCB) as well as reduced ice cover internally in the lake system. It is, however, not clear how anticipation of these climatic change induced extreme events, coupled with anticipated impact of land-use land cover change (LULCC) on the water quality of freshwater lakes, will lead to anticipatory and reflexive
governance, inducing proactive policy changes to mitigate nutrient pollution across transboundary LCB. The transboundary LCB, situated in USA (New York & Vermont) and Canada (Quebec), covers approximately 21,326 square kilometers. The nutrient abatement costs are relatively higher for downstream urban areas than upstream farming areas, yet the downstream urban areas experience more benefits from the clean water through tourism revenues, higher water front property values and drinking water supplies. Climate change has added another layer of complexity in this debate. This paper presents an integrated assessment model (IAM) that couples climate change induced temperature and precipitation variability scenarios with human-system induced LULCC scenarios on the nutrient flows through the hydrological system of the Missisquoi Watershed and its impacts on the water quality in the Missisquoi bay, a transboundary fresh water body in the north-eastern portion of Lake Champlain. Statistical downscaling of 22 Global Climate Model scenarios was performed to generate a 30 arc second (approximately 0.8km x 0.8km ) spatial grid of temperature and precipitation change for the study site for the 2000 to 2060 timeframe. In parallel, a LULCC modeling team developed an agent based model to generate 30 meter x 30 meter land-use projections for the Missisquoi watershed. Both the downscaled climate change data and LULCC projections data are inputs to a distributed hydrological modeling framework for generating daily time-scale forecasts of nutrient flows from the Missisquoi River and their consequent impacts on regime shifts in Missisquoi Bay of Lake Champlain. We will present a suite of scenarios of climatic change, LULCC and anticipatory versus reactive governance aimed at mitigating nutrient pollution, to determine if and under what conditions the Mississquoi Bay portion of the Lake would be eutrophic or oligotrophic. We draw broad theoretical implications for anticipatory versus reactive governance of regime shifts in social ecological systems, with an emphasis on building resilience to climate change through foresight generated by IAMs.

Panel ID 24

Navigating Sustainable Futures: Sociotechnical Visions and Political Landscapes

191

Climate Change and Post-Conflict Peacebuilding

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Building peace after protracted conflict is rarely straightforward. The challenges including reducing and stopping organized violence, the prevention of a rekindling of conflict, and helping societal groups and governments reset their internal relations to build institutions for more peaceful paths for sustaining peace. These challenges get exponentially more difficult in countries affected by climate change, because the compounding consequences of climate change and violent conflicts further exaggerate the human costs of war long after active combat has ceased. Such environmental pressures continue on top of the often quite severe environmental and infrastructural damage done during in war. In fact, the biggest peace operations in terms of personnel – Somalia, South Sudan, Darfur, Afghanistan, Mali and Lebanon – are located in some of the most climate vulnerable regions of the world. To little acknowledgement of climate-change related developments, and too little programmatic action and institutional development to assess and address climate change impacts, is occurring in contemporary peacebuilding operations. In short, international efforts to engender and maintain peace and security have so far not taken these challenges into account. This is concerning, because in most conflict-impacted states and societies, international peacemaking efforts cannot avoid the impacts of climate change on their basic priorities. Our ongoing
research recognizes that the impacts of climate and environmental change are increasingly interfering with the objectives of peacekeeping, peacebuilding, and conflict prevention activities, and seeks to outline strategies that may help to reduce the risk of conflict relapse and facilitate sustainable peace and development. The proposed paper shows that international peace operations remain unprepared to integrate climate change into their operations. Drawing on examples from recent droughts and severe floods in Somalia, Afghanistan and Mali, we stress the need for new efforts to support peace operations adapt to these challenges. These include better risk assessments and closer coordination between different UN agencies on the ground, but moreover better support from UN headquarters and a host of engaged partners. We argue that peacebuilding mandates – and very likely also hope of achieving progress toward Sustainable Development Goals in post conflict societies, cannot avoid grappling with climate change impacts and adaptation challenges in UN agencies and peace building operations.

233

Governance of Novel Technologies in Earth System Governance

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The new Earth System Governance science plan asserts that increasingly the role of technology in environmental governance cannot be ignored. This article sets the stage for inquiry among Earth System Governance scholars into this topic by outlining potential theoretical entrees and empirical examples of novel technologies with significant implications for environmental governance. We first outline three approaches - ‘rationalist,’ ‘techno-determinist,’ and ‘co-productive,’ - to theorizing technology, each with different understandings of the relationships among technology, nature, and society. We then explore these perspectives in the context of three empirical technology clusters – solar geoengineering, digital technologies, and biological manipulation. Within each technology cluster we consider similarities and differences among technologies, raise salient governance issues, and highlight important unanswered governance questions. Our first technology cluster is solar geoengineering, or the intentional modification of the planetary energy balance to attenuate climate change. As a technology cluster that promises far-reaching implications for the relationship between humans and earth systems, solar geoengineering poses important governance challenges including regulating research, preventing uncoordinated deployment, and reaching agreement on where to set the “global thermostat.” In the second cluster, we examine the development and proliferation of digital technologies including artificial intelligence/machine learning, distributed ledger technology, and ‘Big Data’. These technologies create exciting opportunities for accelerating progress towards sustainability goals through, for example, optimizing resource use and distribution, improving monitoring and evaluation, and enabling new scales and modes of access and participation. However, these opportunities are offset by concerns about inclusivity, human dignity and privacy, surveillance and securitization. Third, we consider new biotechnologies including agricultural and pharmaceutical applications and new methods for genetically altering species in-situ to conserve biological diversity. Gene drives, for example, are capable of intentionally extinguishing a local population of an invasive species. These proposals raise challenging questions such as risk-risk tradeoffs,
liability, transboundary effects, and precaution. We conclude by exploring important themes that cut across the three technology clusters. Our case studies stress the anticipatory and complex nature of technology in environmental governance. In the face of uncertainty, we propose and discuss a number of requirements for enabling responsible and effective governance. These include finding historical analogs from which to draw lessons, identifying existing institutions that could be relevant to the technologies’ regulation, ensuring sufficient monitoring capacity and adaptability, establishing accountability for the actors involved in advancing the technologies, and guaranteeing the integration of collective societal goals into development processes. [1] Burch et al, p. 14.

**Understanding transformative changes and emerging properties of institutional systems for future climate knowledge integration**
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The need for climate action has never been greater. According to the IPCC, in 2018 human activities are estimated to have already caused a 1.0°C increase in the global mean temperature of the planet, and experts expressed high confidence it could reach 1.5°C by 2030. Consequently, we face critical transitions and higher levels of uncertainty. Acknowledging these shared challenges will require countries to work together and look for transformative approaches to accelerate and govern the integration of expert knowledge. Yet, the challenge to articulate visions and negotiate boundaries between different epistemic communities remains largely unsolved. Consequently, More research should be made on how to identify and target integration opportunities across knowledge systems. A better understanding of such dynamics could open up innovative ways of dealing with expertise and support transformative agendas of change. In the broader policy landscape, the need for a paradigm shift that effectively promotes low-emissions and climate resilient development together, calls for changes in the international policy discourse in general. Unsurprisingly, important questions about how to generate transformational responses to climate change, and the growing imperative for different and more integrative responses to climate change, suggests going beyond incremental changes and pursue instead transformational change. This means that the need to secure broad scientific, political, as well as civil input in order to maximize the diversity of pathways leading to transformation towards a climate compatible future is essential. It is important, from this perspective, to explore strategies for anticipation and the set of plans that further consider the organisational component of climate technologies from wider perspectives. In this context, my research critically examines a network of experts in a variety of contexts involving science-policy negotiations and boundary work at the United Nations Framework Convention on Climate Change (UNFCCC). It looks specifically at the Technology Mechanism of the Convention by innovatively combining multi-sited ethnographic research with network and policy analysis. The study provides case studies with experts from COP23 (Bonn) 2017, COP24 (Katowice) 2018, the UN-City in Denmark 2017-2019, the Netherlands 2017-2019, Thailand and Myanmar 2017-2019. My contribution in this research paper will be to advance our understanding of emerging transformative approaches in complex institutional systems, and stimulate further debates about the interlinkages between knowledge and governance. In particular, by examining the extent to which emergent cooperation dynamics can serve the purpose of future climate knowledge integration for the effective governance of the earth system.
Upsetting offsetting: Sociotechnical visions and emergence of the sage-grouse Habitat Quantification Tool
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Biodiversity offsetting refers to policy mechanisms intended to mitigate impact of industrial disturbance to species habitat by benefiting species habitat elsewhere. Offsetting schemes entail constructing means for identifying and measuring habitat impacts and offsets. This may seem straightforward and scientifically objective. In practice, however, different groups often contest precisely how to identify and measure impacts and offsets, and how offsetting schemes should function. Differing imagination processes underlie this contest over offsetting and governance. In this paper, I identify and describe these processes of imagination in terms of “sociotechnical visions:” shared expectations about what desirable (ecological) futures science and technology can and should bring about. As discourses that organize behavior, sociotechnical visions can shape material outcomes. I focus on the visions stakeholders brought to bear on the construction of the Habitat Quantification Tool (HQT), an instrument custom-developed for use in an emerging sage-grouse habitat offsetting scheme. Quantifying ecological insult and benefit to a declining bird species—its subject of a highly politicized national debate around conservation and economic activity—brought disputes over offsetting and the role of science in this process to the surface. Developing the HQT involved academics, agency biologists, policy entrepreneurs, ranching tradespeople, extractive industry, and regulators. Each of these groups brought different visions for the future to the table. For this analysis, I draw from an original dataset consisting of interviews with the science team and the policy architects behind HQT development, as well as other stakeholders. Based on 58 in-depth interviews and other primary source material, I unpack the sociotechnical visions different groups brought to bear in HQT development. I analyze the ramifications of these visions in terms of (1) the process whereby the HQT was consequently developed and (2) the HQT that resulted. I argue that the HQT that resulted constituted a technological paradigm shift breaking from standard practice with potentially subversive implications. I conclude by considering what these outcomes have meant, at least in the short-term, for the larger project in which the HQT is situated: launching an ambitious new model for habitat offsetting for an imperiled species. This analysis represents a grounded approach to how, guided by different imaginings of the future, the indeterminate, contingent practice of conservation policy development unfolds relative to ambitions for sustainability.

Panel ID 25
Imagining Multiple Words: Interrogating the Future

Earth System Governance for the pluriverse: proposals for ontological plurality
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Global environmental law and governance models are often framed as independent sets of norms and procedures to regulate the human use of external natural resources. These models, however, often remain fundamentally grounded in a “one-world world” ontology paradigm (Law 2011). Conceived from the perspective of the Western historical experience and its colonial trajectories, the one-world ontology suggests that regardless of cultural variations and belief systems, humans (and other than humans) occupy one single ‘real’ world made up of discrete and separate entities. We consider this vision to be a significant future sustainability challenge and one that could expose the global south to ongoing colonisation and material and cultural
In this paper we consider processes of ontological plurality - ‘a vision of the world that echoes the autopoietic dynamics and creativity of the Earth and the indubitable fact that no living being exists independently of the Earth’ (Escobar 2015: 14) - and how such processes could imagine inclusive and participatory Earth System Governance frameworks for environmentally just sustainable transformations within the global North and South. We seek to draw upon environmental institutional examples within the global North and South to compare and contrast processes for pluralistic environmental governance and examine their capabilities for steering towards sustainable futures. We further acknowledge that ontological plurality has long been informed by ‘Indigenous articulations and intellectual labor’ (Todd 2016: 9) and assert that any discussion of ontological plurality needs be framed within a decolonising methodology. This paper contributes to a shifting paradigm from highly regulatory, technocratic, and human-only oriented environmental law and governance models, to pluriversal and systems-grounded ecological jurisprudence(s) and earth systems governance. A pluriversal orientation of Earth System Governance recognizes the epistemic and ontological diversity of the law, and thus situates Earth System Governance within the larger community of life humans are part of.

Can imagining other futures change the present? Reflections from an experience of a multiactoral network in defense of the cloud forest in Xalapa, Veracruz, Mexico

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Since the Protected Natural Area Archipiélago de Bosque y Selvas of Xalapa was established in 2015 as a green belt around this middle-size city in center eastern Mexico, a citizen network was formed with the intention of being custodians of the local cloud forest, the rivers and the linked peasant life forms. It is an experience of plural and horizontal participation among farmers, academics, civil society organizations, artists, professionals and some local government actors. In this multiactoral process, many difficulties and obstacles arise for collective action towards sustainable environmental governance that are framed within the general sociopolitical panorama of Mexico, the specific context of the protected natural area and the conflicts in the region. Among the challenges, we highlight the tensions between different actors, their visions, interests and forms of life, the fragmentation between communities, the gap between rural and urban forms of life, the lack of mechanism for political participation and the diverse forms of socioeconomic crisis, violence and corruption, considering that all of these are marked by socially constructed power relations. In this context, where fear, desperation, distrust, conflicts and resistance constitute part of the population’s daily life, imagination and dreaming present a challenge and an opportunity for overcoming barriers towards sustainability. The collective construction of visions implies a critical analysis of the past and present denouncing unjust situations and at the same time the announcement of a future that can be created, inspiring collective actions and strategic planning. In a participatory action research process, we experienced different forms of collective dreaming and the construction of visions, embedded in the actions of the network and combined with different participatory practices as transect walks, mapping, time line analysis, theater and collaborative games. In this presentation, reflections will be shared about the role of imagination and dreaming in contexts of socio-ecological crisis, as well as its transformative potential regarding social learning, power relations, the relation with nature, sense of place and community, and collective action.
Writing New Energy Stories: Building innovative governance models in the Global North based on lessons from energy authors in the Global South and Indigenous communities.
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This paper will articulate the theoretical framework for my doctoral research which investigates how to build transformative governance models that contribute to rapid energy transitions. Currently, the world’s energy story is dominated by fossil fuels and follows an extractivist plotline built on exploitation of earth’s resources to fuel perpetual growth while ‘externalizing’ the concomitant problems with this approach. Holes in this extractivist story are becoming increasingly apparent: dependence on fossil fuels has given rise to air pollution, volatile boom-bust economies and global climate disruption. Most of humanity is not writing the world’s extractivist energy story – the planning, politics and production of energy is not in their hands. Instead, they are paying the bills and paying the consequences, watching the story unfold as the energy audience. Where I live in the Global North (Canada), our governments, our economy and our way of life are built on extractivist plotlines, keeping institutions, infrastructure and our collective imagination locked into the unsustainable energy story of fossil fuels. Creating environmentally sustainable energy story lines requires the development of new governance models that empower and connect energy authors who are imagining and implementing new energy stories and building collective capacity to revise the world energy plotline. My research is investigating emerging energy authors in the Global South and Indigenous communities who are writing new energy story lines that challenge the principles and practices of extractivism. These authors are creating visions for the energy future of their communities built on radically different sets of values and transforming their community energy systems through experiments. Though no perfect model exists anywhere, exciting learning opportunities emerge when these innovative energy stories are juxtaposed with the locked-in plotlines of the Global North. Therefore, my research will explore how to design and build new global energy governance models that increase local capacity to initiate energy transitions and facilitate collaborative international networks through which communities can learn from each other – across geography, culture and language. I want to explore how these local/global learning processes can be designed to create new South – North flows of innovation and knowledge that can supplant the colonial flows of knowledge which historically undergirded extractivism and perpetuate it now. I will also explore how building connections between local level energy authors can amplify their power and contribute to the development of global level solutions.

Panel ID 26

Anticipation, Evaluation, Prediction: Sustainability and the Future
50

The Southern California Conservation Corps: A Case Study of Environmental Collaboration
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As the impacts of climate change begin to unfold in real-time, governments and communities worldwide are challenged to meet the demands of natural disaster mitigation and restoration. Increasingly, many natural disasters take place along the wildland-urban interface (WUI), a particularly complex relationship between developed land and natural habitat. Take, for example, California, which has recently seen both of its fire seasons expand in longevity and severity. While most individuals recognize California’s densely populated urban communities, like San Francisco and Los Angeles, in reality, nearly one-
third of California’s population lives within a WUI, bordering state and national lands prone to disasters like wildfires. What does the WUI dynamic mean for restoration efforts after a wildfire is contained and extinguished? Typically, restoration efforts go out to bid like any other general project. However, as California continues to confront increasingly destructive environmental disasters, the normative “one-contract, one-entity” model to restore damaged natural resources no longer provides enough viable time, labor, money, or skills to effectively cover mass amounts of geography, topography, and biodiversity. Additionally, the “one-contract, one-entity” model tends to exclude community organizations and disadvantaged communities (DACs) that are often most in need of aid and assistance, whether it be direct or indirect. But what about collaborative models that emphasize sharing resources? In the spring and summer of 2018, the Southern California Conservation Corps (SCCC) piloted a test collaborative model for restoration work based in the fire-damaged Angeles National Forest (ANF). SCCC focused on building working relationships among the National Fish and Wildlife Foundation (NFWF), American Conservation Experience (ACE), the United States Forest Service (USFS), the Conservation Corps of Long Beach (CCLB), and the Los Angeles Conservation Corps (LACC), such that resources were pooled to more effectively and efficiently contribute to the restoration of the fire burn scars. In doing so, SCCC not only expanded its scope of work, but also created environmental stewardship opportunities for young adults looking for a path forward. This Article will utilize SCCC as a prime case study to highlight the importance of embracing diverse partnerships and pooling resources, to assess the feasibility of long-term partnerships among multiple entities, to review lessons learned, and to provide insight into the future of SCCC. In doing so, the Article will take an in-depth look at the SCCC project—its objectives, goals, outcomes, and deliverables, passing along information that can be utilized in creating future global collaboratives and partnerships.

83

Anticipation within a Physics Framework
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If we equate anticipation with imagination we imply that anticipation is a purely subjective experience. However “prediction”, which has a similar meaning to anticipation, applies to the future of objective physical systems that can be mathematically modeled. Prediction applies to a causal chain of events within an objective system whose future state is predetermined, even though the chaotic nature of the system makes prediction difficult. Anticipation on the other hand, suggests a relationship between the present state of our objective world and a possible imagined future. According to classical relativistic physics, such a relationship cannot exist, because it would violate the chain of causality bound by a sequence of events that cannot exceed the speed of light. Quantum physics on the other hand does not rule out instantaneous relationships across space and time that manifest as phenomena such as quantum entanglement and quantum tunnelling. Moreover, quantum physics affirms that the state of any objective system in the past, present, or future, is indeterminable until it is observed. Therefore if there is any physical meaning to “anticipation”, it must be within a quantum physics framework, in particular one that supports macroscopic quantum phenomena at the human scale. The notion of macroscopic quantum phenomena, although controversial, represents a framework within which human subjective experience could be analyzed in a continuum with objective phenomena. In particular, such a framework may provide a way to understand how an anticipated future, when shared among a set of individuals, predisposes the emergence of the anticipated future in ways not reducible a predictable causal chain of events.
Most Earth issues and governance challenges are the cumulative results of smaller-scale activities. These build up in complex ways to hamper opportunity for broad, long-term sustainability benefits. While some components that steer transformations towards sustainability need global coordination, others may work reasonably well through adoption of sustainability-oriented approaches that share generic characteristics and are also specified to the regional context for application. Hence, there is a need for regional actions to learn from each other and be aligned (at least compatible and preferably mutually supporting) if they are to tackle Earth systems problems. One relevant example is electric power systems. While delivering important benefits, energy-related undertakings are also major drivers of accumulating negative effects – e.g., climate change. Therefore, whether we ensure safe planetary conditions and sound societal foundations or surpass Earth’s biophysical boundaries and spur inequity and injustice will depend greatly on the energy paths we choose. This study examines whether electric power system planning efforts in three regional jurisdictions in Canada, United States and Mexico are or could be moving towards sharing a common sustainability-based approach. These regions have evident social, economic and geographic differences, as well as different governance systems. Nonetheless, lessons drawn from an initial review of the cases suggest that these jurisdictions have incorporated, or at least demonstrate an interest to incorporate, similar alternative elements. Such responses include emphasis on renewables, demand management, storage, efficiency, modularity and adaptability, among others. This suggests cross-jurisdictional learning from the larger, arguably global, sharing of innovative understandings related to complex systems and sustainability. Ultimately, this work focuses on exploring sustainability paths to more beneficial cumulative effects under the overarching assumption that what we do (or not do) regionally will accumulate to the global scale. The study also recognizes the capacity of key actors in steering transition and justice, decision-making, and participative and democratic processes. For this purpose, a context-specific framework will be elaborated for examining and comparing the cases. The framework is a broad package of evaluation criteria for electric power systems’ planning in the consideration of essential, multiple and mutually reinforcing sustainability gains. The findings should help us see successes, missteps, challenges and learnings from the pursuit of sustainability in each region and as a collective learning project. Moreover, these findings should provide important lessons relevant to identifying potential barriers and opportunities for transforming existing systems towards sustainability futures.

Protecting the marine environment: An argument for the enforcement of the precautionary principle to maritime shipping.
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The marine environment faces an uncertain future, specifically in areas beyond national jurisdiction where regulations balancing maritime shipping with the protection of the marine environment are absent. Therefore, this research argues that by enforcing the precautionary principle to maritime shipping the current framework would be strengthened, thus reinforcing the protection of the marine environment. To do this, it closely examines the case of Arctic shipping by studying Article 234 of LOSC and the Polar Code, which regulate the protection of the marine environment in ice-covered areas and shipping in
polar waters, respectively. Besides the environmental benefits for the Arctic, the enforcement of the precautionary principle would enhance the improvement of shipping technology. The findings of this research regarding the enforcement of the precautionary principle to Arctic shipping for the protection of the marine environment are intended to become a framework of reference to encourage the enforcement of the precautionary principle in maritime shipping.
Adaptiveness and Reflexivity

Panel ID 14

Pathways towards sustainable landscape dynamics and food production face to climate change: Opportunities and Barriers of Mexican Rural Societies

Reflexivity in food security: How do peasant and indigenous families cope with vulnerability and uncertainty of their agri-food systems?

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In Mexico, we are far from a “reflexive governance” framework that could facilitate learning, adaptation, and collaboration between actors at different scales of the food system. The discourse of collaboration has circulated in times of an agricultural crisis. The food price pact of 2008 among several agri-food industries with the Mexican government is an example of a discursive reflexive governance. The consequence was the consolidation of the global and national agri-food industry face to the weakness of the national agricultural institutions. The collective priorities for food security were mostly defined by the agri-food industry. For example, the school food programs assured the dependence on food industry. Urban consumers were the direct “beneficiaries” with cheap but non-nutritional food; but peasant and indigenous families were negatively affected with low prices for their agricultural products. This provoked an important transformation of their food systems. More and more, local food biodiversity and agrobiodiversity were replaced by industrial non-nutritious food. These processes and policies, including the pact, and the agricultural structural adjustment programs deepened the socio-environmental vulnerabilities and uncertainties of millions of peasant families. Nevertheless, there are some horizontal forms of social learning for food security among some schools. I will analyze the alternative practices of two school food programs in the municipality of Itundungia, Oaxaca. Teachers and priests organized school food programs based on the agricultural varieties produced locally. Mothers and children collaborate at different stages of the food system. But this experience was not considered so worthy by the DIF (National System for the Integral Development of the Family) and by the Health Ministry in charge of providing the children’s food programs. Tensions and contradictions among teachers, mothers, priests, children, and the government food institutions halt the food reflexivity of the families of Itundungia. But the collective learning was important to foster this experience.

Global-to-local socioenvironmental processes and landscape dynamics in the Mexican dry tropics

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Landscape dynamics reflect human-environmental relations, in turn shaped by the interplay of diverse socio-environmental processes operating at various scales. Global neoliberalization of agriculture and conservation, markets, migration and remittances, public policies, local mechanisms of territory control and bio-cultural resistance, are among those interacting forces. We
analyze how the interplay of global processes with local social responses shape agri-productive and forestry systems through local-scale decisions, influencing landscape dynamics, and fostering contrasting multi-functional frontier spaces, in two regions characterized by tropical dry ecosystems in Mexico. Three-year field work in both sites, involving semi-structured interviews, surveys and participative approaches, complemented by literature research, and remote sensing analyses were used to characterize socio-environmental change from 1985 to 2015, and the local perspectives and responses to change. In the first case, in Amatlán (Morelos), the influence of conservation through protected areas and market-based environmental instruments, the touristic industry, international migration and remittances, and agricultural modernization interact with local responses, such as the maintenance of traditional practices, the use of remittances for this end, and community efforts to conserve control over their territory. In the second case, Nizanda (Oaxaca), large-scale development interventions involving national and transnational energy and agri-industrial sectors, that give rise to local wage employment, interact with traditional agricultural practices, migration and remittances, community-based conservation, and strong community cohesion and a moral economy. Both spaces represent different frontier configurations, that may be regarded as peri-urban in the first case, and internal agricultural in the second case. Interestingly, large tracts of forests are conserved in both sites, reflecting the interaction of global forces with local resistance, adaptation and strategies to cope with uncertainty and loss of control over territories and resources. This study illustrates context-based diversity of landscape dynamics, derived from specific socio-environmental configurations, where common global and national forces are present, but where also local communities’ agency shape how these entangled processes evolve.

Currently, climate change is at the heart of great many political and scientific discussions at both national and global levels. Consequently, new policies and programs have been designed for mitigating its negative effects. Perceptions and views of regional stakeholders living and working is not often considered in the design of new climate change mitigation governance schemes. Notwithstanding the fact that stakeholder participation is now generally recognised as crucial in the development of new governance schemes. Based on the above, in the period 2012-2015, an EU-financed European-Latin-American research project (titled The Role of Biodiversity in Climate Change Mitigation - ROBIN), with case studies in Bolivia, Brazil and Mexico, was developed with the goal to describe and analyse the role of biodiversity and its importance in mitigating climate change. Among great many activities, it sought to understand the perceptions and opinions of regional, state and federal stakeholders regarding land-use transformation and climate change. This paper shows the results of the Mexican case within the ROBIN project. More specifically, we show results from the Chamela-Cuitzmala watershed in the south-coast region of Jalisco state in western Mexico. As part of the project, several workshops were organized in the region, analysing the testimonies of the main stakeholders involved (farmers, municipal authorities, state and federal civil servants, opinion leaders, etc.). During these workshops, different participatory methods and techniques were applied, such as group discussions, participatory mapping, the Metaplan technique, and Fuzzy Cognitive Maps. From our results, contradictions emerge between different stakeholders.
coinciding in the same territory. In this sense, clear stakeholder-related perceptions and opinions could be distinguished: views from local stakeholders substantially differ from stakeholders external to the region. Moreover, power relations shape the relationships between the different stakeholders. In this sense, a notable mistrust was identified between regional stakeholders and those from governmental institutions, especially state and federal level. We end this paper with a discussion on stakeholder participation in climate change policies and actions based on our case study from western Mexico.

263
Place-based governance networks and transformations of food and nutrition systems in agricultural production landscapes: The role of multiple values in selection of alternative pathways
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Agricultural production landscapes are increasingly contested spaces whereby actors from different domains (water, climate change, biodiversity, green growth, value-chains, poverty reduction, food and nutrition security, etc.) each lay different claims to the importance of different land uses in production landscapes and value different environmental services and benefits, while some actors’ narratives dominate pathways selected for the management of these landscapes. In a recent review of 88 Asian cases of managing agricultural production landscapes for multiple outcomes, we found that most landscape planning is still done through local administrative scales in agricultural or forest ecosystems. How governance networks at different scales actually interact to shape management choices in agricultural production landscapes is a pressing question. Transformation experiences in agricultural production landscapes are underanalyzed to understand both how they occur and critically, whose values shape these transformations. These values and their influence are important to understand how greater agrobiodiversity can translate to sustainable food and nutrition security for those groups disproportionately affected by global environmental change, and the increasingly complex and fragmented decision-making driving changing land use patterns in agricultural production landscapes. Building on two recent reviews of transformation theory and experiences in the Satoyama Asian network, and of governance theory for transformations, we examine two cases in Kerala, India and Java, Indonesia where new types of non-state actors such as transnational networks are cooperating in ways to transform the landscape, while landscape residents that depend on the production landscape for their livelihoods are disproportionately affected by declining ecosystem services that result in a loss of income, nutrition and livelihoods. We take a critical approach to understanding how different actors are engaged in common narratives, problem-framing or solution-based networks that influence the choice of land use and management practices in agricultural production landscapes. We apply semantic and social network values analysis to examine how these value networks operate as decision-making arenas across ecological and social scales to shape which pathways are selected in the landscape. We examine and score agency among different narrative-based groups, individual actors and fragmented or polycentric decision-making nodes at different scales and what role it plays in influencing decision-making or application of the narrative to land use choices and the selected pathway. We discuss the implications for how the architecture of landscape networks and imbalanced agency of actors at different levels leads to the adoption of more or less diverse transformation pathways in agricultural production landscapes.
Environmental degradation and service provision in the face of governance gaps: Exploring individual and community action across Mexico

Understanding the controversial access to water in Mexico City: the case of informal settlements in Xochimilco

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Climate change presents challenges for cities in the Global South, particularly for marginalized and vulnerable populations who struggle with diminished access to resources and conditions of poverty and which are not integrated into city policy and planning. Limited access to public services, particularly those considered human rights, such as water, are complex challenges faced by cities where informal settlements evidence the need for alternative solutions. In Mexico City the informal settlements is rising at the same time of formal urbanization in a complex environment of corruption, poverty and legal ambiguities. For example, the contradiction between water as a human right and the “tandeo” system to provide water. Taking as case studies two communities located in informal areas of the Xochimilco borough, where 49% of the total population live in informal settlement areas, we analyze the existing economic, social and environmental costs (to communities, government, environment, etc.) of provision and access to water in these areas, in the absence of effective and transparent manage of water in peri-urban areas. Also, we can draw some alternatives solutions of water provision in this areas ensuring low environmental impact and enhance citizen well-being.

Understanding socio-ecological change and transformation on achieving sustainable water access for indigenous communities in rural Mexico.

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The Sixth Sustainable Development Goal (SDG6) proposed by the United Nations seeks to guarantee access to water and sanitation for all. This will be a challenge for many countries, especially in the Global South. In Mexico, around 10 million people live without access to potable water, and the communities most affected by water shortages are often rural and indigenous. In this paper, we will present a case study of an isolated indigenous community, located in the Sierra Madre, in northwestern Mexico were water situation is extremely precarious. Women and children are responsible for providing water, and families live with less than 20 liters of water per person, per day. The geographical characteristics of the region, as well as the complex territorial, sociopolitical and religious organization, have hampered the success of many government programs that have not been able to resolve the problem of water supply and distribution in the communities. Implementation of the Rainwater Collection System (RWHS), promoted by a group of NGOs, has changed the situation of scarcity. We address the health implications of gaining access to water and how the results relate to residents’ perception of health and seek to understand what changes have occurred from access to clean water in the home, and the potential to trigger improvements in the well-being of families. To understand the implications and potential of the use of RWHS as a transformative action in this indigenous community, we use a quantitative mixed-method qualitative approach, which includes water quality data and semi-structured interviews at household level. Additionally to the interview, we apply an eco-
cosmo-cultural calendar as a visual tool for the deeper understanding of the relationship between water cycles and crop cycles, traditional festivities and the water-borne diseases occurred in recent years. The data showed that water quality is better in sources of consumption from the RWHS. In this case study, one of the importance to the Mexican system governance is the understanding that Wixarika cosmovision is essential to efficiently implement technological packages and address problems such as water scarcity. Further, a transformation in the "real world" cannot be based on a global development perspective, without taking into account local perception and cultural values.

431

Clearing the landscape from waste by reconnecting people to place
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The peri-urban frontier is undergoing rapid change due to urbanization, generating a mosaic of land uses. As a result, government agencies face failures and voids in the provision of basic urban services like waste management, transferring most of the responsibility to the individuals. However, as responsible consumers and law-abiding citizens, individuals have marginal power to transition towards a circular economy and sustainable trajectories, but are experiencing waste externalities like flooding and disease. In this context, we seek to explore how transformative action can emerge among citizens by remembering and eliciting the connections between people and place and through the collective analysis of how waste has disrupted these relationships. Through Photovoice, actors in the peri-urban frontier in a community in the outskirts of Mexico City will share and analyze different perspectives to the problem of place associated to waste and institutional fails and voids and the strategies they each undertake. We propose that through a participatory process of reconnecting to the landscape, agency may be steered towards the caring of their communities overcoming legal impediments and institutional mismatches that limit city service provision.

433

The use of games as a reflective exercise to study individual decisions that transform agricultural landscapes, in a context of informal urbanization.
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Urban expansion generates a peri-urban fringe with particular issues due to the mixture of urban and rural and natural areas. In this peri-urban fringe, governance gaps shape the social-ecological dynamics with tendencies which follow trajectories of environmental degradation and an erosion of the social fabric. A particular case is the Xochimilco wetland in Mexico City in which one of the most ancient and sustainable agricultural systems, the chinampa, is disappearing as urbanization expands. Water availability for irrigation, market opportunities, social organization, value recognition, and land property rights are the drivers for the system to change, expressed as land conversion and the reduction of the agricultural system area and its function. We developed a board game to study how these drivers operate at the individual level of the decision-making process regarding land management. The game involves dynamics were players must make decisions about land use based on resources such as money, labor, and water for irrigation to change it from abandoned land to agricultural land or housing. During the game, players also had to confront challenges which might affect their decisions. The aim is to understand the dynamics of those decisions and how different situations influence them. The data from the games played by the local communities is used to project future scenarios in maps with different landscape configurations based on individual decisions. With this innovative approach to study and dialogue land management issues, we seek
to contribute to fulfilling governance gaps among locals, as well as to public policies that shape land-use planning.

Panel ID 20

Bridging scales of adaptive governance from local to global commons

401

Scaling Conservation: Developing Principles for the Biodiversity Commons

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Sustaining the global biodiversity commons requires a renewed focus on scaling governance. Significant attention has been paid to advancing conservation science in order to move from assessing one landscape, or more often a single conservation project, to comparative analyses. To do this the conservation science community has focused on data science and monitoring to examine efficacy. Borrowing some of the techniques and perspectives from the conservation community, we pursue a similar effort within the realm of scaling governance for conservation.

We begin with the premise that the challenges associated with scaling conservation governance from the local to the regional or even global levels requires a close empirical assessment of the governance principles from the commons and governance literatures, particularly drawing from Elinor Ostrom and Oran Young. Building upon the insights on local common pool resources and international regimes, illustrates the importance of the diversity of governance architectures; there is no panacea, simple solution, or single institutional arrangement appropriate for the biodiversity commons. These insights run counter to alternative perspectives such as E.O. Wilson’s provocative claim that we should set aside 50% of the Earth’s land area for conservation purposes, or Garrett Hardin’s limited options of privatization or state control to solve the tragedy of the commons. Moving beyond simply enlarging protected lands, requires that we think more broadly about governance of conservation. Some have argued that cross-scale, or global, conservation has to emerge from the bottom-up rather than top-down. Yet with challenges of elite capture or limited local support, bottom-up may not always be effective. Trust, credible, stable, and inclusive governance with strong foundations of legitimacy and accountability are precursors identified both in the conservation literature and the commons literature. Others have found that collaborative approaches may require “fuzzy” hierarchies or strong leadership of a political entrepreneur. Thus, there is both tension and synergy between the design principles established by Ostrom and some of the empirical research on conservation. Using a machine learning approach, we conduct a systematic, iterative review of the peer-reviewed and policy literature to examine the mis/match of empirical findings on scaling conservation governance to the more established principles drawn from Ostrom, Young, and the wider conservation literature. Our findings suggest match with some of the existing principles about the commons, but additionally we identify significant gaps in our understanding of how to govern the global commons.

399

Perceptions of Population Growth and Climate Change as Threats in Cross-Scale Adaptive Water Governance Systems in Sub-Saharan Africa

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Global water withdrawals have doubled over the past 40 years as irrigated agricultural land expanded from 138 million ha to 277 million ha from 1961–2003. Irrigated land is responsible for >85% of global consumptive water use, producing approximately 45% of the global food supply on only 20% of global cropland. The combination of increasing usage of irrigation in agricultural
production has led to a situation where over one-sixth of the world’s population relies on surface water that is affected by complex governance arrangements at multiple spatial scales of analysis. Many countries in Sub-Saharan Africa have undergone a process of decentralization of water management with increased authority being granted to local-level actors. Yet there are critical questions regarding under what conditions multi-level, decentralized and polycentric governance structures result in effective management of water resources. Kenya was at the forefront of this process of decentralization in SSA but two potential threats are facing these water management systems: population growth increasing demand for water resources and climate change potentially reducing future water availability. The perceptions of these two threats among actors at multiple levels of decision-making has critical implications for whether adaptive management can mitigate the effects of these two processes. There has been decades of work investigating community-based water management, but relatively little work has explored the coherence of committee decisions with the perceptions of heterogeneous individual members of those committees. A novel component of committee organization in Kenya is the requirement that all governmental recognized committees have at least \( \frac{1}{3} \) male and female representation. This is notable given the gendered roles of water use in rural smallholder farming systems in Sub-Saharan Africa. In this complex management context, under what conditions does decision-making at multiple spatial scales produce adaptations to perceived threats to sustained water use? Our research investigated the perceptions of actors at the river basin, community and individual levels. Focus groups with committees (40) and individual interviews (120) with committee representatives in water projects were used to identify disconnects between individual vs. committee perceptions. In the last 10 years, population has dramatically increased with relatively little change in average precipitation. But we found that most committees predominantly identify climate change as a more significant challenge for water management despite individual representatives correctly identifying population growth as a more rapid source of change. We explore the reasons for this disconnect and implications for short vs. long-term adaptation in irrigation systems.

402

Individual cognitive abilities and group ability to adaptively manage common pool resources
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Collective action is essential to solve today’s biggest issues in commons governance such as changes in climate, biodiversity loss and the depletion of natural resources. While formal and informal institutions have a key role in solving issues related to complex problems and the ability to sustain collective action in societies, it is individuals that lie at the base of institutions. Individuals have the ability to influence the making and changing of rules and norms as so as to adapt to environmental change. In other words, cognitive abilities underpin the capacity of individuals to build models of their environment and make decisions about how to govern resources adaptively. Specific cognitive abilities absolve different functions, and as functional diversity increases ecosystem stability, cognitive diversity increases group adaptability to changes. Here, we test the functional intelligences proposition that states that functionally diverse cognitive abilities within a group are critical to govern common-pool resources. We specifically assess the effect of two cognitive abilities, social intelligence and general intelligence, on group performance on a resource harvesting and management game involving either a negative or a positive disturbance to the resource base. General intelligence relates to the ability of an individual
to recognize patterns, assess the dynamics of a system and more generally, their ability of individuals to engage in complex reasoning and thought. Social intelligence relates to the ability of individuals to communicate effectively and potentially diffuse conflict and enhance the ability to negotiate, and more generally, is related to the ability to model and reason about the intentions of others. Our results, based on 108 participants indicate that groups with high general intelligence and ToM better adapt to deteriorating environmental conditions. Such groups are less likely to deplete resources as these groups have a better understanding of how the system works and are also able to negotiate and communicate effectively. Conversely, based on 100 participants, our results also indicate that when conditions improve, groups with high competency in general intelligence more effectively reap the benefit of the positive change. In fact, high general intelligence, along with reciprocity, is sufficient for groups to perform well when resource conditions improve, as conflict situations are less likely to arise when resources are plentiful. In this situation the discriminating variable between group performances is how well each group understands the resource system.

403

Competing demands for water resources and adaptive water governance in community water projects

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Critical questions on Socio-Ecological Systems governance have been addressed through a variety of experimental approaches, that integrating the Ostromian logic of the Institutional Analysis and Development (IAD) Framework, have addressed foundational dilemmas of Common-Pool Resources theory. In the field of water governance, there has been a considerable amount of research that applied experimental approaches in relation to the institutional dynamics in irrigation systems or groundwater governance. Despite this work there is uncharted territory that could benefit from insights from social psychology and small group research in order to better address decision-making questions at the community level water management. However experimental approaches alone are often and disconnected from the reality on the ground. In order to assess cross-scale resilience and adaptiveness of smallholder households and communities reliant on irrigated agriculture in the context of Kenyan polycentric water governance reform, we have developed a multi-method approach for characterizing institutional dynamics as a platform for cross-site analysis of human-water governance by combining household surveys, institutional analysis and social psychology dynamics in small group decision-making. Much work has demonstrated that informal rules often outweigh what would be dictated by formal rules (i.e. constitutions, by-laws). But we have found that it is critical to articulate the role of internal dynamics within community water project management committees in order to understand the nature of how individual preferences and decisions evolve and manifest in group decision-making processes in the context of nested systems of governance in river basins with multiple competing users. As part of this mixed method research approach we implemented a procedure of ‘small group field quasi-experiments’. We investigated a set of Community Water Projects (CWPs) among four different river basin Water Resource User Associations (WRUAs) on Mount Kenya where management committees play a central role in water allocation and management. The research involved ~95 community water project managers from 20 different CWPs management committees and investigated the internal dynamics of group decision making that are effectively in place. The quasi-experiments were conducted in 2014 and 2019 in the same sites. The results of our research show different
levels of coherence and incoherence between individual decision preferences and group decision and what are the factors that influence the final decision as a result of a small group decision making internal dynamics. These results provide valuable insights on how decision making process on contested natural resources (water) are affected by group dynamics.

404

The potential for cross-border polycentric environmental governance in Hispaniola

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In this presentation I will discuss the prospects for cross-border polycentric environmental governance on the island of Hispaniola. In the north-central part of the island, fishers from the Dominican Republic and Haiti fish on both sides of the border and there is frequent conflict over resource access and use rights. There is evidence that the interconnected fisheries on each side of the border are suffering from overuse, and that this has resulted from a lack of property rights and institutional arrangements to constrain fishing behavior. The fisheries systems are strongly connected to the nearby coastal systems as well. On the Dominican side, there is an expanse of fairly well-protected protected mangroves, while the mangroves in the Haitian side are suffering from degradation motivated by charcoal production and aquaculture. An extensive rice irrigation system also exists upstream of the Dominican mangroves and fisheries, and this likely contributes to coastal resource issues through agricultural runoff. The Dominican rice farmers are facing frequent droughts and the increasing impact of DR-CAFTA as an economic disturbance. Historically the government agencies in each country have been largely absent, and the main governance support has come from two local NGOs, one in the Dominican Republic and the other in Haiti. In the face of these challenges, opportunities also exist in the form of increased governmental involvement and the potential for external funding for development and conservation projects in the area, under which the two local NGOs could work with both Dominican and Haitian fishers and mangrove users as well as Dominican rice farmers to facilitate cross-border environmental governance. In this presentation I will examine the barriers to and opportunities for the current situation to develop into a polycentric environmental governance system, with overlapping authorities between a variety of multiple actor groups. I will examine how the agency and incentives of the actors involved may encourage or frustrate the ability of the system to adapt to increasing resource scarcity and future shocks, such as increasing drought, DR-CAFTA, and between-group conflict. To do this I will synthesize work I have done with Dominican fishers and farmers in the area and interviews I am conducting with the directors and staff of each NGO as well as staff at related governmental and non-governmental organizations. In conclusion I will discuss the likely implications of the structure of this system for the future of local livelihoods and the environment in the study area.

Panel ID 68

Realizing and Enabling Local Scale Adaptiveness

6

The Role of Formal and Informal Institutions in Smallholder Agricultural Adaptation: The Case of Lawra and Nandom Districts, Ghana

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As the current frequency of climate impacts is expected to increase in semi-arid regions of Ghana, smallholder farmers will require access to new and relevant information to adapt successfully. Institutional support is increasingly gaining attention for effective and successful adaptation; however, there is limited knowledge on the specific roles of both formal and informal
organizations in implementing adaptation strategies in semi-arid regions. Using the Lawra and Nandom Districts as case studies, the various roles of existing institutions in adaptation strategies were examined. A total of 135 household questionnaires, six focus group discussions (FGDs), 20 in-depth interviews with farmers, and seven key informant interviews from institutions evaluated climate risks and impacts, adaptation responses of farmers and the functions of the different institutions in supporting these adaptation strategies. Majority of respondents observed that irregular and unpredictable rainfall (77%), high temperature and extreme heat (56%) and rainfall irregularities during growing season (55%) as the main changes in the past 10 years. Major agricultural adaptation strategies identified were changing of planting dates (100%), planting of different varieties of the same crop (51%), planting of trees (35%) and seasonal migration by the local farmers (21%). There is high dependence by the smallholder farmers on formal institutions’ resources to adapt, especially for developing/building the local capacity, rather than on local innovations within the communities. This is mainly due to the lack of knowledge about climate change risks and adaptation strategies and limited or no access to financial resources. Government-led adaptation is considered to be more sustainable than NGO-led programmes although it comparatively lacks specific mandates and financial resources. Continued support by formal institutions will therefore enable the development of more effective agricultural adaptation initiatives.

In the framework of the study of the resilience of the Saint-Lawrence estuary and gulf in Quebec to global change, we propose to investigate the importance to integrate the ecosystem services in the assessment of vulnerability. Building on an initial participatory mapping of uses of coastal territories and their evolution, we explore the perceptions of stakeholders. Through workshops gathering local and regional authorities, ministries, NGOs and local organizations, we evaluate the interdependencies between stakeholders and coastal ecosystems through the use of ecosystem services’ concept. After introducing this concept, we organize discussion tables around chosen ecosystems that lead to the assessment of the relative importance of each ecosystem service. Second, we conduct semi-structured interviews to identify community of practice linked to their relation towards ecosystems. A community of practice represents a group of persons who share common knowledge, experiences and language due to shared practices. Themes such as their level of knowledge, dependency or impact on these ecosystems, their perceptions regarding the ecosystems’ evolution and the values associated with coastal habitats (we recognize here a plurality of values: economic, social and ecological). Using fuzzy cognitive mapping, interviewed individuals represent graphically causality links between an object and concepts through arrows specifying the direction and the intensity. We obtain a visual representation of a person mental model linked to a particular issue at a specific time. These elements are integrated in the assessment of adaptive capacity of coastal communities in relation to global change. The results are analysed in light of current responses provided by different levels of governance (from local municipalities to central ministries) and their expected evolutions. These data have been gathered through another section of the project. This may help bridging the gap between fragmented approaches towards adaptation where environmental policies deal with the impacts of
global change on ecosystems and public safety policies tackle the ones on population.

157

Climate adaptation governance for agriculture sector: A case of Punjab province in Pakistan
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Climate adaptation strategies at subnational level are key to protect farmers from fatal climatic impacts and future climate vulnerability. However, there are implementation challenges for these strategies at the subnational level?. This study develops a framework to understand responses of subnational governments looking at the province of Punjab, Pakistan. Pakistan is ranked one of the most vulnerable country to climate change. Punjab is the most populous and second largest province in Pakistan. The province accounts for 53 % of the total agricultural gross domestic product in the country. The implementation of climate change and other related policies is the responsibility of provincial governments in the country. The subnational/provincial governments play an important role to tackle the impacts of climate change. This study is conducted to understand the climate adaptation governance in the Punjab province. The scope of the present study is to explore the prominent adaptation initiatives for agriculture sector in the province of Punjab. More succintly, the study investigates the autonomous adaptation to climate change for agriculture sector in the province. The study also identifies the drivers behind planed and autonomous adaptation initiatives in the province. The study finds that the government has launched massive level awareness campaign to educate about climate change by publishing about climate change, its impacts, and possible solutions in various local languages. The training programs are being arranged for the farmers so that they can handle the challenge effectively. Moreover, academics and other stakeholders are engaged to manage the issue of climate change in the province. Some other important steps are also initiated in the province. The local farmers are actively involved in autonomous adaptation in the province. The subnational government encourages engagement of farmers in climate adaptation policies and actions. Four important elicited autonomous adaptation initiatives are taking place: changing planting dates, changing crops types, changing fertilizers, and planting shade trees. Our study identifies the factors that influence the implementation of these autonomous initiatives. The initiatives at planned level adaptation are primarily driven by coordination among the respective departments, engagement with academics, and availability of financial resources. On the other hand autonomous initiatives are majorly driven by the previous experiences of farmers, sustainability in agriculture production, and the knowledge sharing among the farmer community. Keywords: Climate, agriculture, governance, adaptation, Pakistan.

423

Transdisciplinary Intercultural Collaboration and sustainability: a process of social learning in the Sierra Nororiental de Puebla
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Multi-stakeholder collaboration and transdisciplinarity promote collective problem solving and engagement in adaptive management in socio-ecological systems. Approaching Transdisciplinary Intercultural Collaboration (TIC) involves sociocultural processes where the interaction between diverse cultural identifications and world views takes part. Learning communities co-create and apply knowledge and actions to maintain and defend their ways of living. Diverse perspectives and cultural traditions participate in building ethical and political grounds towards common goals; where indigenous and peasant organizations and movements promote engagement in culture-sound processes alternative to
colonial relations. A social learning approach emphasizes the socio-cultural processes and reflective action to promote capacities and social transformation. TIC is embedded and part of social learning, emphasizing situated learning and action as part of collaboration and transdisciplinary processes, no only for having local engagement and situated problems, but for engagement in intercultural dialogue and local social institutions. Learning communities from a peasant organization, academics and others in the Sierra Norte de Puebla build strategies for ways of living towards yeknemilis (good living in náhuat) during a series of workshop sessions. Through participatory research and qualitative analysis (workshops and semi-structured interviews), characteristics and dimensions of the collective process are analyzed. The process shows challenges and ways to promote and maintain local indigenous ways of life, as well as to favor collective processes that may contribute to these grassroots experiences towards sustainability.

449

_Human Behaviour and Social-Ecological Systems: Defining a theoretical basis for a pragmatic field_

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While much recent progress has been made in incorporating the human dimensions of the earth’s systems into analytical and decision-making fora aimed at positively transforming social-ecological systems, in this paper we argue that efforts to encompass disparate approaches within an overarching philosophy and basic theory of human behaviour are now required. In this paper we explore the value and implications of adopting functional contextualism for these purposes. As a worldview, functional contextualism raises questions around the assumption that human behaviour can be predicted on the basis of a universal set of variables, and in so doing supports elaboration of an adaptive theory of human behaviour that encompasses complexity and dynamism at the individual, group and societal level. As a pragmatic philosophy of science, it furnishes a set of principles that act as a means of systematically building and testing knowledge of these dynamics, and for discriminating between analytic methods for a given purpose. This pragmatic approach to science and inquiry has important implications for influencing socio-ecological outcomes from different transformation strategies. Analysts and practitioners alike will be both better placed to understand and predict human behaviour within social-ecological systems at multiple scales, while also being able to understand how the principles and approaches they adopt influence the transformation process itself - by viewing scientific inquiry as one type of adaptive behaviour that contributes to the intentional transformation of the earth’s systems.

Panel ID 69

**Linking Global and Local Economics: Governance Responses across scales**

72

_Climate shocks and the supply and demand for global climate governance_

_Sam Rowan_

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Existing studies have demonstrated substantial and robust effects of temperature shocks on economic growth, agricultural output, labor productivity, conflict, and health. These studies help clarify the impacts of climate change on social and economic systems, yet the relationship between climate shocks and political outcomes are less well identified. What effect do climate shocks have on states’ climate policies? In this paper, I estimate the relationship between national-level temperature and rainfall shocks and the supply and demand for international climate governance. Temperature shocks may increase the salience of climate change in national politics and lead political leaders to adjust policies to match. Similarly, temperature shocks may have material consequences that induce adaptation--
One avenue being to use international institutions to coordinate a global response to climate impacts. I argue that the responsiveness of national governments to climate shocks is conditioned by the political and natural context in which governments operate. Specifically, I expect that democratic governments will be more responsive to climate shocks, as will countries that are more vulnerable to the impacts of climate change. I assess whether countries that experience more frequent and more severe climate shocks participate more in international climate politics and adjust their climate policies. I examine four sets of outcomes at the national level: (1) membership in international institutions that govern climate change, (2) the provision and receipt of climate finance, (3) representation at the UN climate conferences, and (4) national climate policies. Placebo tests lend credibility to the findings, by parsing how states respond within the issue-area of climate change compared to international politics more broadly. As the climate changes, we are developing stronger evidence about the underlying natural relationships, but the heterogenous effects across socio-political contexts are less well understood. This paper contributes to our understanding of how climate change shapes national policy and with it the ability of countries to manage and adapt to climate change.

Beyond positivist decision-support methods: insights from piloting a semi-quantitative method for systemic analysis of SDG interactions in Mongolia, Colombia and Sri Lanka

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While the adoption of the Sustainable Development Goals (SDGs) was a milestone in international cooperation, its success will heavily rely on national implementation. In an assessment of global progress on the SDGs ahead of the Third High-Level Political Forum (HLPF 2018), the UN stated that “immediate and accelerated action by countries and stakeholders at all levels” is fundamental to achieve the goals, overcome data gaps, and pursue an integrated government-wide approach for achieving the SDGs. The need for systemic and integrated analysis between goals for effective implementation has been further emphasized in assessments of Voluntary National Reviews (VNRs), which highlight the need for methodologies and systematic approaches to address remaining analytical gaps. Whereas progress has been made in the initial planning stages of Agenda 2030, e.g. follow-up mechanisms and mapping SDGs in national development strategies, large gaps remain in the assessments of interlinkages, trade-offs and synergies between targets. Countries’ capacity in conducting necessary systemic analysis for integrated policy-making is therefore considered critical for the implementation of Agenda 2030. SEI’s novel work in this area - a method for systemic analysis of SDG interactions supported by an online tool - emerges as an option to address the lack of systemic approaches. The purpose is to improve the understanding of how targets interact in a given context in a way that informs decision-making around priority-setting, collaboration and actions that best lead to the achievement of the SDGs. The framework rests on the assumption that progress in one SDG will not exclusively have positive impacts upon the rest of the Agenda; instead, the method seeks to identify action areas that have potential to enhance progress across the SDGs through a more nuanced conceptualization of target interactions and analysis of these networked relationships. To inform policy processes this type of analysis requires careful tailoring to the national contexts and tools to facilitate data gathering, analysis and presentation of results. The method combines qualitative and quantitative analysis and takes as point of departure, the interactions between SDGs as perceived by key stakeholders, as it is assumed that human behavior and cognitive
aspects play an important role in decision-making process, sometimes, even more than numerical evidence. This paper reflects upon the experiences of applying the method in Mongolia, Colombia and Sri Lanka.

308

An analytical approach for Mexico City’s Resilience Strategy: incorporating reflexivity towards sustainability

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Urban planning for resilience building is a complex socio-political process that in the absence of reflexivity can lead to lock-in development paths and prevent sustainable pathways. Monitoring, Reporting, and Verification (MRV) systems in general, and the development of indicators in particular, play a key role in meeting planned resilience goals by assessing and reflecting on the performance of policy interventions in urban systems. Through the case study of Mexico City’s Resilience Strategy (the Strategy, hereafter), we present an analytical approach to assess the performance of urban planning interventions towards urban sustainability. Mexico City is vulnerable to multiple and interacting shocks and stresses, such as flooding and weak urban planning and regional coordination. In this context, the Strategy becomes a relevant planning tool to support the articulation of several interventions by integrating a resilience approach in Mexico City’s urban planning. The Strategy was developed under the 100 Resilient Cities Program, a worldwide initiative focused on addressing the vulnerabilities that hinder a city’s coping abilities to handle disruptive events. The Strategy covered five working themes, each with a set of goals that were operationalized through specific actions. This Strategy was developed under the perspective of governance for transformations. Thus, it was aimed to promote adaptive transformations —i.e. adjustments of the fundamental attributes of a system in response to acute shocks and chronic stresses. In our analytical approach, we first integrate a resilience conceptual framework and analyze its implications for the operationalization of the Strategy. Then, we propose a method to evaluate the Strategy’s actions in which resilience is not a normative term. The method is based on the construction of indicators at multiple spatial and temporal scales for each working theme. Although many of the actions emphasized the adaptation of the urban system, outcomes may not necessarily contribute to more sustainable paths. Thus, based on our results, we discuss the political, economic and social factors underlying Mexico City’s resilient attributes and its implications for the adaptiveness and reflexivity of this urban system.

368

National interest of whom? Reviewing the role of the state in responding to transnational climate risk for trade flows

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The evidence that climate change will have transboundary and teleconnected impacts across areas such as agricultural trade flows, migration and foreign direct investment is mounting (IPCC, 2014; Challinor et al., 2017). While some countries have started assessing the nature and magnitude of these risks and opportunities, it is less clear if and how states identify a responsibility and mandate to respond, through existing or new governance mechanisms. Part of this ambivalence might be attributed to current national climate adaptation governance which is highly locally and territorially focused. In this paper, we review relevant literatures on what might be key rationales for states to actively govern or be passive observers of transnational climate risks, with the goal to produce a typology
of possible roles. As a heuristic device, the typology is illustrated with the example of Sweden and expected climate risks to its key food supply chains. The review draws on several strands of literature, which have not previously been systematically applied to climate risk and climate adaptation. First, we draw on international relations theory, and particularly the realist school, for exploring competing definitions of national interest. For example, is it objective or subjective, and does ‘national’ refer to a country’s population, its capital, its employers, etc.? Second, we draw on public administration and political theory literature on the role of the state vis-à-vis its citizens. This includes classic accounts such as Musgrave’s (1959) three roles of the state – provision of public goods and corrections of market failure, redistribution of income to achieve social welfare goals, and Keynesian policies to secure high employment and price stability – as well as critiques of states’ over-expansion of responsibilities. Lastly, the review will examine more recent literature from the emerging epistemic community around international risk governance (e.g., International Risk Governance Council, World Economic Forum). This literature highlights global systemic risks as a qualitatively new phenomenon and identify a more proactive and managerial role for states in their governance.

Urban Climate Adaptation and Governance: Cross-city comparison of social, ecological and technological strategies
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As cities continue to lead urban resilience planning, examining how urban governance structures in diverse socio-cultural and biophysical contexts are planning for climate extremes can help us understand what strategies are effective and inform approaches seeking to advance resilience planning. Governance planning documents are one source of insight into how cities are framing urban resilience, yet there are few mechanisms to effectively and efficiently highlight the suite of social, ecological, and technological (SET) climate action strategies cities are considering. Our research asks, how do cities define and prioritize climate resilience strategies within a single plan and among governance planning documents and how do strategies address current and future climate vulnerabilities? Through a content analysis of nine municipal planning documents from two US and one Latin American cities (Baltimore, Phoenix, and San Juan), we examine the diverse SET strategies proposed to address climate challenges, specifically related to heat, drought, and flooding events. Our findings suggest that current planning strategies tend to prioritize technological solutions and do not adequately consider system relationships. Identifying patterns in proposed and implemented plans are important steps in bridging the gap between ideas and viable adaptation actions. We discuss ways in which governance-based strategies and vulnerability assessments both form a basis for scenario visioning processes, and can be adapted through those processes.

Panel ID 70
Unpacking Process of Adaptiveness and Reflexivity

The influence of levels of conflict and trust on processes of participatory monitoring and evaluation
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Participatory (collaborative or reflective) monitoring and evaluation (PME) facilitates a process of collecting and sharing different kinds of knowledge. The literature suggests that PME stimulates dialogue, reflection and mutual learning, which is crucial to adaptive co-management
of social-ecological systems. It remains unclear, however, under which circumstances PME can be successful. The central question of this paper is how levels of conflict and trust among actors influence PME processes and their potential for fostering dialogue and mutual learning. To answer this research question we have employed a methodology of action research. As researchers we have been actively involved in two pilot projects with participatory monitoring and evaluation of climate adaptive measures in Dutch rural water management. The pilot projects are the monitoring and evaluation of rewetting farmland in the Raam valley, and of experiments with drainage and soil management in the neighbourhood Stegeren. Whereas rewetting the Raam valley is contested and the level of trust among some parties involved is low, the experiments in Stegeren are broadly supported, and the level of trust is high. We have actively contributed to the design of PME processes for these cases, facilitated and observed meetings in which PME was discussed, and conducted a series of interviews with participants in these PME processes. The analysis was informed by the literature on PME as well as theories on policy-oriented learning. In both cases, most actors (land-owners) are willing to contribute to the PME process, either by collecting data, such as groundwater levels, themselves, or by contributing to the interpretation of these data. The motives for participation, however, differ. Whereas in Stegeren farmers are eager to learn about innovations to further improve soil and water management, in the Raam valley farmers and land-owners who do not support the idea of rewetting the valley foremost expect to proof the negative impacts of rewetting either to reverse measures or to get compensation. The advocative use of monitoring data is a potential risk to PME processes. This risk can be reduced by openly discussing scenarios for the outcomes of the monitoring process as well as measures to reduce, mitigate or compensate expected losses in these scenarios. This implies that PME cannot be organized as an isolated process, but should be connected to and embedded within the broader policy context.

164

Transforming Resource Management in the New West (USA): Collaboration and Wild Horses
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Experienced managers for federal and state agencies in the western United States confront a “New West” distinct from the commodity extraction environment in which many of them trained. New challenges include a broader perspective of multiple uses on the landscape, the involvement of multiple stakeholder groups, and a desire for more inclusive decision-making. As a result, we focus our research on an attempted transformation in natural resource management toward collaborative governance. The increased emphasis on collaboration in governance stems from two broad objectives. The first is a desire to improve social and ecological outcomes given the challenges of governance in complex adaptive systems and the belief that collaborative processes and shared knowledge may lead to improved outcomes. Second, collaboration also focuses on the importance of process in decision-making, increasing democratic processes, legitimacy and broadened stakeholder participation. This research explores key issues in this changing landscape at two scales. First, the research team began a interdisciplinary project by working with US Forest Service personnel and a broad coalition of stakeholder groups to convene a collaborative working group to develop a management plan for a wild horse territory in the Arizona mountains with the author serving as the group’s convenor. Through an adaptive and collaborative process, the convenor, the agency officials and stakeholder groups aimed to better represent the diverse interests of multiple stakeholder groups and come to more equitable, just outcomes. The second scale of the research occurs
through a meta-analysis of similar local-scale collaborative initiatives around the globe. This broader study seeks to understand the effect of context on success factors or “mechanisms” of collaboration in generating desired outcomes.

327

Governance, Social Learning and Reflexivity
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One of the most pressing themes to the contemporary environmental debate within the scope of the governance of system Earth is the institutional architecture that has become one of the determinant factors of the enlargement of adaptive capacity, as well as the resilience of ecosystems. The aggravation of socio-environmental capacity, notwithstanding the expansion of governmental and non-governmental activities to enlarge access to information and education due to the incidence and intensity of natural disasters and its impacts, demands increasingly collaborative strategies. In this direction, we propose a theoretical as well practical discussion on the capacity of social actors and institutions to think critically their own performance, and to reformulate their objectives, practices and values as to navigate with wisdom within the human, social and environmental complexity. We argue that the production of knowledge has to necessarily consider the interrelations of the natural environment with the social, including an analysis of the determinants of the process, the role of the different actors involved and the dynamics of different forms of social organization that increase the strength of actions focused in socio-environmental sustainability. The literature on the theme recognizes environmental governance as an action that demands social participation through the engagement and negotiation of multi-stakeholders, based in empowerment and management of natural resources through mechanisms of conflict resolution. But this implies in the establishment of a system of rules, norms and behaviours that reflect values, world views of those individuals that interact and give a meaning to the process. The construction of this system constitutes a participative process, and most importantly, of social learning. We understand that the biggest challenge for reflexivity is to create active social learning opportunities, in which there is a real involvement of individuals in dialogical relations, that favour: the perception of the diversity of opinions and worldviews; the mediation of individual and collective interests and the possibility of enlarging repertoires that expand their capacity to contextualize and reflect. Active processes, mainly those on a collaborative basis (known as co-learning) have the potential to promote innovation, collective commitments and practices of citizenship oriented towards sustainable actions at different levels. The creation of spaces of conviviality, interwoven by the experience of thinking and acting in a dialogical, solidary and ecologically systemic form, thus creates a fertile soil to promote a culture of participation, and consequently, for the building of new potentials of democratic governance of natural resources.

382

Adaptive capacity, Poverty Traps and the Complexity of Scale-Specificity
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Adaptation to unprecedented climate variability and change in the background of resource scarcity and policy constraints is challenging and demands enhanced adaptive capacities at multiple scales. Much of the current research surrounding vulnerability has examined how communities are coping with current climate variability while far less attention has been paid to the adaptive capacity required to deal with future climate change. Although the impacts of climate change and subsequent adaptation actions are likely to be realized at a local level, the policies and financial flows must take place at much broader
The adaptation literature emphasizes the importance for scale, for assessing adaptation success, as well as for measuring and characterizing adaptive capacity, among other implications for the larger governance system. While there has been a notable increase in research focusing on characterizing and measuring adaptive capacity of socioecological systems; these studies tend to be focused at either at a broad, aggregated national scale or at specific local levels. Thus, studies thus far have focused at scales that are either too broad for contextualization, or too contextually focused; making generalization difficult. This highlights the absence of a “midrange theory” that allows for both generalization and contextual specificity. Additionally, while studies have attempted to identify factors that could enhance the capacity of vulnerable communities, the relationship between different attributes of governance and knowledge systems and the question of how they function in society to enhance capacities to respond to climate variability is relatively unexplored, especially in the context of developing countries. Considering this, there arises a need for an integrated framework that tries to assess local adaptive capacities as a ‘starting point’ to understand how it can be enhanced through policy processes and interventions at both the sub-national and national levels. In light of the above, this paper aims to explore the a) the importance of scale in measuring and characterizing adaptive capacity, and the uncertainty it embodies, b) the differences in adaptive capacity as understood in the adaptation literature across scales, for different actors, c) exploring the complexity of scale specificity through the notion of poverty traps, in an attempt to comment on a ‘sustainable’ scale for policy implementation to safeguard against falling prey to such traps.

This essay arises in the context of the dramatic contemporary political polarization occurring in the United States and beyond, in part due to the drawbacks of social media and increased text-based communication. I first explore the growing literature on the pitfalls and dead-ends of a “with-us-or-against-us” discourse of social change, and the rising counter-current of sociopolitical activists who are turning (and/or returning) to collaboration, emergence, and curiosity about the subjectivity of the Other as tactics. This stream of activist praxis searches at minimum for understanding and at best for points of commonality and opportunities for creative-problem solving where it is least expected. Along these lines, I document a growing community of practice of that uses a structured form of dialogue called “Empathy Circles,” to communicate about political conflicts. This format is grounded in the work on empathy developed by Carl Rogers, Marshall Rosenberg, and other psychologists. In contrast to an emphasis on campaigning; laws; or morality, Empathy Circles take a simple group therapy approach to political disagreement that is quickly accessible to many citizens. In the specific community of practice in question for this research, participants (a “family” of fellow citizens) practice reflective listening on typically contentious topics via video conferencing technology. My first research question is whether or to what extent this enables nervous system regulation, deeper understanding, trust, and even Freirean self-reflexivity and learning to emerge. My second research question is if and how meta-processes of empathic feedback about the practice itself function to fine-tune the structure of the empathy circles. Can this group of practitioners navigate conflicts using the same process of reflective
listening to course-correct as they develop their work? After reporting on the theoretical grounding of this initiative and its apparent outcomes, limitations, and challenges thus far, I explore its implications for the potential of increasing human adaptivity and “wicked problem-solving” capacities.

Panel ID 71

Linking Aspiration and Realities of Adaptive Change

38

Reflexive Urban Governance? How Networks Cultivate Adaptiveness and Guide Transformation

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Urban resilience can be conceived as the ability of complex social-ecological-technical systems (SETS) to change, adapt, and to transform to both internal and external stresses and pressures. The conceptualization of resilience in urban areas, particularly through a systems framework, has advanced tremendously over the past decade. Relatedly, the notion that urban systems are complex institutional systems has been well established. Yet, theory and research that link a network-analytic understanding of governance attributes such as polycentricism/centralization and flexibility/stability to adaptiveness and transformation in metropolitan areas are underdeveloped. This research advances this conversation by exploring the multi-relational networks present in a metropolitan governance system in Austin, Texas. Austin is a demographic and climatic hot spot. In the 21st century, the region is projected to undergo a doubling of its population and a shift to a higher intensity flood-drought climatic cycle. This poses synergistic challenges for the region’s hydrological and ecological resources, geographically shifting inequality, notable culture and system of governance for the region. Much of the planning for resilience happens by government entities that formally manage resources (funding, services, ecological and hydrological) in the metropolitan area. Yet, resilience implementation must be understood in the context of multi-relational connections between the public sector and a wide array of non-governmental stakeholders at multiple scales from neighborhood and community groups to city and regional scape forums. We analyze this gap in Austin using social network and qualitative data. Results suggest that that providing urban communities and actors with the capacity to respond to change and uncertainty, cultivate adaptiveness and guide transformation requires viewing metropolitan governance from a network perspective.

200

Do Indian farmers respond to climate change: a systematic review of options and barriers

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India is home to a large chunk of farm households and their livelihood is at risk now and in the years to come due to climate change and extreme events. Over the years, several agricultural adaptation options are being promoted across the Indian states, and in the recent past years, ‘climate-smart agriculture’ is a buzzword for both policymakers and researchers. These measures could have enhanced the resilience capacity of the farmers, and from the policy perspective, the onus is to large-scale diffusion so the goal of doubling farmers’ income by 2022 could be achieved. Both national and state governments are being taken up several initiatives to promote farm-level adaptation options, however, the adoption rate is apparently found as low. Thus, it becomes a prime research issue among policymakers, researchers, and practitioners. Over the years, several research studies are being carried out, following neo-classical economics principles, to identify the major determinants of agricultural adaptations. However, there is a dearth of a systematic review of the existing studies in order to identify the most
prominent adaptation options and barriers. Henceforth, the present study aims to do a systematic review of the adoption of agricultural adaptation measures in India. In doing so, we did a systematic search of articles in web of science, Jstor, and Mendeley with using several keywords. After the initial screening, we end up with having 12,000 articles, and out of them, around 48 articles are considered for a final survey on the basis of title, year, geographical location and relevance to the present study. By doing this, we identified the prominent adaptation options and major determinants.

214

How do we motivate action for flood risk mitigation when there is no flood? Challenges of community capacity building towards local adaptation to climate change.

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Capacity building for the adaptation to local effects of climate change has gained weight in research and practice during the last decade. Successful adaptation requires the capabilities of individuals and communities to develop and thrive the overall adaptive capacity of their social-ecological system. This continuous process includes social learning by the wider public that leads to collective action. Social learning and capacity building for climate change adaptation are, however, highly fragmented research fields with scarcely scattered empirical evidence far from clarifying how and under which conditions these phenomena materialize. We engaged into a community capacity building process for local adaptation to floods from February to July 2017 in Ulm, a southern German city. Employing a survey, a focus group, and interviews at various governance levels, we conducted an initial capacity assessment developed in the context of the European research project ‘CAPFLO – Local Resilience Capacity Building for Flood Risk Mitigation’. The results conveyed a low awareness of the high flood risk induced by an alpine river. Institutions are in place for informing and advising municipalities on flood risk mitigation, yet, knowledge seems not to be disseminated further ‘down’ to individuals and communities, and the last major flood occurred two decades ago. Together with participants of the focus group we planned participatory pilot actions with the aim of raising risk awareness and motivation for collective action. The developed formats open for anyone interested were deliberately designed as unconventional in comparison to traditional ones (e.g. workshops), such as a movie screening and interactive engagement at the river. We evaluated the categories of knowledge gain, motivation for action, and network building as well as the perceived quality of pilot actions via questionnaires and group discussion observation. Our findings show a considerable increase in knowledge, while motivation for action and networking score substantially lower. In addition, the actions on- and off-site resulted in different effects. The challenges we confronted might give useful implications for future research and particularly transdisciplinary approaches: In contexts without recent disastrous events and a low risk awareness, mobilizing interest and participation for the adaptation to local effects of climate change is demanding. The role of the researcher is complicated, meandering between neutral observer and promoter. Eventually, the questions of what actually constitutes a community (locality, municipality, community of practice) and who is the addressee of actions need conceptual clarification.

258

Can ‘scaling up’ community-based activities lead to more inclusive adaptation governance? Discordant discourses of transformation in Vietnam

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The idea of inclusive adaptation in developing countries was once mainly associated with small
community-based adaptation (CBA) activities that engage local people through participatory approaches implemented by NGOs. Amid growing realisation that a proliferation of stand-alone CBA projects is not leading to cumulative impact in the form of substantially more resilient populations, nor allowing those at local levels to be included in big picture decision-making about adaptation, there has been increasing interest in how to ‘scale up’ adaptation efforts from the ‘bottom up’. The term ‘scaling up’ is appealing to donors and recipient governments for a range of reasons, including an interest in spending larger tranches of climate finance with lower transaction costs. While this discourse seems to align closely with calls in the literature for a shift from incremental to ‘transformative’ adaptation, some scholars express concern that a growing focus by donors on higher-level programmatic approaches to adaptation, far from promoting inclusion, actually risks meaning that local communities can expect to get a diminishing share of, and voice in, adaptation finance; it is ‘top down’ governance by another name. In this paper I explore how discourses of ‘scaling up’ are articulated by different groups of actors involved in adaptation in Vietnam, and how they intersect with ideas about – and the reality of – multi-level governance. Vietnam is a lower middle-income country that is highly vulnerable to climate change, places a strong emphasis on adaptation in its Nationally Determined Contribution (NDC) and receives substantial international climate finance for adaptation. Its hierarchical governance system manifests in clear vertical linkages between government agencies, while presenting challenges for horizontal coordination across sectors and for engagement between government and civil society. Given many of the countries most at risk from climate change are non-democratic, there is value in building empirical understanding of how adaptation governance functions in these contexts. The paper presents research findings from over 30 semi-structured interviews with policy-makers, donors, NGOs, local communities and experts, and draws on over four years of professional experience working in Vietnam on climate change and international development with government and community organisations. While it might appear that support for the idea of scaling up adaptation unites a wide range of stakeholders, the term is understood by different actors in highly diverse and sometimes conflicting ways. My analysis points to potential trade-offs between the goal of inclusiveness and aspirations towards programmatic, systemic or ‘transformative’ approaches in adaptation governance.

Rendering adaptation technical: A critical examination of community-based adaptation challenges and opportunities in Indonesia and Timor-Leste

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Community-based adaptation (CBA) is a common policy response in international development programmes implemented in middle- and low-income countries vulnerable to climate change. CBA aims to facilitate adaptation planning and action at the community level, to encourage communities to plan for and better cope with impacts of future climate change, as well as to ensure adaptation activity is more sensitive to the needs and risks faced by poorer, more vulnerable groups. However, experience with CBA to date demonstrates that such interventions are rarely being sustained beyond their project lifecycles and adaptation activities are quickly becoming redundant once programmes end. This study uses a governmentality perspective to critically examine the challenges and opportunities different individuals and groups encounter when participating in CBA programmes in Indonesia and Timor-Leste. An analysis of
planning documents, focus-group discussions and open-ended interviews with individuals from rural communities, community leaders, and staff from local and national governments and local and international NGOs, reveals how CBA programmes follow a problem-solution rationale, that is, CBA works by rendering problems of vulnerability and capacity to adapt to global climate changes as technical and manageable. Here, boundaries are defined and made visible, information about what is to be included is assembled, techniques are devised, individuals are classified, categorised and mobilised, and ways of life are revealed. In rendering climate change adaptation technical, this study finds that CBA programmes rarely address the values, needs and practices of rural, remote communities, provide little incentives for local individuals and government to maintain adaptive practices, ignore broader political and economic activity that influence and constrain village life, and downplay the transformative potential of climate change adaptation action. Having demonstrated the analytical importance of critical development theories in CBA research, this study concludes by outlining a new conceptual model for the future CBA research agenda, which combines the aspirations of community-based adaptation with the critical understanding of, and reflections upon, traditional and technical development efforts held by critical development theorists.

Panel ID 72
Navigating Adaptiveness in Large and Complex Regional Systems

Governing freshwater in India under uncertainties in climate: challenges in implementing policies and adaptation strategies
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Governing freshwater under a changing climate is a major challenge in India. With millions living in climate sensitive river basins, wetlands and urban slums, India is one among the countries highly vulnerable to the impacts of climate change. Indian economy and life of the majority has been traditionally linked to agriculture, the largest consumer of water. Abnormalities in rainfall seriously affect water availability and agricultural production. Extreme hydrological conditions affect hydropower generation and industrial development. Increasing rainfall seasonality in certain parts reduces groundwater recharge and summer water availability. Changes in the intensity, frequency and tracks of storms salinate coastal aquifers. Increasing seasonality and intensity of rainfall results in erosion and sedimentation in hilly regions, reducing reservoir capacity and summer flow in rivers. Water related health issues are worsening. Changing climate leads to socio-economic issues related to water such as worsening of water disputes, migration, pricing of water and large investments for the adaptation and mitigation. Present economic growth is likely to be haltered. India’s preparedness for the effects of climate change on water is poor. National policies are vague guidelines, lacking information on effective implementation. Initiatives in the water sector as part of adaptation often fail in fulfilling objectives because of issues like lack of coordination of departments, weak and corrupt administrative mechanism, social issues and vested political interests. Vulnerable groups are often neglected during decision making. Declaration by the government for the inclusion of civil society and public/private partnerships were not enabled. Projects lack transparency and accountability. Theft of water and illegal connections are common in cities. Institutions fail to collect water tax from the powerful industries. Rules and regulations to control pollution and the overuse of water rarely work in the industrial sector. Change in water allocation priorities lead to dispute among
Adaptiveness and Reflexivity

different sectors. India urgently needs appropriate policies and strategies and an efficient implementation mechanism to face the climate challenges. This paper assesses the impact of climate change on freshwater resources of India and its reflections on different sectors and critically reviews the existing policies and adaptation strategies. Changes in water availability in an altered climate have been estimated using hydrological model. Results show that water availability will be drastically reduced in most parts of the country. As the changes in climate are still uncertain, India should be prepared to face the worst condition. Guidelines for better water governance have been provided.

147
Transformation of socio-ecological systems in the Arctic: marine ecosystem change and management in coastal communities
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In few places on Earth are the consequences of climate change more apparent than in the Arctic. A warming climate has left increasingly large areas of the Arctic Ocean ice-free in summer, which, together with thawing of permafrost and rising temperatures on land and water, is changing the ecosystems in unprecedented and unpredictable ways. With landscape and ecosystems, societies that depend on them are also changing: Arctic populations are confronted with challenges as well as opportunities presented by climate change, having to adapt to changes quickly to remain resilient. In addition to this, globalisation, technological development and rapid growth of tourism are also driving change in the circumpolar North. The study looks at how three coastal communities in Greenland, Iceland, and Norway have dealt with these changes so far, whether they managed to adapt to them or steer them, and what it has meant for the surrounding marine ecosystems. In order to do that, the study adopts the notion of ‘social-ecological systems’ (SES), which is used to highlight the interdependence of humans and nature and diminish boundaries between social and natural domains. We use the SES framework to examine the interdependent environmental and social processes in the case study locations and interactions between them. For instance, how variations in the abundance of certain marine mammal species and increasing global interest in them resulted in new economic opportunities through tourism, changes in perceptions, and altered management practices. The analysis of the case studies is a part of a broader project ARCPATH looking at how Arctic SEs respond to rapid socio-ecological changes. It reveals the ability of communities to react to environmental change and globalisation through directed economic development, altered use and management of marine resources, and redefining identities in relation to changing global paradigms. Globalisation and tourism emerge as dominant forces in the studied societies’ recent social and economic transformation. As a result, social perceptions of marine ecosystems and community identities are also changing. On the other hand, self-determination and decision-making power are very important for its members who are cautious of top-down governance initiatives, some of which have been detrimental to their economic and social development and the health of ecosystems. The main sources of risk faced by the social-ecological systems include climate change, resulting industrial development and unpredictability of ecosystem changes. However, there is also a perception of opportunities that can be seized through self-determination and stakeholder-driven ecosystem-based management.

246
Impacts of climate change in the water sector in the Basin of Mexico: challenges for adaptation
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Today, cities face significant restrictions to supply their inhabitants with improved water and sanitation services. The lack of access to water and sanitation, as well as the increase of water-related disasters (i.e., floods, droughts, waterborne diseases) are some of the problems that affect cities the most. These problems are likely to be intensified due to climate change. Therefore, water has a central role to accomplish the 2030 Agenda and the Paris Climate Agreement. Cities cannot be sustainable without adequate access to safe drinking water and sanitation services, since they are at the heart of sustainable development. However, the practices used to guarantee the provision of these services need to be rethought not only to meet the requirements of these services in the short term, but also to ensure the conservation of ecosystems and alleviate poverty. The Sustainable Development Goals (SDGs) propose alternatives to favor the development of sustainable cities that ensure safe and sufficient water-access and adequate sanitation services. At the same time, they aim to reduce the ecological footprint that cities have on ecosystems and water sources. Achieving these objectives will require strengthening the leadership and capacities of local governments that are closest to water problems and their solutions. Therefore, water management with a comprehensive approach will play a fundamental role in strengthening the resilience of cities. The manuscript will focus on the water challenges that the Basin of Mexico will face due to climate change in the short, medium and long term, and the water management challenges that must be addressed to respond to these impacts and develop adaptation capacities. In particular, it addressed the impacts of climate change in water availability and examined the governance adjustments needed to cope with it. To this end, the linkages between the SG6 and the Paris Climate Agreement will be explained. Second, water challenges in the Basin of Mexico and the cities of the region will be analyzed, in addition to addressing how climate change will magnified them. Third, climate change scenarios from 24 Regional Climate Models will be examined in order to estimate water availability scenarios. Fourth, current water management practices and their effectiveness to tackle down climate change impacts on water resources will be discussed, including institutional and governance arrangements to improve water resilience in the cities that composed the Basin of Mexico. Finally, relevant lessons learned will be developed based on the approach of socioecological systems.

347

Goverance Influencing On Trajectories Of Social-Ecological Systems

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A socio-ecological system (SES) refers to the social and natural reality in which the human being is immersed, and co-evolves as an integrated whole like an open, self-organized, non-linear, multiscale, hierarchical and adaptive system. This approach makes explicit the biophysical and social connections, whose interaction processes operate at multiple hierarchical and nested scales. In the SES there are changes over time, caused by specific events that arouse them. These changes called trajectories are the route or path that a system makes when moving from one site or state to another, this implies a dynamism. The trajectory of any system is based on the interactions of the system and the type of stressor or shock to which it is subject. The trajectory can be analyzed through the adaptive cycle, which allows identifying thresholds and pseudo-trajectories that is states of the SES. Then it is possible to describe its dynamism in time and space. Governance is an important
component of the SES that determines its trajectory. Identifying shifts, actors, decision processes and interaction with different elements of the system within the governance system will allow to understand its dynamic. This research investigates the trajectory of the SES governance in order to define regime shifts, as well as the factors that trigger it. Defining these trajectories will provide theoretical elements to discuss the utility of using the adaptive cycle to identify patterns of change. It also aims to identify if the processes of governance in a given coastal socio-ecosystem can be classified as adaptive governance. This study is carried out in the Copalita - Huatulco basin in Oaxaca, characterized by being an area that provides important ecosystem services to the region, as well as having a diversity of productive activities. The aim is to analyze the trajectory of the governance of the basin over 20 years to identify the stressors, thresholds of change and their results. A qualitative analysis for describing the evolution of the governance will be presented as well as a social network analysis to identify patterns of change and model the possible phases in which it may move in the future.

Coastal climate change adaptation policies in Brazil - is EBM being taking into account?

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Coastal ecosystems have indisputable socioecological importance as they contribute to human well-being through a wide range of ecosystem services. However the provision of those benefits is being affected by anthropogenic impacts both locally, regionally, and globally. Such is the case of climate change, which dynamic and uncertain consequences demands new frameworks to cope with change, in which adaptiveness and ecological reflexivity are two prominent concepts. In that matter, Ecosystem-based management (EBM), when applied to coastal climate change adaptation strategies, can foster integrated and sustainable coastal management. EBM proposes long-term planning and considers the connections and interrelationships between the ecological and social dimensions of a system, and how these connections affect the system itself and the benefits derived. It also recognizes the political dimension of the planning process at multiple spatial scales, stemming from the contemporary human values and interests of different social groups, fostering the adaptiveness and ecological reflexivity towards the improvement of the governance system in force. In Brazil, climate change adaptation instruments for the coastal zone are inserted on the National Plan of Adaptation to Climate Change (PNA) - and embodied in the National Program for coastline conservation (PROCOSTA). These are the institutional arrangements that provide the means to EBM implementation, nevertheless, there is no analysis of whether the directives and actions proposed by them are enabling of this implementation. This article aims to evaluate if EBM is being fostered in Brazilian politics for climate change adaptation, and to discuss the application of the adaptiveness and ecological reflexivity concepts within the existing institutional arrangements. The findings from this paper shows that Brazil still has an incipient and preliminary EBM approach to climate change adaptation at federal level. Even though the PNA and PROCOSTA consider many EBM principles, they imposed a top-down execution strategy (from federal to local/regional governments) that barely considers the governance regime in force at lower scales, undermining the capacity for adaptiveness and ecological reflexivity in the climate change adaptation policies.
Disaster risk reduction has become a core strategy in the 2030 Sustainable Development Agenda in recognition of how disasters hamper and even reverse development gains in rich and poor countries alike. Abundant research shows that developing countries are worse hit by impacts of natural disasters due to the increase in the occurrence of climate change related hazards, and the multitude of socio-economic, political, and environmental vulnerabilities that characterize these nations. Disasters not only cause deviations from sustainable development pathways, but also reduce the ability of the poor to escape poverty in the long run. The complexity of disaster risk reduction and management (DRRM) in developing countries discourages a one-size-fits-all governance approach. In practice, participatory approaches are often promoted in such communities especially when polycentricity – where there multiple centers of semi-autonomous decision-making, in disaster governance – is present and democratic engagement of various stakeholders are desired. Participatory DRRM governance has been widely attributed to successes in terms of reduced mortality and socio-economic losses. This paper argues however, that though participatory approaches may work in many situations, it may not be the best model in cases of socio-cultural diversity in the population, technical knowledge and capacity limitations, and the lack of specific resources by local governments and communities to implement effective participatory DRRM actions. Issues of accountability and the governability of complex landscapes and processes also arise from highly devolved governance arrangements. Select cases in Southeast Asia illustrating these constraints are presented in this paper to demonstrate how critical pathways in the DRRM system, such as components of early warning systems, steps involved in risk assessments of localities, as well as elements of planning processes in different levels, may benefit from more centralized supervision and coordination in the form of standardized policies and regulatory mechanisms. The study’s proposal does not discourage empowered participation nor recommend a reduction in the fundamental aspects of polycentricity; rather, it advocates for the possibility of complementing the existing participatory measures with centralized approaches in certain crucial aspects to help organize DRRM systems at various scales, towards a more technically-sound and just application of DRRM measures and to establish accountability of rightful duty-bearers. Considering the benefits of centralized approaches may allow developing countries to better achieve their DRRM outcomes.
questions regarding the relationships between socio-environmental context, structure and function of governance networks, and outcomes as measured by institutional adaptation. Our purpose here is to provide preliminary insights on these questions through a comparison of four distinct emergent responses to a common, climate-driven forest disturbance event. Between 1998 and 2016, pine forests throughout the western United States experienced the largest and most destructive outbreak of the native mountain pine beetle (Dendroctonus ponderosae) on record, with most of the affected forests located on lands owned and managed by the U.S. government as national forests. Socio-political responses to this event in many geographies included the emergence of regional governance initiatives that provided direction and resources for responding to the disturbance event. Our research compares these responses across four regional geographies: northern Colorado, southwestern Montana, northeastern Washington, and the Black Hills region of South Dakota and Wyoming. Specifically, we analyze the structure and function of these emergent governance networks as products of their respective socio-political contexts (including the history of relations between local communities and the U.S. Forest Service) and provide evidence of the lasting impact of the networks on institutions at multiple scales. We pay particular attention to the mechanisms through which documented institutional changes were enacted and the consequent implications for the role of non-state actors in governing landscapes formally dominated by state bureaucracies. By analyzing the origin, characteristics, and persistence of these institutional changes, this research contributes a comparative perspective on the adaptive potential of networks as reflective of network composition and function. We discuss the implications of these findings for state-society relationships and the adaptive potential of emergent, networked, and voluntary approaches as a form of hybrid governance of large-scale and climate-driven environmental disturbance events.

Protests as an Urban Socio-Ecological Technical System Feedback: Governing Vulnerability to Social-Hydrological Risk in Mexico City

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In contexts characterized by weak institutions, significant inequality and high uncertainty, what role does citizens’ protests play in the governance of vulnerability to social-environmental risk? Protests – street blockades, sit-ins and other such demonstrations – can serve the function of a system feedback, communicating urgent needs of populations and provoking action in the public sector. Yet reliance on social mobilization to inform decision-making is also problematic for a variety of reasons. Protests are a function of different social thresholds of risk tolerance and harm, and thus may mask conditions of chronic low-level vulnerability. Protests involving vulnerable communities are also subject to manipulation by brokers with ulterior political motivations. And governance that aims to “put out fires” rather than address the underlying causes of vulnerability may ultimately be unsustainable. In this research, we investigate how social mobilizations (formal and informal) associated with water scarcity influence the distribution of public investment in infrastructure, and thus shapes the built environment, with implications for the spatial and social patterns of vulnerability in Mexico City. We provide a conceptual framework to analyze the role of protests as a feedback mechanism in an urban Socio-Ecological-Technical System (SETS). Through a combination of qualitative data and quantitative analyses, we investigate the conditions under which residents are incentivized to protest, and the implications of these social pressures on the decision making of water managers. Through the use
of an agent-based model, we theoretically explore the role that protests can play in shaping the distribution of exposure to risk in the city. By making visible the interaction of social pressure emerging from street protests, public sector decision-making about urban infrastructure, and social-hydrological risk, we reveal a potentially important driver of SETS governance with complex and potentially problematic implications for equity and sustainability in urban areas such as Mexico City.

437

The emergence of a new environmental governance regime in the periurban forest areas of Mexico City and a new trajectory towards sustainability

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Southern mountainous peri-urban forests provide a number of ecosystem services to Mexico’s city inhabitants, including air quality improvement, carbon sequestration, recreation and several hydrological services. Among them is acting as the main catchment area to recharge the city’s aquifer, which in turn is the main source of fresh water. Yet rapid land use change and now climate change, threaten to compromise this vital provision. Since the year 2000 these areas have been declared as conservation territories, to maintain the forested areas, several public policy instruments have been implemented, most of them based on the handling of economic supports directly to the communities living within the conservation territory, including the federal program of payment for environmental services, but they seem to have no effect on the conservation, since deforestation continues. All the while, as a result from a political crisis derived from a disagreement with the City’s new constitution and its dealing with collective property regimes, a grassroots movement emerged, composed by an alliance of the several rural towns that inhabit the conservation territory. Based on their common prehispanic origins, culture and traditions, they claim their ancestral right to handle the land. They call themselves the Autonomous Assembly of the Peoples of Mexico’s City Basin (AAPCM), they seek to obtain a fair retribution from the ecosystem services they provide and historical documents, scientific data, information exchange, community monitoring and community police have been theirs tools to regain control of the territories. The emergence of the AAPCM has propel an internal reorganization within the communities, like the creation of brigades tasked with collecting data on illegal logging and deforestation. It has also created a new relationship between the different communities propelling joint work and information exchange, finally it has created a new power balance with the local and federal authorities that has allowed the AAPCM to take part on development and implementation of environmental programs. To assess change and evaluate if this social movement is pushing for adaptiveness and reflexivity in the governance system, I use key indicators like, knowledge, trust, resource flows and leadership to in a social network analysis. I use the adaptive cycle and panarchy models to reveal the dynamics of the governance system trajectory. I explore what are the conditions currently missing to ensure real change. Finally I reflect on my own role to play in this transformation as a member of the academia.

439

Social participation and adaptiveness in coastal zones: study cases in Brazil and Chile

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This paper reports the preliminary results of CoAdapta project, a research-action to produce local knowledge and historical-cultural memories for disaster risk prevention. Two case studies
were adopted: a protected area in the Northern coast of state of São Paulo – Brazil, and Chiloé island in South of Chile. This research explored local knowledge among inhabitants of coastal settlements in Chile and Brazil, and their attitudes and responses to disaster risk. Despite the specificities between Chilean and Brazilian coastal territories, there were some similarities that could better characterize the barriers and opportunities for the construction of evacuation plans based on local and scientific knowledge using the interviews based on local working groups, social cartography and participatory Geographic Information Systems (PGIS). The CoAdapta involved people located in different places in the study area, bringing the social and environmental context in the coastal areas and island territory with traditional community (artisanal fishers, quilombolas and indigenous), resulting in (1) social risk mapping and adaptation strategies, based on official data integrated with community-produced maps and (2) timeline of disasters events based on interviews. All results are being organized on a digital platform of spatial data, as the story map and Earth Observing Systems. This research shows the importance of social engagement and mobilisation by the local communities associated with valuing their culture and identity. Moreover, it demonstrated how these characteristics are relevant for the integration of natural resources and strategies for adaptation in their territory. Particularly it showed the potential of open and collaborative science for the creation of bridges between science and local development.

252
Maladaptive food governance: Using human ecology to identify food discourses in Leyte, The Philippines
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The Philippines is home to over 100 million people, half of which remain connected to agrarian livelihoods and depend on rural landscapes for incomes and food security. Despite progress in producing cash export commodities in the Philippines, smallholder farmers remain marginalized from policy making processes and continue to face poor development and nutritional outcomes. At the same time, environmental change continues to affect food production systems and biodiversity and deforestation continue to prevail. This presentation will distill findings from a four year research project working in partnership with a local agricultural research center focusing on the prevalence of major food discourses in the Philippines. I will discuss how a complex mix of colonial legacies, village social relations, and lack of agency create a maladaptive food governance system in rural Philippines. I will situate this discourse and governance analysis within the framework of human ecology, which I used to thematically analyse interviews with 39 coconut producing smallholder farmers from Leyte, The Philippines. The results document how smallholders perceive market food security discourse as the main way out of food insecure situations, and thus continue to seek institutional support for maintaining a coconut based agricultural system. Farmers also perceive elements of the food sovereignty discourse, notably decision-making agency and agricultural diversification, as parallel strategies to improve their food security. The ongoing support for coconut production and inequitable access to training and knowledge in rural systems traps farmers into an agricultural system influenced by a long history of colonial institutions and social structures. The presentation will demonstrate that farmers are aware of the interventions required to diversify food systems towards higher value commodities and more socially inclusive practices, yet sovereignty is unlikely to be enabled due to maladaptive institutional and social networks. The integration of human ecology,
food discourse theory, and Philippine historical literature will allow me to discuss the implications of rural inequalities for governing increasingly fragile food systems.

Panel ID 74

Policymaking for Adaptiveness and Reflexivity
30

Multi-level governance of climate change: a comparative analysis of US and UK local government programs
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There have been a variety of national-level efforts to address climate change impacts. These vary in both substantive activities and intensity. Understanding the influence of national efforts on local government actions is critical to understanding the roles of different levels of government within multi-level polycentric systems. This paper compares the number and types of local government policies addressing climate change across the United Kingdom and the United States using two recently collected original datasets. Analysis focuses on whether national-level leadership on climate policy within the UK and the lack of national policy within the US has had impacts on local climate efforts. Factors include whether states have effectively filled the gaps within the US, the influence of sub-national political structures including local and state government activities and regional climate action networks, and the influence of local party politics. Differences between the distributions of policymaking responsibilities across the two political systems are highlighted to determine in what ways national-level leadership influences local climate change policy decisions. The paper concludes with a discussion of the importance of flexibility in polycentric governance in order to build reflexivity and local adaptiveness.

416

Multilevel governance in climate change adaptation in Bangladesh: structure, processes, and barriers
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Large-scale climate adaptation management requires the engagement of multiple actors in different sectors and at multiple levels of governance. The decision making and implementation in the multilevel arrangement of diverse actors demand recognition of the actors’ roles, their interactions, and the mechanism of barriers. Nevertheless, we have limited evidence on how multilevel adaptation governance structure shapes the roles of the actors, how their power dynamics affect the governance process, and how barriers emerge through their interactions. Addressing these gaps, in this study, we analyzed the structure, processes of and barriers in the multilevel governance of adaptation to flood in coastal areas of Bangladesh. We adopted a social network analysis approach, power concept, and causal mechanism approach for the analysis. Results revealed that the adaptation governance process is elite-pluralistic in nature, but has a co-existence of top-down and bottom-up processes in different phases of adaptation actions. We categorized the influence of organizations into three classes: high, medium, and low, and we found that the organizations with high influence over the governance process reside at the national level. We further identified five types of organizations based on the structural attributes of the governance network and their functions. The analysis of power dynamics among them discloses the processes of domination of a few organizations in the adaptation governance process. We found that eight types of mechanisms that cause the emergence of barriers in the adaptation governance process: frame polarization, lost in translation, risk innovation, conflict
Global climate change is widely viewed as one of the most significant challenges facing society today. Although an overwhelming majority of climate scientists agree that reduction in greenhouse gas emissions (GHGs) or mitigation can help maintain the temperatures below the 2.5°C threshold level, the U.S. public, on the other hand, is still divided on the existence, causes, and impacts of climate change. Effective legislation and implementation of climate mitigation policy requires a better understanding of why the public support or oppose such policies. While there has been a concerted effort to highlight factors that are associated with public’s support for mitigation, these studies are splintered across several social science disciplines, each of which uses its unique epistemological tradition for forming research questions, developing methods, and situating research within specific theoretical assumptions. Against this background, this paper use a meta-analytical framework to comprehensively identify and explain the main determinants of U.S. public’s support for climate mitigation policies. The results of the meta-analysis will be of special theoretical and methodological interests to the social science discipline, and of immense practical benefit to practitioners and policy makers to understand the diversity of public opinions and drivers of climate change mitigation policy support. The results will also identify effective ways to communicate the risks of climate change to the public.

Advocates of the Agenda 2030, and of sustainability-oriented Science, Technology and Innovation (STI) more broadly, typically view science–society interactions and societal co-production of knowledge as preconditions for responsible research and innovation. However, the complexities we face in practice trigger resistance, reinforce institutional and political obstacles, and weaken the success of development interventions. Recent progress in epistemological clarification of sustainability science makes it possible to better align research and innovation (studies) with the paradigm of sustainable development. An emancipatory understanding of sustainability allocates each individual an equitable role as an agent of change in a joint future-forming process. As a result, equity-related factors define the quality of science–society interaction. These include: the balance of power and deliberative capacity of actors involved; openness to diverging values, interests, culture, worldviews, or knowledge systems; the growth of shared understanding, working culture, and mutual trust; the principles of reflexivity, learning, and adaptation in a collaborative setting; and meaningful, consequential involvement of all in decision-making and process navigation. Although promising ways of increasing the quality of science–society interaction are often incorporated in the planning, transdisciplinary practice usually continues to be contested by partners within and beyond particular projects. We argue that to understand, evaluate, and adapt the contribution of research and innovation to Earth System
Governance, it is helpful to examine the generally conflictive systems of reference that are binding for researchers and practitioners involved. To underpin this, we focus conceptually on three major innovation paradigms usually combined in transdisciplinary research and innovation portfolios: In a first innovation paradigm, science is the system of reference – with scientific analysis expected to bring in the “right” solution for policy and decision-making. The second – now very popular – innovation paradigm centres on science–society interaction in multi-stakeholder processes and platforms: yet, frequently representing “open spaces” of negotiation and exchange, these suffer most from dynamics of unequal negotiating power and conflicting systems of reference. In this paper we examine how sustainable development as the overarching reference system for Earth System Governance might generate a third innovation paradigm suited to foster equity-based, reflexive, adaptive and inclusive knowledge production and innovation. More specifically, we draw on evidence from transdisciplinary projects in a North-South context. Reflexive, adaptive project navigation successfully allows combining disciplinary, inter- and transdisciplinary steps and elements on behalf of shared goals, and is suited to reduce tension and resistance in the joint project navigation towards sustainable development.

93

Between fixed hierarchies and ‘rule of code’, a middle way toward a social ecosystem
Gael Van Weyenbergh
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The surge in connectedness that came with the internet propelled us into a new threshold of complexity and uncertainty. As a result, human societies now have to deal with global challenges in a world where change is the only constant. In order to navigate effectively the waves of change, social organizations have to become more agile and to rely increasingly on third-parties that escape their traditional chains of command and control. Therefore, new societal models would need to include an improved capacity for resilience on one hand and a capacity to exercise trust as a fundamental element of social relationships on the other hand. Having an upper limit on what social organizations can structurally handle, it is time for them to be redesigned for adaptability and reflexivity. As an example, we witness a global and lasting trust gap between citizens and their institutions. Alternatively, distributed technologies promise consensus based on a cryptographic proof instead of trusting a central authority. Yet, when the ‘rule of code’ fails, distributed initiatives fall short. A human-computer interaction could theoretically support the development of a robust distributed governance model at scale if human governance could be modelled on distributed principles. Since ecosystems are champions at adaptability, we propose to apply their dynamics to the social fabric. And since they know no clear boundaries - which erases the concept of externalities - they are also champions at reflexivity. Yet, because ecosystems are self-regulated the challenge is to overcome the tragedy of the commons without central control. Thus, we propose to supplement the basic principles of ecosystems with a distributed social architecture that has the capacity to prompt interpersonal coherence at scale. Similar to ecosystems where synergistic relationships lead to stability, a global human organism would operate as an heterarchy and the regions of greatest authority would be those where trust, emotional resonance, and reciprocity have scaled the most across the social fabric, aligning intrinsic individual human needs with broader collective needs. We propose here a middle way between fixed hierarchies and rule of code to propagate the dynamics of cohesive communities horizontally and at scale in multi-stakeholder scenarios. Compelled to adapt to the ever changing societal environment, this capacity is especially relevant for institutions as
social unrest now operates on increasingly complex networks without any formal leadership to negotiate with. Indeed, the systemic challenge that we are facing today calls for nothing less than a systemic solution.

245

*Using Fuzzy Cognitive Mapping to Understand the Farm-Level Impact of External Support for Sustainable Agriculture Transitions*

Bonnie Averbuch
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Concerns about sustainability in our food system surfaced nearly a century ago. For decades, there have been efforts to establish more sustainable agricultural practices, including through public, private, or non-profit support for sustainable agriculture transitions, with varying degrees of success. Now, we have reached a critical point where the transformation of our food system to one that is more sustainable is urgent. This study explores the experiences of US farmers who have received private support for sustainable agriculture transitions. Specifically, it examines the farmers’ perceptions of successes and failures of the support they received as well as support that they could have used but did not receive. We identified farmers from the northeast United States who have received transition support using snowball sampling. During the interview process, we constructed fuzzy cognitive maps (FCMs) of farmers’ perceptions of how successful different support mechanisms were. To analyze these FCMs, we condensed and combined related concepts into clearer concepts and grouped them into broader categories. We then performed a quantitative analysis on the combined FCM matrix values, analyzing them for number of concepts, number of links, and concept indegree (receiving effects), outdegree (transmitting effects), and centrality (receiving and transmitting effects). Finally, we determined density and complexity, where density describes the connectivity between concepts and complexity describes the ratio of receiver-to-transmitter concepts of an FCM. We used this analysis to explore similarities and differences between the farmers. Reflecting on how support systems have succeeded and failed in the past can help us begin to adapt old and create new governance models that acknowledge and adjust ineffective support as well as expand upon favorable and promising components in order to create the strongest and most likely to succeed transition support systems.

253

*Anticipating ‘unthinkable’ collapses: collective social ecological systems impacts and responsibilities*

Beth Edmondson
Federation University, Churchill, Australia

This paper examines the benefits of adopting the notion of ‘unthinkable’ collapses to progress international sustainability and environmental governance. It draws upon the work of Cuming and Peterson (2017) who argue that ‘collapse and resilience are two sides of the same coin’, paying attention to predictability/unpredictability. Engaging with predictability/unpredictability dynamics in social ecological systems settings demands sustained identification and interrogation of key factors in their systemic and structural interplay. To meet this goal, this paper focuses on collapse and resilience in ‘coupled human environment systems’ (Edmondson & Levy 2019: 301). It utilises this notion of coupled systems to examine contributing factors for predictability/unpredictability of collapse and resilience. It also pays attention to their importance for environmentally sustainable social ecological systems and governance in the 21st century. It considers scalable (and tailorable) knowledge of community resilience and ecological sustainability and their respective contributions to cascading ‘predictable surprises’, interlinked ‘tipping points’ and ‘unthinkable’ social ecological systems collapse/s. This analysis arises from
increasingly dire scientific predictions of the impacts of human induced environmental transformations (including climate change) alongside persistent discursive divisions concerning social ecological systems, sustainability and environmentally sustainable governance. It is underpinned by the work of leading knowledge holders and experts across different fields, drawing upon their attention upon factors and risks in social ecological systems collapse, especially in ‘sustainability research’ (Cumming & Peterson 2017). Their work suggests that it is now more possible to envisage mass-scale environmental disasters and upheavals in natural and human created systems. Consequently, this paper asks whether (and under what conditions) unthinkable collapses might become more thinkable in the collective decision-making settings that characterise international environmental governance. It also considers whether doing so might progress effective international environmental governance, especially in settings of ‘uncertainty-ridden collective decision making’ (Mahmoodi et. al. 2013). This paper aims to progress understanding of the implications of complex interplay between social ecological systems and structures by identifying opportunities to reframe ‘unthinkable’ collapse/s. It therefore examines these concepts and their problem-solving frameworks. It examines conceptual and sectoral intersections and analyses their potential significance in anticipating/predicting sustainability, critical thresholds and tipping points (see Westley et. al. 2011). This approach is underpinned by cautionary observations that environmental sustainability relies upon ‘urgent… reforms of institutions and governance approaches to keep planetary systems clear of [further] irreversible degradation’ (Mummery & Mummery 2019: 46).

Is all adaptive governance good governance? Or, why we are already, always adaptive
Nicholas McClean
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The mantra of new governance thinking and sustainability science is that to address the challenges facing the earth’s systems and human society as a whole, our governance systems, from local communities, to catchment and fisheries committees, to national management agencies and on up to global governance frameworks, need to be adaptive. Yet in every sector of society, or even for that matter in the earth’s natural systems, change is far more of a constant than stasis, and typically occurs as a response to some sort of internal or external impetus. That is, it would appear from a basic analysis of the world around us that we are already, always adapting to our changing circumstances, every moment of every day. Understanding what is required of our governance systems to enable sustainable transformations does not involve identifying whether we are adapting or not, but rather in what ways we are adapting, and in response to what. What does this mean for the concept of adaptive governance? In this paper I apply some principles derived from contextualist thinking to demonstrate an initially semantic point – good governance is not, in fact, defined by the fact of its adaptiveness, but by the fact that it adapts in ways that are intentional (i.e structured around clear objectives and values), reflexive (i.e. responsive to evidence and analysis about progress towards objectives and the extent to the system is embodying its values), and transparent (objectives, values, evidence and analysis are openly shared and communicated). This is important because it has the ability to change what governance systems do – firstly by avoiding the misguided notion that any adaptive behaviour is inherently good. Secondly, to demonstrate good governance, a system needs to focus not on its adaptiveness, but being in a constant state of...
change, instead focus on applying these 3 principles to guide the nature of its adaptations.
Panel 18:
Making conservation work in a globalized world: Investigating opportunities and challenges for public and private land use governance

Learning to Live Together: Competition and Complementarity in Public and Private Land Use Governance
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Land use change is a key contributor to climate change. It is also the subject of an increasingly broad and fragmented array of governance efforts led by both public authorities and private groups. In this paper, we ask: how do public and private land use governance interact in commodity-exporting countries? We address this question through comparative case studies of soybean farming in Brazil, palm oil production in Indonesia, and pangasius aquaculture in Vietnam. In each of these countries, we find a common pattern to public-private governance interactions. An initial period of complementarity is followed by an interlude of competition between governance efforts before resettling into a complementary interaction. In essence, public and private governance hold an uneasy marriage characterized by learning to live together. While our findings are preliminary and specific to commodity-exporting countries, they hold broader implications for the ways scholars think about the relationship between public and private governance. We suggest that the two spheres are neither in competition for finite political authority, nor are they necessarily additive. The dynamism of public-private governance interactions further complicates efforts to measure the contributions of non-state actors to climate change mitigation.

Missing the Forest for the Trees: The Hidden Costs of Eco-Certification for Land Use Change
Yixian Sun¹, Janina Grabs¹,², Benjamin Cashore¹, Hamish van der Ven³
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Private governance in the form of certification and labelling has become a prominent regulatory mode in the global agricultural and forest supply chains to promote sustainable production. A major goal claimed by these instruments is to halt deforestation and protect biodiversity, and recent impact evaluation studies find that certified areas have reduced forest loss compared to non-certified areas. While such evidence seems to suggest that certification is a powerful tool to address the issue of land use change, we argue that these incremental gains hide the real costs of private governance solutions by providing businesses with reputational gains to certify areas that were previously deforested. Over time, certification programs have shifted problem definitions, and therefore left regulatory loopholes in their standards and enforcement, which are likely to worsen land use outcomes on the ground. We corroborate this argument by an examination of the standards of major certification programs in the agricultural and forestry sectors in the past 25 years as well as primary and secondary evidence on the relevant programs’
practices. Our study suggests that this failure is deeply rooted in the way latent power is exercised in global supply chains, making private governance, by design, unable to trigger profound sustainability transitions.

239

Explaining Divergent Community Forestry Trajectories in Costa Rica, Mexico, and Peru: A Historical Institutionalist Account
Benjamin Cashore, Chelsea Judy, Michaela Foster
Yale University, New Haven, USA

Current understanding of how indigenous and forest-dependent communities might participate in and benefit from local resource governance remains a significant and contested theme of research in academia and among policy practitioners. Community Forestry Management (CFM), which involves local peoples and stakeholders in the management of forests, has been touted as a leading model of forest governance that acts as a triple win for society, the environment, and economic growth. However, as CFM has emerged and expanded across different country contexts over time, the institutional aspects of these iterations of community forestry, as well as their trajectories, diverge and vary significantly in terms of uptake, durability, and extent across tropical countries. The purpose of this article is to shed light on CFM divergence and variation by comparing three Latin American countries that have established and fostered CFM institutions: Peru, Mexico, and Costa Rica. Further, we ask how might micro-level institutional analyses, that have as the goal the creation of generalizable design principles, be modified to incorporate vastly different historical trajectories? By comparing CFM in three case studies, we demonstrate how historical institutionalism (HI) adds importantly to the overall scholarly attempt to describe how community forestry develops over time and why CFM varies in extent and form across regions. We introduce a new inductive framework that identifies Jurisdictional Authority, Land Ownership, and Leasing & Licensing Regulations as three variables inherent in every iteration of CFM, and demonstrate how this framework, when paired with path dependency analysis, can explain the variation in CFM models across our case studies. By closely examining the institutional factors at play in our case study countries, we establish the value added of the HI approach to the literature by demonstrating how historical forces over time have shifted institutions governing forest resources in our country case studies, thereby influencing contemporary efforts at engaging community forest management.

159

Is private environmental governance an oxymoron? The effectiveness of market-based sustainability standards in improving ecosystem conservation
Janina Grabs
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To combat deforestation and biodiversity loss, private environmental governance through sustainability standards has risen in popularity and entered the mainstream of many agri-food markets. This paper adopts an institutional rational choice perspective and uses the case of coffee to answer two research questions: first, focusing on land use and biodiversity protection, how do mainstream private sustainability standards operationalize and incentivize environmental sustainability in the presence of economic tradeoffs? And second, what impacts do their strategies have in the field? Using document analysis and 1,900 observations from Honduran, Colombian and Costa Rican coffee farmers that are analyzed using propensity score matching, it finds that standards increasingly support a land sparing approach to biodiversity conservation, marked by set-asides of high conservation value forestland and sustainable intensification, rather than a land sharing perspective, which would support agroforestry and shade coffee
production. Due to economic pressures, the majority of sustainably certified farms in the field thus pursue intensified methods with sparse shade that have not shown to yield on-farm biodiversity benefits. Further, it is questionable whether the regulatory attempt to prevent deforestation has been successful, as up to 50% of certified farmers that expanded their coffee farm reported having done so on former forestland.

Panel ID 37

Economics Globalization and Governance (i): socio-environmental impacts of mining, renewable energies and agricultural commodities

Impact of Economic Globalization on Natural Habitat Depletion: Analyzing the Public and Expert Perception in tribal region of Odisha, India
Manoranjan Mishra
Khallikote University, Brahampur, India

The indigenous communities around the world are facing the neoliberal economic dogma of globalization. The corporate encroachments in tribal habitat areas which are protected under Schedule V of the Indian Constitution are common phenomena. The multinational companies are not only siphoning the profit by extracting resources of these areas but also forcing these peace loving tribal people to be homeless and restless. The byproduct of resource capturing by pro-corporate mafia have resulted into loss of ecological sensitive areas, deprivation, marginalization and inequality. As pitfalls of globalization, industrialization and mining appear to be severe on tribal society and culture and overall sustainable pathways of development, there a need for a fresh research study which can combine both theoretical debates as well as local perspectives of tribal society in era of Anthropocene. Inclusive and sustainable development needs a new urge of participation as well as preservation of marginalized sections of society in the course of development. This paper has tried to understand legal and institutional process of mining and industrialization and their impact natural habitat loss and on the cultural practices of tribal population. The scientific consciousness about habitat loss are constructed from desktop literature review and semi-structured interviews with diverse experts (N = 20). Further, research works were carried out with a diverse sample of members from the communities living around tribal villages four district of Odisha i.e Ganjam, Gajapati, Koraput and Kenojhar. Further, sufficient samples (N = 200 for each district) are decided by lead research when it will be felt that saturation of major themes have reached. The tools (questionnaire, FGD guides and In-depth interview guides) are to be developed after a thorough review of literature and documents available as well as discussion with experts. The whole sessions will audio recorded and transcribed and coded for content analysis using EpiInfo version 7.0 database. The result of the study comprise: 1) products and advice/recommendations from case studies across the Odisha and recommendations for the customisation of science and social science approaches to phenomena and issues targeting decision maker as audience in mind. One of the high-level ‘real-world impact’ aims of the research is to use science and social science to inform and get to the heart of governance. This study has explored a range of impact pathway methodologies in creating range of ‘policy-‘, ‘tribal community-‘, ‘decision-maker-‘ and ‘media’ ‘friendly bespoke products’ as a fundamental part of the work.

Community structures, conflict dynamics and narratives of resistance: Synthesizing current scholarship on mining and water conflicts
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Conflict around access and quality of water accompany mining projects all over the globe, resulting in conflicts of varying intensity, such as complaints, protests, and even violent confrontations. With water demands rising across sectors and (seasonal) water scarcity increasing due to climate change, resource competition is set to intensify. Simultaneously, environmental and social protection legislation has come under fire in several parts of the world, being rolled back in political economies that favor the interests of national and international economic and social elites instead, exacerbating the vulnerability of marginal, rural communities. While a number of case studies investigate water-related mining conflicts, scholarship on the topic still remains fragmented, lacking a synthesis that allows for empirically grounded theorization on how communities mobilize around water and how conflicts surrounding extractive industries and water resources develop. This paper provides a first step in that direction, presenting a meta-analysis of roughly 45 case studies on mining conflicts related to water. Our goal is to a) assess the state of current scholarship, bringing attention to territorial and disciplinary biases that limit our understanding, and to b) provide insights into the roles that state, market and civil society actors play in these conflicts, which forms of agency they assume and which narratives they employ in doing so. We examine the interlinkages between pre-conflict community attributes and conflict development using qualitative comparative analysis (QCA). We find that most case studies are situated in post-colonial settings and tied to claims over land rights, political participation, and differing ontologies related to water and nature. Affected communities challenge hegemonic narratives of development, questioning neo-extractivist politics and discourses that are often promoted by national governments and mining companies. Especially in water scarce areas, resistance movements frequently invoke identity narratives as mineral extraction endangers customary water use that is embedded in cultural practice, affecting community structures and cohesion. Overall, national governments tend to support extractive projects, while regional governments as well as faith organisations and NGOs ally with communities. International NGOs play an important role in connecting local conflicts to global discourses on environmental justice and climate change dynamics but they also limit their engagement to very specific conflict frames. Our study further points to a growing awareness among mining companies regarding the potential for water-related conflicts and their engagement in sustainable forms of water use especially in countries of the Global North.

225

Socio-Environmental Impacts of Hydropower Development in Nepal

Prakash Gaude
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There is an unprecedented rise in energy demand in South Asian Region. In recent times, there has been increasing number of initiatives to harness water resources in the Himalayan region including Nepal. Now hydroelectricity has become one of the most favored water harnessed projects for Nepal and for international corporations as well as multilateral financing agencies. With the increasing number of projects coming on Himalayan Rivers through domestic and foreign investments, the adverse impact on environment is anticipated to increase. In such a situation, this paper attempts to elucidate the emerging challenges of environmental management in harnessing hydropower potential. The paper also argues that though hydroelectricity is considered a cleaner source of energy as compared to other conventional sources, there is increasing threat to society, environment and biodiversity. The hydropower sector is facing the dual challenges; meeting the energy demand on the one hand and minimizing socio-
environmental damage on the other. For maintaining such a balance, environmental impact assessment (EIA) is being practiced. However, the project level EIA is not being able to address the challenges of irreparable socio-environmental damages. In order to address such challenges, the EIA tools need to be robust enough with binding enforcement. Further to reduce the adverse impacts, the paper recommends that the government needs to seek for optimal size and number of export oriented hydropower project based on the environmental carrying capacity of rivers.

251

Green State Capacity and Extractive Governance in Peru and Ecuador
Hyeyoon Park
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Since the global financial crisis in 2008, Chinese investment in Latin America has drastically increased, with a great deal of money flowing into extractive projects. This leads to a concern that China’s growing influence will escalate a country’s economic dependency on natural resources exports which can cause resource curse and hinder ecological modernization (EM). However, there is a lack of research what political conditions help Latin American countries to make ‘green extractive policies’ through the process of EM so that they can better manage the negative environmental impacts of foreign investment in their extractive industries. Applying the EM approach, this research examines the question of how different political regime types influence in various characteristics of extractives governance, especially regarding Chinese investors in Latin American countries. To answer the question this study compares Peru and Ecuador, the two countries that have different regime types but commonly experience the growing impact of Chinese investment based on their abundant oil and mineral resources. As a most similar comparative research, this analysis will trace the evolving history of main extractive policies, and dominant values and ideologies in main policy discourses in the two countries since the 1990s. The preliminary research results show that the value of developmentalism has been dominant in political discourses related to extractive policies in both Peru and Ecuador, and it hinders strengthening environmental regulations on foreign investors such as China. In this sense, different regimes types of the two countries have not shown distinctive impacts on green extractive governance clearly. Nevertheless, a few pieces of evidence reflect slight differences between the two countries. Peru as a decentralized liberal regime gets more pressure from transnational advocacy groups, which contributes to facilitating the institutionalization of sustainable extractive governance. On the other hand, Ecuador as a centralized leftwing government operates more social policy-oriented extractive governance rather than environmental policy-related one. This study provides an implication on some obstacles and potentials of the ecological modernization in Latin American countries, given the Earth System Governance conference stream of Socio-environmental impacts of economic globalization in the developing world.

440

Know, Measure, and Control: Epistemic and Technopolitical Practices in the Global Project to Eliminate Mercury Use in Artisanal Gold Mining
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In the past two decades, mercury pollution and its ecological and health effects have arisen as a priority for global environmental policy. Eliminating and reducing mercury use from sectors and processes such as artisanal and small-scale gold mining (ASGM), coal-based energy generation, or the manufacture of industrial chemicals or electronic devices has become a critical goal for sustainable development agendas. The two
most significant contributors to mercury pollution are the ASGM sector, which accounts for 35% of global atmospheric emissions, followed by coal-burning energy plants with 27% of emissions. The signing of the UN Minamata Convention on Mercury in 2013 and recent efforts to promote mercury-free gold markets and ‘ethical’ or ‘clean’ coal constitute a new wave of interventions that intend -as UN Environment has repeatedly said- to ‘make mercury history,’ especially in the mining and energy sectors. Drawing on STS literature on knowledge-power formations in global and local environmental governance (Jasanoff & Martello 2004) and global environmental assessments as social processes entailing varied and multiscalar epistemic practices (Mitchell et al. 2006), my research analyzes the UN’s, states’, and experts’ attempts to know and govern artisanal and small-scale gold miners (ASGM) and its role in global mercury pollution. For doing so, I study: (1) different practices of knowledge production/compilation/mobilization -deployed by actors such as UNEP, states, networks of experts, and local populations- about mercury contamination coming from ASGM activities to the global atmosphere and local environments; and (2) the relationships between these epistemic practices and the socio-technical interventions and regulations that have been developed in countries with ASGM activities and globally through initiatives like the Minamata Convention and the UN Global Mercury Partnership. Through a multi-site ethnography of the global mercury regime, and recurring also to interviews, legal analysis, participant observation, and process tracing, my research makes visible the assumptions and political claims underpinning how this global regime knows and governs the sector of ASGM through specific technologies and epistemic practices. The repertoire of studied practices of quantification, data compilation, and reporting includes the UNEP’s Global Mercury Assessment reports, national baselines and inventories of mercury pollution, and localized interventions promoting socio-technical changes in ASGM sites. The local dimension of my research is grounded in Colombia, one of the UN’s preferred laboratories of intervention for mercury-abatement initiatives since the 1990s and the third largest mercury polluter in the world.

Panel ID 38

Forest governance in the Global South: limits and possibilities

49

Planting and replanting: Continuity, change and impacts of 50 years of tree planting in Himachal Pradesh, India.

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Global policies are increasingly encouraging national governments in the developing world to increase investments in forest restoration with the goal of increasing the provision of ecosystem services from degraded landscapes. However in many parts of the world, coordinated afforestation programs have been going on for decades, and it is imperative that we learn from the experiences of these past programs to understand the potential range of outcomes of afforestation programs. In this paper we analyze 50 years of government records from the forest department of the Indian Himalayan state of Himachal Pradesh. We show that, contrary to global narratives about increased investments in forest restoration, the number of trees planted and number of acres treated in Himachal have declined from their high in the 1980s and 1990s. Furthermore, over this period, species composition has shifted from a focus on timber producing species (e.g. Pinus roxburghii) towards a more diverse set of native broadleaf species, which reflect local preferences for the production of firewood, fodder, and other non-timber forest products.
and ecosystem services. At the same time, the number of programs sponsoring tree planting has proliferated, reflecting the increasingly fragmented nature of forestry funding in India, as well as the ways that tree planting has been framed as the solution to a growing number of problems, ranging from poverty alleviation to climate adaptation. We then draw on results from a large-scale household survey to examine the impacts of these plantations on livelihoods in the region, pointing to the complicated nature of relationships between forests and livelihoods in rapidly changing rural regions.

88

Climate Finance: The role of the Green Climate Fund in supporting governance reform to address tropical deforestation
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Global climate change is arguably the most serious challenge facing humanity today and there is general consensus that the less-exposed industrialized countries in the global North have the moral responsibility to financially support countries in the global South in their mitigation and adaptation efforts. Recognizing that deforestation is a main contributor to climate change and the majority of deforestation takes place in the global South, the global community has mobilized substantial funding (so-called climate finance) to encourage the maintenance of forests in developing countries. To date, the ability of climate finance to reduce tropical deforestation has had varying degrees of success and deforestation continues unabated in most countries. Therefore, this research seeks to understand how the world’s largest fund dedicated to climate finance—the Green Climate Fund values enabling investments in forest governance reform. First, a global overview of forest-relevant applications to the Green Climate Fund will be achieved through a systematic content analysis. Thereafter, two in-depth country case studies will be undertaken in order to better understand how and why certain governance mechanisms are funded or not. Ecuador and Madagascar have been preliminarily selected as case studies because both countries’ Green Climate Fund programs are amongst some of the most advanced and both countries have identified forest governance as a main cause of deforestation. Despite the existence of many global, regional, multilateral and bilateral climate funds, the Green Climate Fund was designed to be broader and more ambitious than any climate fund to date and is intended to be significant and catalytic. This research will contribute to knowledge regarding the ability of mainstream climate funding models to address the underlying drivers and issues related to tropical forest loss and degradation in the global South. Evidence shows that good forest governance (which includes clear land and forest tenure, multi-sector land use planning, transparent management of forest revenues and public participation, amongst others) is critical to any meaningful effort to reverse the trend of tropical deforestation. The outcomes of this research seek to inform an understanding of how investments in governance can support transformational change in numerous countries in the global South where forests are the key to sustainable development. This speaks to the questions posed in sixth conference theme by unpacking the dominant climate finance architectures currently proposed to bring more equity into the fight on climate change by compensating the global South in its climate efforts.

103

False Forest Sustainability in the Age of Globalization: The Carbon Cost of Abandoning Self-Sufficiency
Matthew Jurjonas, Leticia Merino
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Indigenous and rural communities historically dependent on forestry enterprises are facing an
increasingly complex regulatory framework in Mexico. Additionally, market influences are incentivizing conservation and carbon sequestration over logging. Ecotourism is replacing the chainsaw and many former farming parcels are being left fallow allowing for afforestation to begin. As permits become more difficult to acquire and challenge local capacity, many communities have reduced extraction leaving half of their allowable quota in the forest. Lost livelihoods in turn contribute to rural flight thus challenging many communities’ social capital making it more difficult to run a successful local business. Within this context, increased forest cover may appear to be more “green,” but where might the actual carbon balance lie within these communities from a climate change perspective? As communities and voluntary carbon markets consider this afforestation for carbon credits this study examines land use change, out-migration, and lost economic opportunity. Forests are complex socio-ecological systems where humans have a long history of integration within the landscape that must be considered to move beyond the exclusively ecological sequestration assessments employed to date. Drawing from three communities with common tenure regimes in Quintana Roo, Oaxaca, and the state of Mexico, we make multiple case comparisons to address globalization and climate change mitigation. Using semi-structured interviews, a household survey, census data, and geospatial analysis, metrics for carbon sequestration are developed within a modern rurality where population and land cover are fluid. We find that in these rural contexts, milpa–Mexican subsistence farming–has given way to the increased local import of food while construction materials are purchased where in-house timber previously housed residents, both of which imply increased emissions constraining net forest gain sequestration. Qualitative findings uncover a youth primarily driven to seek economic opportunity away from home even though some prefer to stay for family and rural aesthetic reasons. Furthermore, given that urban Mexicans and the United States emit two to six times more carbon dioxide respectively than rural Mexicans—even considering logging-based emissions—out-migration is presented as a new type of “leakage.” We argue that renewed focus on sustainable rural development and local livelihoods is needed to avoid this new form of “leakage,” while negative emissions schemes must begin to consider forests as a socio-ecological system in order to achieve climate change mitigation.

Global commodities and food system (i): governing supply chains

The many aspects of sustainability: Unpacking consumers’ support for tea standards in China and the UK

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Over the last two decades, many labels were created in the food sector as a market-based governance model to promote sustainable production and consumption. This has led to a rising literature on the emergence and growth of sustainability labelling schemes. While a growing number of studies have investigated consumers’ willingness to pay for certified products, this strand of work has either focused on a specific label or asked consumers’ support for labelled products in general, and consequently has paid insufficient attention to the heterogeneity of different schemes. Yet, institutional analysis on sustainability standard-setting organizations have shown that different labelling schemes often prioritize different types of sustainability issues (e.g. environment, labor, and health), and accordingly set varying degree of standards on each issue. Moreover, past studies have also suggested that the creator and the origin of labelling organizations can influence consumers’ trust in
sustainability labels. As a result, to understand the potential of sustainable markets, it is of primary importance to know which requirements in sustainability labels consumers actually look for. Our study investigates consumers’ preferences for specific standards and features of sustainability labels. To do so, we conducted a choice experiment and questionnaire in early 2019 with 2000 tea drinkers in China and the UK (1000 in each country). We focus on tea as it has been associated with several social and environmental issues and various labeling schemes exist in the market. China and the UK are the largest markets for tea, but as China produces most of the crop itself, the UK relies heavily on imports. Amongst other factors, this difference allows for the hypothesis that the requirements for the various standards vary between both markets. We find that Northern (the UK) and Southern (China) consumers tend to prioritize different aspects of sustainability in certified tea products. This result suggests that public support for sustainable consumption is likely to be driven by specific market contexts where socio-economic and cultural conditions give rise to different frames on sustainability issues related to the relevant product. The study makes a novel contribution to the broader literature on Earth System Governance by unpacking public support for specific elements behind sustainability labels and examining the variation in the potential of sustainable products in Southern and Northern markets.

158

Signaling Sustainability: The Interplay of Public and Private Regulation of Tropical Commodity Production
Janina Grabs
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A common narrative holds that the private regulation of agri-food value chains through voluntary sustainability standards emerged to fill a governance gap that states were unable or unwilling to address. However, reality is more complex: in a number of producing countries, laws exist that mirror and go beyond what private labels demand. These countries have two options for placing their sustainable products in the market: signal their national system’s equivalence to private schemes, or utilize the existing regulatory framework as favorable preconditions for widespread certification. In framing this choice as a collective action problem that pits individual against collective reputations, this study analyzes under which conditions states and parastatal actors opt for either approach, provides evidence of the strategies used, and draws conclusions on their respective success and on-the-ground outcomes. Using an in-depth comparative case study of the coffee sectors of Costa Rica and Colombia, the study finds that the divergence in institutional strategies can be explained by three factors: a country’s overall international image; the expected added pay-off of certification; and sector-specific institutional capacity. In practice, producers may still pursue their own strategies that contravene the best laid-out plans and compound the collective action problem sectoral actors tried to prevent by gaining individual-level certification in spite of efforts to build a country-wide sustainability reputation. However, evidence suggests that the majority of standard requirements that mirror public regulation show little additionality in certified farmers over non-certified controls, showcasing the limited effectiveness of such regulatory duplication. The paper closes with an inquiry into more effective ways of combining public and private regulatory tools for improved socio-economic outcomes.

161

Regulation for whom? North-South tensions and their implications for the institutionalization of transnational private regulation in the global coffee and tea value chains
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Transnational private regulation to reduce social and environmental externalities in the form of certification and ecolabelling schemes has risen in prominence in several commodity sectors. Such tools have become particularly popular in buyer-driven value chains of cash crops such as coffee and tea where lead firms and end consumers show growing awareness of sustainability issues. Nonetheless, the institutionalization of private regulatory governance has been slower than expected. To explain this lack of institutionalization, past studies have looked to the contentious politicization of the governed sectors due to divergent interests and power imbalances among stakeholders. However, the existing literature mainly focuses on the value chains supplying Northern markets, overlooking a crucial explanatory variable: (sustainable) consumption in the Global South. We argue that bringing a geopolitical perspective to the study of transnational private regulation is crucial to understand the limited capacity of private regulation to transform global value chains, especially in an era of rising consumption in the Global South where the power of Northern actors is increasingly constrained. The paper draws on data from original documents and fieldwork to comparatively assess the institutionalization of private sustainability regulation in the global coffee and tea sectors from a normative, organizational, and practice-oriented perspective. We find that the power of Northern multinationals in the coffee market has facilitated the diffusion of sustainability norms along the chain, whereas the dominance of emerging markets in the tea sector has reduced the incentives and capacity of Northern stakeholders to globally promote private regulation. We also show evidence of a growing contention over the types of regulations between Northern and Southern stakeholders within both value chains as Southern markets expand. By emphasizing the North-South tension, the study provides a new conceptual lens to understand challenges for transnational private regulation.

179

Governing transboundary climate risk in agriculture supply chains – Insights from the coffee sector

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Interconnections between people, ecosystems and economies in a globalised world change the scope and nature of the adaptation challenge and generate climate risks that are in many cases transboundary. One area where climate impacts will be felt both domestically and across borders are agricultural supply chains, where climate change can disrupt local economies with impacts on vulnerable people’s livelihood, prices of goods, and the quality and availability of goods and services on international markets. This paper identifies and analyses the different modalities that exist for governing transboundary risk, focusing specifically on coffee supply chains. Coffee is one of the most traded products with immensely globalised supply chains. However, coffee is highly vulnerable to climate change impacts and countries have a growing need to increase the adaptive capacity of smallholder coffee farmers. At the same time, the coffee sector is dire need of reducing climate risk in the supply chain. Focusing on Germany, the largest importer of coffee in Europe as well as a key international development actor, and Brazil, the largest coffee producing country and exporter to Germany, the paper identifies key actors in the coffee supply chain and explores how state and non-state actors interact along three governance pathways: international relations, international development and transnational governance. The paper explores actors’ motivations, awareness of climate risk and broader institutional arrangements to understand how resources are governed across...
borders and the ways in which legitimacy and sovereignty intersect. It assesses the key barriers and enablers to effectiveness, compares substantive differences across different governance pathways and identifies opportunities for increased adaptive capacity in the supply chain.

Panel ID 65
Economic Globalization and Governance

Research on Cooperative Governance of Marine Multi-agent Based on Coupling Relationship of Ecological Quality and Industrial Agglomeration
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As a direct manifestation of marine economic activities, the production activities of the marine industry are directly related to the marine ecosystem. Therefore, studying the relationship between the two is conducive to promoting the coordinated development of the two. Based on this, the interaction path and coupling mechanism of marine ecological quality and marine industry agglomeration are explained in detail. The coupling analysis model is introduced to construct the coupling index system of marine ecological quality and marine industry agglomeration, and the marine ecological quality of Jiaozhou Bay is constructed. Taking the marine industry cluster in Qingdao as an example, the empirical analysis of the relationship between the two systems is carried out, and the comprehensive evaluation value analysis and coupling analysis are carried out on the evaluation results. Based on the above analysis results, considering the diverse characteristics of participants in marine economic activities, the paper analyzes and proposes suggestions for promoting the coordinated and sustainable development of the two systems.

240
NAFTA in retrospective: Predictions and retrospections about the environmental impact of the North American Free Trade Agreement (TLC) along the US-Mexican border
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25 years after the North American Free Trade Agreement (NAFTA) came into force what impact has it had on the environment, especially along the border between Mexico and the US? What lessons does NAFTA offer to contemporary debates about trade and Earth System Governance? In the early 1990s, scholars and activists argued that NAFTA would have mostly negative impacts on the US-Mexico border, creating water scarcity and increasing air, land and water pollution; degrading ecosystems and causing health problems. The debate over NAFTA was part of the larger discussion on the environmental impacts of trade and globalization and was linked to concerns about the overall impacts of neoliberal policies, especially in Mexico and to the need for new governance arrangements for the environment within trade agreements. In response to these concerns, several governance institutions were created to monitor the environment (the Commission on Environmental Cooperation) and to certify and fund improvements to environmental infrastructure along the US-Mexico border (the Border Environment Cooperation Commission and North American Development Bank). Today, NAFTA faces replacement with a new trade deal (the USMCA), this time with little discussion of border environmental issues. In our study, we analyze trends in environmental datasets and institutional reports for the US-Mexico border over the past 25 years, review scholarly literature, and conduct interviews and surveys with experts (researchers, activists, government personnel, and other border institutional actors) to understand the varied impacts.
of NAFTA on the border environment at 25 years. We find both positive and negative impacts on the environment. For example, the anticipated growth of the maquila industry on the Mexican side of the border was less than anticipated as maquilas moved deeper into Mexico where wages are lower, and because the assembly and electronic industries shifted to China. The impact of the NAFTA environmental governance institutions is mostly detectable through projects to improve water and waste management infrastructure along the border. Efforts to increase protection of ecosystems have been made, but are confounded by the expansion of a hard border between the US and Mexico and by the setting aside of environmental regulation in the US to allow for increased security and immigration enforcement. Our analysis is complicated by challenges of attribution, lack of data and baselines, and memory. The lack of baseline and time series data for most environmental issues along the US-Mexico border makes it very difficult to track the environmental impacts of trade.

344

Foreign Direct Investments vs. Payment for Ecosystem Service Mechanisms: Why transformations in Earth System Governance are needed to conserve tropical forests?
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Tropical forests are huge carbon sinks, acting like lungs of our planet, and ensuring modulation of regional climate. They also contain the largest amount of land-based biodiversity and nutrient rich soils (per areal unit). Yet, according to the recent growth rate of tropical deforestation, more than half of the non-conserved tropical forests are likely to be replaced by urban and agricultural land-cover by the end of the 21st century. As opposed to conventional thinking that local livelihoods and consumer demands in more than 45 tropical countries lead to deforestation, there is growing scientific evidence and consensus that foreign direct investment (FDI) driven large scale agricultural projects (e.g. soybean & palm oil plantations and cattle ranches), mega-development infrastructure projects (e.g. roads & hydropower dams) and massive mining projects (extraction of oil, gas, gold and other metals) are the leading drivers of deforestation that account for more than two-thirds of the global tropical deforestation problem in recent decades. Despite this growing realization, the leading international agencies, such as UNFCCC (www.unfccc.int) and UNEP (www.unep.org), are promoting so-called payment for ecosystem service (PES) approaches that will only address small fraction of the deforestation problem by stimulating payments from rich industrialized countries to tropical developing countries. The UNFCCC is concerned about 24-30% of global carbon emissions that are added to the atmosphere annually due to tropical deforestation. Negotiations in the UNFCCC-sponsored Paris Agreement have institutionalized REDD+ (www.unredd.org), a PES mechanism, which promises to transfer billions of dollars in annual payments in response to the “performance-based” commitments by tropical countries that demonstrate decreased deforestation compared to historical baselines. While these incentive-based PES approaches could both conserve forests and improve livelihoods of small to medium scale farmers and indigenous populations where land-tenure rights are clearly demarcated, this study hypothesizes that such PES approaches are not transformative enough to reverse the fundamental drivers of FDI-driven deforestation problem. In this context, this paper compares the flow of past, present and expected FDI vs. PES in 45 tropical countries. The FDI and PES data analysis reveals that without structural transformation in the economic globalization model, which promotes FDI as driver of economic development in the global south, PES mechanisms will only lead to intra- and international carbon
leakage and exacerbate existing socio-environ-
mental inequities.

Regionalism and natural resource governance: findings from the pulp mill conflict between Argentina and Uruguay
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This paper examines the role of regions in the governance of natural resources and argues that regional institutions could potentially play an important role in promoting sustainability and environmental justice, not least because countries within a region may share similar socio-environmental concerns and/or hold a similar position in the global economy. The paper is based on an analysis of the pulp mill conflict that escalated between Argentina and Uruguay, seemingly out of nowhere, in the 2000s. Disagreements over the construction of a pulp mill by a European company on the shared Uruguay River escalated to a full-blown international conflict that cooled down relations between the two previously friendly neighboring countries while a road block maintained by a Citizen Assembly closed off the main road connection between the two capital cities for several years. The conflict continued for the most part of the decade and was only resolved through a ruling of the International Court of Justice (ICJ) in The Hague far away from the region and without involvement of any of the region’s existing institutions. The case clearly highlights the tensions, between and within South American countries as well as globally, stemming from the neo-extractivist development model promoted by governments across South America during the 2000s when commodity prices were high and entrenched further with the changes of governments in many countries in recent years. In some respects the pulp mill conflict is puzzling because it took place at a time when most governments in the region shared a commitment to regional cooperation and there were some increases in regional cohesion at other levels. Yet, this did not extend to natural resource governance. On the contrary, the paper demonstrates that the approach to the governance of shared and transboundary natural resources adopted by governments which sidelines socio-environmental concerns in fact constrains regional cohesion. Regional institutions could therefore potentially play an important role in promoting sustainability and environmental justice, but outside Europe the regional level has received relatively little attention by scholars while often being difficult to access for civil society.

International Influences on Forest Resources and Social and Environmental Transformation on the Yucatán Peninsula
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The Yucatán peninsula is a focal point of socio-ecological and institutional changes like in property land rights that have led to serious environmental degradation. This leads to the emigration of the local Maya population, which for decades lived on forest resources and agricultural production. Institutional changes have led to conflicts in forest use and property rights within the population as well as with government authorities and undermine afforestation efforts. These conditions affect the livelihoods of local people, forcing them to adjust and leading them to migrate for a better income mostly to the city of Cancún and the touristic coast. In addition, unequal political measures in development between the wealthy Caribbean tourist coast and its rural hinterland hinder the improvement of livelihoods inland, discouraging people from investing in their location of origin. A stable population and long-term economic investment in agroforestry institutions could be the basis for a more resilient landscape and promote biodiversity. To understand these processes, the contribution focuses on environmental and institutional
transformations of exploitation, social and political marginalization, and specific adaptation strategies like circular labour migration of the population in northeastern Yucatán. The dominant international influences will be shown on the example of an formerly last continuous forest area which was used for forest extraction since the 20th century. A colony was established and a successful timber company promoted with the main objective to produce wood products for the international market. This type of dealing with forests is anchored in national and international ownership and power structures and thereby legitimized as it contributes to the national benefit. The institutional history has made the population and the landscape more vulnerable to climate change, and has made local collective action for reforestation more difficult. Studies on the socio-environmental impact of economic globalization that take into account historical and institutional change are important in order to understand what decisions were made, by whom, and with what consequences. They must be considered not only as comparative studies, but also as sources of information for future political and economic decisions, for example, in reducing communities’ vulnerability to environmental degradation, and to improve sustainability and environmental justice.

Panel ID 87

Global Commodity and Food System (ii): socio-environmental impact of agriculture

113

Exploring new public environmental policy approaches for governing the Brazil-Europe soy telecoupling

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Literature addressing the “environmental state” or the role of public policy for environmental protection has focused on processes within the state’s jurisdiction. In contrast, the role of national and international public policies for governing negative externalities abroad remains under-researched. Based on empirical research into the governance approaches of the main European soy importing countries and the European Union, this paper discusses current initiatives’ advances and shortcomings for regulating the Brazil-Europe soy telecoupling. Previous literature has argued that the role of the states and the European Union for regulating the global soy production network has been weak. Most governance initiatives in this sector have been established by corporate actors or multi-stakeholder roundtables, without a substantial participation of state actors, pointing to the existence of a “corporate environmental food regime” (Friedmann). While this general trend has persisted, the limitations of private sustainability initiatives have increasingly come to the forefront and new initiatives wherein the commodity importing European states play an important role have emerged. For instance, in France the Law of the Corporate Duty to Vigilance was adopted in 2017 and in Switzerland the Swiss Responsible Business Initiative is expected to be implemented soon. Likewise, new public-private partnerships in the Netherlands aim to improve the social and ecological sustainability of its soy supply chain. In this paper, we will scrutinize and compare the emerging governance initiatives in the following four European states: France, Germany, Switzerland and the Netherlands. We will discuss our findings in the broader context of the European multi-level governance system. With this regard, this paper also sheds light on the role the EU plays or could play for shaping the sustainability of its soy supply chain, for instance when negotiating trade agreements (e.g. the EU-Mercosur agreement), by fostering learning processes about good practice examples from its member states or by orchestrating certification schemes for soy products. Eventually, we discuss the broader implications of our findings about new public environmental policy approaches to
address negative impacts caused or exacerbated in distant places, thereby contributing to the emerging volume of literature about the governance of telecouplings and inter-regional linkages.

Expanding commodity complexes and socio-environmental impacts in the Amazon: the Tapajós case
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The Amazon contains the largest tropical forest and river basin on the planet, and is extremely rich in terms of biodiversity. What is more, Amazonian Indigenous peoples and traditional communities are very diverse in and of themselves, and their production modes and ways of living are essential to conserving the forest ecosystems and ensuring the region’s biodiversity. Many studies have discussed the impacts of large-scale infrastructure projects and commodity production such as soy and minerals in the Amazon. However, few have focused on the socio-environmental impacts and politics through the conceptual lens of commodity complexes, which we define, in aggregate, as the activities related to the production, input provision, processing, financing, and export of primary commodities, which necessarily includes energy and transportation infrastructure development. Accordingly, this study aims to identify and analyze the socio-environmental impacts and politics of commodity complexes in the Brazilian Amazonian region of Tapajós, state of Pará, which has become a transportation hub for export commodities and an area for development projects like ports, hydro ways and dams. Importantly, this region contains a mosaic of protected areas, land reform settlements, and Indigenous lands, making it crucial not only for biodiversity conservation, but also for the survival of Indigenous peoples and traditional communities. Thus, socio-environmental problems in this region are connected to broader dynamics of expansion of transnational capital towards frontier zones for commodity extraction. Considering that governance arrangements surrounding commodity complexes reflect and reify configurations of power between civil society actors, the state, and investors/developers, we identify the dynamics of soy and mineral production and export, and examine how these relate to infrastructure development in Tapajós; who are the main actors, and the power relations among them, as well as the governance arrangements that foster these dynamics. We then map and analyze the associated socio-environmental impacts on specific localities within the region, paying particular attention to the peoples and lands impacted, and the power relations and governance arrangements that are in place to protect the forest, rivers, and socio-biodiversity. Based on literature review, document analysis, and first stages of fieldwork, we set a context in which there are competing and conflicting visions for the Tapajós – as a micro-cosmos of the whole Amazon – reflecting different ideas of development, autonomy, livelihoods and well-being. Understanding this context will allow us to analyze how different governance arrangements foster or hinder the survival of peoples and the forest.

The Organic Desert: Sustainability and Small Farm Agriculture in Baja California Sur
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Over the last few decades, the oasis communities of Baja California Sur have been the scene of a most unlikely boom in organic agriculture. In this harsh, dramatic landscape, rainfed aquifers support surprisingly rich soils and abundant yields, with microclimates that limit vulnerabilities to many of the pests and plant diseases that associate with high application of agrochemicals. In response to steadily increasing North American demand for organic produce, hundreds of
small-farm families have organized to transform their small ranchos and arroyos into high-yield organically certified parcels, specializing in lucrative counter-seasonal export crops. Haute cuisine restaurants and resorts now feature seasonal, local, organic produce. Proponents boast that Baja’s organic boom creates jobs and opportunities in poor, rural settings, slowing and even reversing the rural exodus. Critics charge that the export boom has betrayed key principles of sustainability in the realms of social equity, food sovereignty, and ecological integrity. This paper assesses the promise and peril of Southern Baja's organic boom, in the context of hemispheric economic integration and the global food system.

Panel ID 88

Governing Energy Transitions

22

Increasing Earth System Governance through the Augmentation of Nationally Determined Contributions (NDCs) and Sustainable Development Goal 7: Policy Considerations for South America.

Dumisani Chirambo

Seeds of Opportunity, Blantyre, Malawi

Despite the existence of many climate change frameworks such as Nationally Determined Contributions (NDCs) and the United Nations Framework Convention on Climate Change (UNFCCC), if all countries fully implemented their climate change pledges global temperatures would increase by an estimated 2.7°C by the end of this century which is inconsistent with the 2°C and 1.5°C goals of the Paris Agreement (Röser et al., 2016; Jiang and Hanaoka, 2017). Moreover, there are indications that developing countries will intensify their efforts to increase electrification rates to promote industrialisation, and this might exacerbate air pollution and climate change since the energy sector is currently a major emitter of greenhouse gases (GHGs) since electricity and heat emissions amount to 31% of global GHG emissions and energy production of all types account for 72% of all emissions. Arguably, the world is now at risk of being caught in a cycle of high GHG emissions and low and uneven growth and, with it, of failing to reach the Sustainable Development Goals (SDGs) (Bak et al., 2017). On the other hand, Global South Emerging Countries such as Brazil and Mexico have drastically improved their electrification rates in recent times and increased their capabilities to provide financial and technical assistance to other developing countries through South-South Climate Finance (SSCF) modalities (Ha et al., 2016; Chirambo, 2016; Abramskiehn et al., 2017; FRB, 2015). It may therefore be argued that enhancing South-South Climate Finance modalities for climate change mitigation may not only augment more investments in the renewable energy sectors of the Global South to facilitate a low carbon growth trajectory, but might also reduce inequality, exclusion and injustice in the region. Through an inductive analysis based on research articles, case studies, policy briefs, and academic literature reviews, this paper sought to determine the innovations and policies that can enable SSCF modalities to foster enhanced renewable energy deployment and Earth System Governance in the Global South. The paper shows that low carbon trajectories in the Global South will be influenced more by the domestic strategies developing countries will implement to crowd-in and attract private climate finance flows rather than the overall availability of climate finance internationally. It was concluded that local governance systems in Global South countries greatly influence Earth System Governance as they have more innovation capabilities than central governments to develop policies that can harmonise the implementation of the SDGs and NDCs.

41

Governing the Global Displacement Effects of Renewable Energy

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Renewable energy is the best means of bringing global emissions within the 1.5 degrees limit for sustainable life on Earth. While this is an imperative technical response to climate change, the political economy of renewable technology needs further investigation. Specifically, the market for metals, rare earth minerals, and other materials used to produce renewable energy remains poorly governed, and poorly understood. This paper argues that growing demand for global renewable technologies has led to the displacement of functioning ecosystems and social cohesion, creating new governance challenges at the global level. It does so in three ways. It first identifies the rapid increase in global demand for renewable energy before outlining the concept of governing global renewable displacement, which examines the environmental, social, and economic costs of extracting, producing, and utilising them. Second, the article focuses on the dramatic increase in wind, solar photovoltaics, and energy storage (primarily in the form of lithium-ion batteries), detailing the elements required to produce, use, and discard or recycle them. Finally, the paper explores the governance arrangements and accountability mechanisms established by state, private, and non-state actors of these three renewable technologies, revealing an inability to address the global displacement effects of renewable technology. The paper argues that transcending the technocratic paradigm and scholarship favouring the shift to renewables will be essential for understanding and ideally mitigating the displacement of ecosystems and societies around the globe.

The role of quality standards and IPR policy in the governance of sustainable energy transitions: The case of off-grid solar energy access in Kenya
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This paper looks at the governance of sustainable energy transitions in Kenya in terms of
drivers and barriers in the market-based dissemination of off-grid solar systems from a case study perspective. The governance of this dissemination process is understood in terms of political valuations evolving on two levels. First, risk and opportunity along pro-poor global production networks, and secondly in terms of constraints and drivers implicitly and explicitly identified by actors in policies and policy implementation tools. I argue that the internationalized framework steering energy access in times of the Anthropocene is based on three themes: energy security, energy poverty and climate change and is related to global goal attainment as universal energy access by 2030 (SDG7). Here, energy access is part of an emerging logic of production and regulation for the global poor that leads to shifts in the direction of global production networks organized by public and private stakeholders such as the off-grid solar sector. Political valuation plays a central role in understanding such shifts that impact technology governance in the Global South and are framed as quality standards and Intellectual Property Rights. Public actors take on the role of techno-political promotors and preventers of emergent niches under conditions of often limited state capacities, where regulative decisions and non-decisions have intended effects and unintended side-effects. I will focus on the role of political valuations of technology configurations in public-private decision-making processes to understand socio-economic and socio-ecological implications of the governance of pro-poor energy access. In a first step, I will describe the energy access governance framework in Kenya focusing on off-grid solar energy access. In a second step, I will compare risks and opportunities in the context of globalized production networks directed at Kenya by investigating political valuations on off-grid solar technology in the two governance contexts. I will conclude with a final step where I will analyse the emergence of narratives and discourse coalitions around the governance off-grid solar energy access in the context of Kenya. This study is based on expert interviews conducted in China and Kenya as well as relevant policy documents. The analysis is carried out with NVivo 12.

330
Goverance in sustainable energy transitions: the case of Mexico’s recent energy reform
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Mexico started the liberalisation of its energy sector through the Energy Reform of 2013. In the electricity sector, the Reform incorporated a sustainability approach by introducing clean energy obligations in a newly created electricity market. The highly controversial Energy Transition Law (ETL), approved in 2015, particularly seeks to regulate the sustainable use of energy in the electricity industry. Although the ETL seems to set an important precedent for Mexico’s transition to sustainable energy, the law should be analysed in the wider context of a Reform that aims at making the fossil fuels sector more efficient. By focusing on the ETL, this presentation offers an analysis of the mechanisms used by political, economic, and civil-society actors to negotiate and contest the electricity reform at the national level. The research highlights the need to include analytical tools that allow the examination of a broader range of relations and political processes that affect energy policies. The study is situated within the Socio-environmental impacts of economic globalization in the developing world stream as the Mexican case shows the deep tensions between the need to adopt new policies that respond to electricity and sustainability challenges and the prevailing political-economic structures, in the backdrop of shifting governance towards sustainability.
Energy Transitions Transformations in sub-Saharan Africa: Conflict in priorities and accountability
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Energy transitions in African countries are gaining increased attention. These transitions are conflict-laden as they involve multiple actors, multiple regulatory structures and reforms, and multiple potential pathways. This literature builds on the technological transitions literature and emphasizes a political economy approach, focusing on the interrelationship between capital and actors with different degrees of power and authority. One dominant question in this literature asks how these transitions can be ‘just’? What are the conditions that will foster and impede ‘energy justice’ in African countries? This paper examines this question specifically in relation to the complex transition taking place in one East African country, Uganda. Uganda is a fascinating, and perhaps critical case, in the study of energy transitions: it has been undertaking energy sector reform for almost two decades. Yet, today, it still has one of the lowest levels of access to electricity in sub-Saharan Africa. What is striking about Uganda is that it originally followed or was required to follow the 'standard prescription' for energy sector reform promoted by the World Bank. But after this model failed to produce the outcome it desired, it turned away from the World Bank, particularly for funding new large infrastructure projects, especially new large hydroelectric dams. One of the world's Rising Powers, China, filled this financial void, offering Uganda the opportunity to pursue a policy path it better controlled. Yet the outcome of China's involvement is to pit the World Bank and China in conflict over ecological concerns with ongoing dam building efforts. This paper, based on over 15 years of research on the country, argues that before it is possible to understand the conditions leading to 'just energy transitions', it is first necessary to theorize the relationship between energy transitions and political change in African countries. Further, owing to the multitude of actors engaged in these transitions, more attention to the conflict over accountability mechanisms in energy governance are required. Understanding the potential for just energy transitions in African countries is contingent on understanding the social and political transformations that are taking place in many African countries, particularly transformations in state-society, state-donor, and donor-donor relations which produce conflicts and opportunities for cooperation.

Panel ID 89
Land use sustainability and conflict
319
Sustainability governance between competing claims on land: insights from Myanmar
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Competing claims on land are at the core of many sustainability challenges in countries of the global South. Different actors from local to international level compete for access to and decision-making power on the use of land. Their distinct claims on land can be understood as claims for prioritisation of different SDGs (e.g. land for economic growth through agricultural monocultures such as rubber and oil palm (SDG 8), land as a habitat for flora and fauna (SDG 15), or land as a place for subsistence agriculture (SDG 1, 2). Hence, from a governance perspective focusing on advancement towards sustainability, it means first of all, to tackle with these multiple claims on land. Against this background, our transdisciplinary research investigates the governance arrangements and actor constellations involved in recent land use regime shifts in Southern Myanmar, as well as the consequences...
for human well-being and ecosystem services. In particular, we focus on the actors’ agency and their power relationships, as well as on identification of transformative strategies for more sustainable development. Data collection is based on a mixed-methods approach and involves interviews, surveys, focus groups, participatory mapping and document review. Ostrom’s SES framework is used as an analytical lens. Results show that land use gradually changed from forest and shifting cultivation based land use regimes for subsistence use in the 1990th, to fiercely contested land systems due to diverging interests manifested through commercial, conservation, and political activities of local, but also regional, national and international actors (farmers, businessmen, investors, governments, ethnic armed groups, CSOs and NGOs). While local villagers actively engage in these activities, decisions on regional development are increasingly taken by powerful actors at places and scales beyond the local systems (e.g. related to oil and gas production and pipelines crossing the region, a planned Special Economic Zone (SEZ), and large scale land concessions granted by the government). However, implications for people living in the area are multifaceted. On the one hand, they stress that their wellbeing considerably improved in many aspects such as health, and food security; on the other hand, they deplore lost access to land, water and forest resources. In several cases, initial challenges could be turned into more positive outcomes through mediation and brokering activities of boundary actors. In conclusion, this analysis will reveal critical governance challenges and sustainability pathways, as land disputes unfold between commercial interests, nature conservation and human well-being.

338

Socio-ecological impacts generated by the magic towns (pueblos mágicos) program in Mexico: illustrations of two divergent cases.
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The Mexican Government implemented the Pueblos Mágicos (Magic Towns) Program in 2001 as a means for promoting economic development of attractive towns through tourism activities. However, this program has produced changes in the social-ecological dynamics of the receiving towns. A growing interest of housing developers to urbanize such towns has created important pressure for land use change in peri-urban areas, and the consequent loss of valuable ecosystem services. The new dynamics of urbanizations brought about by the program, has also created intensive gentrification processes that often create tensions between the original dwellers and the new residents. Nevertheless, the negative social-ecological consequences of the program have also triggered social movements of local actors in defense of their territory. This study presents two case studies: Tepoztlán and Valle de Bravo, where remote sensing techniques including the use of the Normalized Difference Vegetation Index (NDVI) were applied in both the dry and rainy seasons to identify areas of potential urban growth and the amount and quality of the green infrastructure at risk of facing land use change. Subsequently, through interviews with the municipal authorities and fieldwork the main socio-ecological dynamics were identified to characterize the consequences and resistance traits that such communities are facing. In the two cases, patterns of connectivity and social diversity are key to generate local identities that provide the means for resisting the effects of the negative social-ecological consequences produced by the Magic Town Program.
From deforestation to Trees on Farms (TonFs): Identifying incentives and actor coalitions for sustainable land-use in the Peruvian Amazon

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An advancing agricultural frontier is one of the key causes for tropical deforestation and presents a major obstacle towards the global target for sustainable agriculture (CBD-Aichi target 3). The Padre Abad province in Ucayalli is currently the most critical hotspot for deforestation and land-use change in the Peruvian Amazon. In search of livelihoods, Andean migrants enter the Amazon basin start transforming primary forests into pastures or plantations of palm oil, cacao, café or coca. To date, regional and local governments as well as projects by NGOs and the international cooperation engage in individual activities with limited scopes and duration. The NET-MAP is a tool for analysing social networks of local actors (Schiffler et al. 2010, Reed 2009), which we applied for analysing the governance of Trees on Farms for biodiversity (TonF) on the national level in Peru, in the region of Ucayalli, and the province of Padre Abad. Focus group discussions brought together stakeholders from governmental agencies, NGOs, business and farmer organisations as well as academic actors to analyse the influence of actors on trees on farms. In a four step analytical process, we first identified and categorised relevant actor groups. Secondly, linkages regarding the exchange of information, financial flows and regulatory influence were mapped. Thirdly, participants rank the influence of actors in an ordinal scale. Finally, results and observations were discussed. As key result, the regulating agencies in agriculture and forestry play a key role as land-titling and formal registration of trees are major obstacles to the commercialisation of timber. Furthermore, various capacity building and extension services provide a strong but yet disregarded potential for transforming dominant land-use practice. By contrast, agencies from the environmental sector were hardly visible in local implementation processes. Initiatives from anti-drug and local development initiatives present a strong finance potential, which however is often lost by missing continuity and integration in the broader socio-ecological context. While coca-producers and its supporting market resulted in both net-map processes among the most influential actors, their strong economic potential and logistic advantages were never related to other ongoing commercial activities. While producing both quantitative and qualitative information, our results highlight the potential of net-map to connect different actor groups in structured learning processes. Net-Map presents a methodology that is both methodologically solid and flexible to be applied as analytical tool in transdisciplinary development projects.

Integrated land use planning for community-based forest management: study case of in the Mixteca region Oaxaca, Mexico

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Sound forest management has been proved to trigger social and economic development of those who hold the rights over them. In Mexico, the communal ownership of a great portion of forests with potential for commercial use, prevails. In several forest’s territories, the management tends to be participatory, because the owners have the capacity to decide collectively...
to make use of, conserve and restore this common goal. Mexico comprises the largest proportion worldwide of forest under communal ownership. Governance and therefore capacity to collectively trigger sound forest management is uneven. A holistic understanding of the space is therefore crucial to facilitate successful communal forest management. We argue that the landscape approach may serve as a trigging baseline to comprehensively understand and turn forest management into sound participatory holistic territory management. Hence, we aimed at comparing traditional individual government incentives with territory-based incentives focus on strengthening local governance collective decisions. We further apply this argument in the Mixteca region, Oaxaca (±9,000 km²), where 97 forestry communities exist and were considered as a landscape mosaic. These are integrated as well in five zones with different conservation needs and forestry usages. From this recognition, it is proposed that the public investment for the forestry sector in the Mixteca is focused on zones of the landscape, instead of still individualizing the incentives. With the synchrony of experiences of Community Forest Management, and conservation programs in contiguous communities, not only can forest coverage be promoted, but also the functional integrity of basins, and in turn generate opportunities for regional development.

Panel ID 90
Innovation and equity in food and climate governance
162
Seeds and Sunflowers: Opportunities for Gender Equality in the Pursuit of Food Security
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Various governance efforts to address the challenges of food security under the threats posed by climate change have sought to engage global private sector actors in the design and execution of new initiatives and policies, particularly across sub-Saharan Africa. However, the execution of these global public-private partnerships has had uneven impacts in practice. Even though billions of dollars have been invested in expanded agricultural production, the risks and benefits have been unevenly distributed, often undermining the livelihoods of rural populations. Importantly, the failure to think about these rural populations, particularly rural women, in goal setting and project design has led to the neglect of key issues, such as land access and control, agricultural inputs, and agricultural labour markets. Moreover, the focus on large-scale agricultural production appears to be coming at the expense of conserving key sites of biodiversity raising questions about the viability of rural livelihoods in the longer term. This paper reviews one such case of public-private partnerships for food security – the G8 New Alliance in Tanzania – and examines not just the allocation of risks and benefits, but also provides an assessment of the opportunities for change in this context. Based on field research conducted in 2018, this paper reveals the ways in which commercial agricultural activities have overlooked women’s role in agriculture and have created new risks. New commercial interest in land, shifts to imported seeds and agrochemicals, and new modes of farming risk leaving women behind. At the same time, there are also new transnational actors and domestic opportunities to facilitate women’s participation in agriculture and address these risks. Several organizations are findings new ways to engage with both the government and private actors on gender issues, and an emerging organic movement is dominated by women. Yet within a precarious political and economic context, it remains unclear whether these opportunities will materialize into real and lasting benefits.
Global economic growth in the past three to four decades has often come at the expense of the environment. The current challenge of the Nigerian economy is therefore not limited to tackling poverty, inequality and other economic related problems, but also the need for strategies that would unlock Nigeria’s potentials for green growth. The imperative for green growth is further increased by the projected impacts of climate change especially on a highly vulnerable country like Nigeria. It is in view of this that the country’s economy and environment can no longer be considered in isolation. Nigeria presently lacks a clearly defined green growth agenda or comprehensive policy or framework for moving towards a green economy. Current indicators of greening are generally not yet precisely defined or standardized to enable credible measurement and data on green growth accounting in the country is unavailable. However, several initiatives aimed at promoting sustainable development in the country directly or inadvertently contribute to the greening of the economy. Evidence on status and progress of these initiatives revealed steady advancement in greening the Nigerian economy from different fronts. This study, conducted through empirical research involving use of primary and secondary data as well as projects assessments, documents some greening stories and initiatives in parts of the country. It was revealed that many of these initiatives may not have been taken directly within the ambit of ‘greening’ by the initiators but aimed at ameliorating some of the existing environmental challenges in their domains. These initiatives range from those that promote green in the transport sector, waste management sector, agriculture, rural development (poverty reduction and food security), renewable energy and ecotourism. For example, in Lagos, institutions, policies and programmes for greening focus on climate change, urban regeneration (inclusive of beautification and landscaping), natural resources conservation, environmental protection, and waste-to-wealth. The major lesson from these stories is that the initiatives have had significant impacts on poverty reduction by providing income and employments for a large number of people and also help solve the targeted environmental problems and invariably contributes to climate change adaptation. More rigorous campaign and advocacy are needed to improve household attitudes towards greener behaviour.

Governments may play a key role in the transformation of earth governance systems towards sustainability by using a neglected instrument capable of driving large-scale transformation: public procurement (PP). PP is an underutilized policy instrument that has the potential to contribute to sustainable development goals through the purchasing power of the State. Sustainable public procurement (SPP) builds on the realization that “business as usual” is no longer an option and that our production and consumption patterns need to be realigned with social and environmental values. PP may drive sustainability in food system by leveraging the purchasing power of the State to restructure production and consumption patterns. Brazil offers a remarkable case in which SPP programs (under the Zero Hunger Strategy) were designed to address cross-sectorial goals in food and nutrition.
security, rural and agricultural development, and education. In this study, we investigated the changes that one of Brazil’s flagship SPP program—the National School Meal Program (PNAE for its Portuguese acronyms)—drove in farming systems among family farmers and discuss how this program restructured food system governance. This study shows how the creation of an institutional market aligned with nutrition and development goals may restructure food systems. PNAE is an exceptional PP program in that 30% of its spending budget need to be spent on purchases from family farmers and a price premium is offered for organic food products. By rechannelling a portion of spending budget exclusively for family farmers, PNAE creates an institutional market that offers a stable and reliable demand for diversified food products (e.g., vegetables, legumes, fruits, dairy products). We found that family farmers with relatively small landholdings were able to shift their production away from monocultures and volatile cash crops (e.g., soybean) to diversified farming systems for food production. This shift resulted in the reduction of commodity crops mostly for regional or international markets, to the production of food for local consumption. Because the program is de-centralized and procurement and consumption occur at the municipality level, short food circuits emerged, characterized by the flow of nutritious food products and the creation of alternative economic opportunities. We demonstrate that SPP may serve as a policy instrument to change the structure and governance of local food systems to foster a transformation towards sustainability.