



2017 Lund
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2017 Lund Conference on Earth System Governance

Allocation & Access in a Warming and Increasingly Unequal World

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The conference is part of the global series organized by the Earth System Governance Project. The first Earth System Governance conference was held in Amsterdam in December 2009, followed by Fort Collins (2011), Lund (2012), Tokyo (2013), Norwich (2014), Canberra (2015), and Nairobi (2016). The 2017 conference will take place in Lund, Sweden. The Lund Conference on Earth System Governance is hosted by Lund University and jointly organized by the Lund University Centre for Sustainability Studies (LUCSUS) and the Earth System Governance Project.

Conference Theme

The 2017 Lund Conference on Earth System Governance will address the overarching theme of 'Allocation and Access in a Warming and Increasingly Unequal World'. This theme acknowledges the multiple crises faced across the world and the uneven distribution of their impacts. A recent report from Oxfam suggests that the richest 1% of the world's population now has as much wealth as the rest of the other 99% combined. Similarly, climate change and the challenges of mitigation and adaptation are driving further inequalities across the world. In addition, climate change implies an unprecedented intergenerational dimension because of the long lags between emissions, on the one hand, and climate change impacts on the other. However, inequality is far more complex than simply wealth distribution and climate change impacts. Earth system governance must address the entire spectrum of environmental, social and political inequalities.

This leads to the fundamental questions of 'who gets what, when, where and how'. Different disciplines refer to this challenge differently: lawyers speak of equity, economists of distribution, resource analysts of access, political scientists of fairness, and sociologists of social justice. In earth system governance research, we refer to this as the analytical problems of 'allocation and access'. In this line of inquiry, we are particularly interested in outcomes, pathways and reallocation in governance. Given the clear impetus for a drastic change in earth system governance in the coming decades and the key challenges faced by many countries politically, socially and environmentally, matters of allocation and access will continue to be crucial questions in the coming decades.

Conference Streams

The conference theme 'Allocation and Access in a Warming and Increasingly Unequal World' will be addressed in five thematic streams (click on them to quick access abstracts):

[Environmental justice in earth system governance](#)

[Conceptual understandings and progress](#)

Science and activism

[Theory and methodology](#)

Earth system governance in turbulent times

[Other](#)

Conference Chair

Vasna Ramasar (Lund University Centre for Sustainability Studies)

Stream 1: Environmental justice in earth system governance

We understand that governance structures and decisions affect the allocation of, and access to, environmental benefits and burdens. Impacts of global environmental change are experienced differently at the local level and are neither borne nor distributed equally within groups in society. Environmental quality has become closely tied to human equality through environmental justice. Environmental injustices pose significant governance challenges at the international, national and local levels and ultimately lead to widespread inequalities in society and across generations. In this stream, we invite contributions that address the procedural and distributional aspects of earth system governance. How does earth system governance across scales affect allocation and access of environmental benefits and burdens? Who is accountable for environmental justice and at what levels? What constitutes a just distribution of collective goods in a democratic society?

Climate change and SDGs governance across scales and issue areas: SIDS and benefit and burden sharing

Reference 0011

Michelle Scobie

The University of the West Indies

The use of interconnections as a conceptual and methodological tool towards achieving the goals of the Paris Agreement and the SDGs Agenda fits well with SIDS development trajectories. SIDS are vulnerable to climate change impacts and need to manage multiple sustainable development and climate change adaptation and mitigation forums and efforts with very limited financial, administrative and technical resources. How can an "interconnections" approach help further climate justice through mitigation and adaptation efforts in the Global South? St. Lucia has tremendous and largely untapped potential for renewable energy (St. Lucia Renewable Energy Roadmap 2016) that can contribute to multiple climate justice fronts: energy security (SDG 7), food security (SDG 2), improved water management (SDG 6), economic growth (SDG8), sustainable industry (SDG 9), sustainable communities (SDG 11) and sustainable consumption (SDG12). This paper makes two novel contributions to climate justice-"interconnections" discourse. First it proposes a framework of what "interconnections and climate justice" in the context of SDGs means for small states, distinguishing between interconnections-action: efforts/forums and interconnections-content: policy/agendas- both complex and demanding for resource-limited SIDS. Second, it uses this framework in a case study as a lens to understand the nature of the challenges with involving private sector stakeholders (interconnections-action) in implementing renewable energy policy (interconnections-content) in the Global South Caribbean SIDS of St. Lucia. In examining the "interconnections-climate justice" trajectories for St. Lucia, the study found that existing narratives and governance architectures are stronger on "interconnections content" but have not yet succeeded in contributing to sustainable solutions because of a disconnect between global narratives and available local governance architectures for climate change and SDGs sustainable solutions (interconnections action).

A Sustainable and Resilient Caribbean - Benefit sharing, conservation and sustainable use of Marine Biological Diversity Beyond Areas of National Jurisdiction

Reference 0012

Michelle Scobie

The University of the West Indies

The problem of the governance of the global environmental commons is especially challenging in marine spaces or the high seas: areas beyond national jurisdiction (ABNJ) and has become a key focus in the SDGs, in particular through Goal 14: Conserve and sustainably use the oceans, seas and marine resources. Marine ABNJ are rich in resources, account for 40 percent of the planet's surface, 64 percent of oceans and 95 percent of the volume of oceans. Less than 0.5 percent of this space is regulated and protected making it vulnerable to overuse by those with the resources to do so. Developed states by far have many more resources to exploit the mineral and biological wealth of the ABNJ. Three countries already hold 70% of the patents on marine genetic sequences and between 2000 and 2010 10 countries held 70% of the landed value from fishing. How can SIDS benefit from a developing ABNJ legal and regulatory regime? This paper examines whether the distributive justice norms and existing legal and administrative arrangements in the global governance of the ABNJ (the United Nations Convention on the Law of the Sea, the International Seabed Authority and the UN Working Group for the new ABNJ regime, the Convention on Biodiversity, the Convention on Migratory Species, the International Maritime Organisation and a network of regional seas and fisheries organisations) can benefit SIDS and so fills a gap in the literature since little is written of ABNJ governance from SIDS perspectives. To do so it creates a SIDS- ABNJ framing of key governance debates: lack of legal clarity on resource use and activities in ABNJ, inadequate administrative and monitoring arrangements and the absence of mechanisms to develop and apply distributive justice principles to the ABNJ. The paper discovers the areas of governance and institutional framework building which SIDS should most immediately insist on if they are to continue to have agency in the process of crafting a new legal instrument for ABNJ under the UNCLOS: legal clarity, systems to increase flexibility in rule making for ABNJ in the face of new technologies and biological discoveries, science based decision making and market based approaches to monitoring and regulation that will not require new and additional resources of SIDS but rather better policy integration and optimization of resources among the agencies, states and private actors with a stake in the ABNJ.

Indigenous Peoples and REDD+ governance - pathways and challenges from a local level perspective: the case of Suruí Forest Carbon Project, southern Amazon region, Brazil

Reference 0018

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This paper aims to explore the pathways and challenges for local governance of a UN Framework Convention on Climate Change mechanism Reduction from Deforestation and Degradation (REDD+); the Suruí Forest Carbon Project.

It is the first REDD+ project to be developed on indigenous lands in southern Amazon region in Brazil; the first in the world to sell carbon credits under the voluntary market and first in the world to receive multiple certificates in the voluntary market i.e. Verified Carbon Standards - VCS and Climate, Community and Biodiversity Standards - CCBS.

The REDD+ has generated interest as a ground-breaking concept for saving tropical forests and counter degradation through long-term conservation financing for environmental services. However, the challenges for the REDD+ governance has been numerous and some critics even argued that it holds a colonial approach and that it leads to a corrupt development.

International community keeps calling for environmental justice and protection of the world's lungs. However, the management and financing of the protected areas in the Amazon region are left with relatively little or no resources. Sustainability and protection of the untouched native forest of the Brazilian Amazon region is intrinsically linked to the presence of the indigenous communities. In total Indigenous Territories account for 13% of Brazil's territory and the indigenous population account for close to 0.4% of Brazil's total population. The role of Indigenous Peoples' is of central importance for the maintenance of the standing forest. However, in Brazil the indigenous people live under tutelage from the National Indian Foundation (FUNAI), a government body that recently has suffered from several budget cuts. The protection of the rights of the Indigenous Peoples and their right to their lands is thus undergoing a severe threat in terms of resources allocation and legal protection as recognized by the Brazilian constitution from 1988. Additionally, illegal loggers and miners of diamonds has during the

recent years triggered in their capacity to invade and abuse the territorial rights of their indigenous reserve and thus, the outcome is severely undermining their voluntary market REDD+ project.

The contribution of this research will be its focus on increasing the knowledge of the local governance and the role of the various actors involved in a REDD+ project on an indigenous land in Brazilian Amazon. It requires bottom-up research and actor analysis in order to understand the complex pathways and challenges under which it is implemented, maintained and executed.

Urban revitalization and environmental injustice: The story of Santa Cruz, RJ

Reference 0020

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This paper is the result of a qualitative research carried out to identify the impacts suffered by the population that was transferred from the Port Area of Rio de Janeiro to the Santa Cruz neighborhood, due to the urban revitalization process in the Port Zone that occurred between 2009 and 2015. It was conducted by researchers from the Engineering, Cities and Sustainability research group of the Civil Engineering Post-Graduation Program of the Fluminense Federal University, Rio de Janeiro, Brazil. The methodology used was a bibliographical survey, technical visits and observation. The research has shown that Santa Cruz has been transformed into a commodity city, offered in the global market for allocation of major international developments and in the national market, to real estate capital and construction of popular housing. It fits into the so-called sacrificial zone. In such places, companies settle, benefit from lower operating costs in the form of lower wages, lower rental costs, and less attention from state and national public opinion. The region has the highest temperatures in Rio de Janeiro and also has an incidence of diseases such as dengue. Moreover, the fact that populations of such places have less access to formal education and have less relative power in the social structure of the state facilitates the performance of business groups and government in the flexibilization and non-compliance of environmental legislation. Although the Port Zone presented several problems, due to abandonment and non-integration with the urban dynamics, residents enjoyed a number of benefits such as proximity to the labor market, access to a series of urban services and equipment and a network of social relations that strengthened them. When they were transferred to Santa Cruz, distant about 60 km, they lose these benefits, experiencing a situation of environmental injustice. Environmental injustice is the mechanism by which unequal societies place the greatest burden of environmental damage on development on social groups of workers, low-income populations, discriminated racial groups, marginalized populations and the most vulnerable. New urbanization projects are being carried out in Brazil, so it is necessary that the theme be discussed throughout society, especially the deepening of environmental injustice.

Justice, Democracy, and Water Allocation: A Tale of Two Basins

Reference 0023

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With increasing demands upon river systems for extractive uses during a time when their surface flows are decreasing as the result of environmental change, water scarcity appears to be a permanent constraint that calls for renewed efforts at water conservation in the short run but also a rethinking and redesign of the policies and principles of water allocation as a vital part of a more robust remedy. This paper, which examines the Colorado River basin in the United States and the Murray-Darling River basin in Australia, compares two similarly over-allocated river systems that rely upon similar structures of riparian law and are grappling with similar tradeoffs in balancing various social and economic pressures while also aiming to protect environmental flows. After casting water allocation issues within these basins in terms of key normative commitments to equity and sustainability, along with democratic ideals within water governance and various constraints within water law and policy, the paper shall consider several key commonalities and differences between the two cases, focusing upon deliberation toward the development of a priority system among competing water uses of the kind necessary for transformation change in water law and policy, and from which policies and principles of “water justice” could emerge. In anticipating increased strain upon standard schemes of water rights and water needs in the future and of water allocation decisions becoming a key component of routine adaptation to climate change, this paper develops and applies equity principles to issues of water allocation under scarcity, and examines innovative approaches to water governance by which legal reform and stakeholder participation promises to identify and operationalize several key principles for more equitable and sustainable systems of water allocation.

The Place of Rights in Earth System Governance Democracy

Reference 0030

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Environmental rights are necessarily central to the achievement of both democracy and justice in earth system governance. What would it mean to conceptualize environmental relationships as bundles of rights, rather than as a good or goods as generally defined by liberalism?

Rights can be conceived of as regions in policy space where the democratic deficit has not resulted in elite processes going "off track." When there is congruence of elite and mass attitudes, the label "rights" serves as a shorthand description of conceptual understandings and consensual constraints on democratic action (Baber and Bartlett 2015). Thus the notion of rights constitutes the bounds of legitimate democratic discourse. The real world of democratic politics and governance since mid-twentieth century has been transformed by a rights revolution that has emerged in fits and starts, a revolution that has profound implications for both how democratic earth system governance ought to be conceptualized and its potential for realization. This revolution may be most extensively documented in a few countries, but its reach is global. Issues of enforcement notwithstanding, recognized rights have come to constitute a "global normative order." Some of these rights are manifestations of norms, constituted as law-like statements of principle that can be found in domestic law and numerous treaties as well as in long-standing patterns of customary international practice. Others are better understood as background norms or principles. They are widely (although not unanimously) accepted as "publicly available, critical standards" to which one may appeal in justifying or criticizing the actions and policy proposals of governments (Beitz, 2009, 209- 210).

The rights revolution has been characterized by enough fits and starts to give anyone pause. We assess five policy spaces in which environmental rights discourses have begun to emerge from the existing or foreseeable congruence of elite and popular environmental norms: access to information and decision-making processes; reconciling group and individual rights; ensuring access to food and water; providing shelter and security to all; and balancing the interests in private property and economic equity. In this paper we analyze how those emerging environmental rights can be reconciled with the social and cultural diversity of earth system governance in coming turbulent times.

Power Shifts: The Implications of Distributed Renewable Energy Transitions for Political Systems and Outcomes

Reference 0039

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Energy transformations are progressing rapidly. Community and co-operative decentralized renewable energy (DRE) producers are capturing a growing share of global energy markets (e.g. solar, wind, biomass). As their market shares rise, DRE producers have the potential to become increasingly effective political actors. The traditional political privilege enjoyed by incumbent energy industries can be challenged by DRE actors as they impact control over jobs, economic growth, and energy supplies and infrastructure. In many regions, political struggles between new and incumbent industries are increasing. However, the nature and extent of these political power shifts (e.g. changes in policies produced, access to policy makers, media influence) remains poorly understood. This talk examines if and how DRE transitions are shifting political power relations, and the consequences of those shifts for renewable energy and environmental governance outcomes. It discusses the rise and fall of a community feed-in-tariff program (COMFIT) in Nova Scotia, Canada using a novel approach grounded in sustainability transitions (i.e. Multi-Level Perspective), power theory (e.g. Lukes), and institutions (i.e. institutional logics). The study reveals the conditions leading to shifts in political power by analyzing political power relations over time; assessing the mechanisms by which political power shifts are occurring; and, identifying the consequences of DRE-related political power shifts for renewable energy outcomes. In the case examined, it also highlights the inertia of incumbent political power. Findings address systemic scholarly questions about political power in transformations, as well as questions highlighted by academics, the EU, and global economic bodies about the political, economic and social impacts of energy transformations.

This paper directly addresses the conference theme of “Allocation and Access in a Warming and Increasingly Unequal World”, the “Environmental Justice” stream, and the ESG crosscutting theme of “power”. Political power is continuously in flux but has traditionally been concentrated in the hands of incumbent industry actors. This has led to highly inequitable patterns of political influence with consequences for the distribution of rights and resources. As socioeconomic and climate pressures disrupt existing systems, political power structures are reorganizing. This presents opportunities, risks and

challenges that must be understood in order to design governance systems that meet the needs of both people and the planet. This paper helps build this understanding.

Means to an end or an end in itself? Empirical evidence on the relevance of equity in payments for ecosystem services

Reference 0042

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Ecosystem services governance, and payments for ecosystem services schemes (PES) in particular, influences rights and responsibilities of resource use and conservation, and is thus a highly normative undertaking. Furthermore, studies find that recognizing social equity considerations can have an instrumental value in shaping outcomes of PES schemes. We draw on insights of a systematic review of the environmental justice, ecological economics, and behavioural economics literature to highlight current knowledge gaps in empirical research on equity in ecosystem services governance. Amongst others, we find that to date empirical studies with regard to the social effectiveness of PES and the additional value of including equity considerations are still scarce.

We then provide insights on recent work that contributes towards filling the gap in empirical analysis on the role of equity in PES. We explore the relationship between equity and the effectiveness and efficiency of PES schemes building on empirical findings from a case study on Vietnam's Payments for Forest Ecosystem Services scheme (PFES) conducted in Dien Bien province. It focuses on the assessment of legislative considerations and local perceptions of equity in PFES. The paper analyses how contextual, procedural and distributive equity considerations are reflected in national PFES legislation and implementation, how equity outcomes are perceived locally, and whether local perceptions match legislative considerations. For this we reviewed national legislation and government reports, conducted expert interviews on the national and provincial level, as well as surveys, focus group discussions, and in-depth interviews on the local level. Our findings reveal that implementation on the ground contrasts with local interests. On the local level the preference for a distributive equity principle is very much influenced by the degree of transparency of the payment distribution process. The prevailing perceptions of equitable benefit distribution by local PFES participants correspond to a merit-based principle of compensation for the effort of forest protection.

Finally, to get insights on how the (mis)match between equity considerations in legislation and implementation, and stakeholders' perceptions at the local level have an effect on behavioural change, we

revisited the same villages in Dien Bien province to conduct behavioural economic experiments. This allows us to draw conclusions on how perceived (in)equity in PES implementation affects the outcomes of the scheme. We will present the fresh findings of this study and conclude the presentation with an outlook on how this interdisciplinary approach has revealed findings for a critical inquiry of equity in ES governance.

Orchestrating Climate Adaptation Actions - an inventory of, and proposal for strengthening non-state actors

Reference 0048

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Current efforts to 'orchestrate' non-state climate actions have been strongly biased towards 'high mitigation potential' initiatives. This narrow focus has resulted at significant imbalances in climate action across developing and developed countries. For instance, the large majority of recorded transnational climate actions are led by global North-based actors, and the benefits of transnational climate actions seems to accrue disproportionately in developed countries. However, transnational climate actions are especially urgent in developing countries, as they are the first to experience the detrimental impacts of climate change.

This paper will address the question which role adaptation plays in the current landscape of transnational actions. Moreover, it also addresses the question how adaptation action can be strengthened within the (transnational) global climate architecture.

This paper (1) inventorises to which extent of transnational climate actions across the most important dedicated platforms (for instance: Momentum for Change, the Non-State Actor Zone for Climate Action, the 2014 UN Climate Summit Commitments, the Lima-Paris Action Agenda Initiatives, and the Global Climate Action Agenda) address adaptation and issues beyond 'mere' mitigation; (2) discusses political and economic challenges to transnational climate adaptation actions; and (3) proposes institutional linkages throughout the climate regime complex (in particular but not exclusively within the UN system) to strengthen transnational climate actions, so that transnational actors deliver on both sustainable development, climate adaptation, mitigation.

To answer the main research questions, this paper will analyse data from existing databases of transnational climate actions. Moreover, challenges to climate adaptation actions as well as possible linkages will be identified through dialogues between experts and practitioners.

Reconciling power, relations, and scales: a quest for environmental democracy

Reference 0066

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This paper leverages findings from an empirical study of relationship democracy and environmentalism in the watershed conducted in the Prairie Provinces of Alberta, Saskatchewan, and Manitoba. Local watershed groups, their mandates, activities, membership, processes, and accomplishments were examined in relation to democratic practices and the facilitation of climate change adaptation. Through a thorough review of secondary sources and ninety interviews with participants in local watershed governance in the Prairie Provinces findings were made in relation to these groups' representation of their community members demographically, the concerns of their communities, and an analysis made of their areas of contestation and consensus, their procedures, funding and future. These answers illustrate the current nature of ecological democratic practises and the future potential such initiatives might have in relation to bottom up, democratic, ecological governance in the future.

Current processes of local watershed planning focus on activities such as developing source water protection planning and integrated land use planning utilizing mechanisms of community building, community forums, and consensus building through practices of deliberative debate. These practices are in and of themselves practices of the colonizer, excluding the voice of the marginalized, reproducing the structure of power and privilege from which they are created.

An institutional realism that can reconcile power imbalances, alternative processes and alternative ways of thinking and knowing must be embraced. These alternatives must allow 'truth claims' to be critically interrogated and deconstructed through the meaningful participation and contribution of marginalized and powerless voices, including the voice of the environment. The scale of the watershed is an important starting point, but regional, provincial, national and international scales must meet at the watershed.

Notions of 'consensus' based on political expediency, time frames, and agendas will need to be set aside as a process of critical ecology pedagogy is embraced enabling all people to embrace in relational learning, not just substantive critique of one, or another's position or claims. Through a process of engagement, ecological exploration and learning, current institutional structures can be turned upside down, correcting

power imbalances and breaking down cognitive walls of understanding and reconciling relations among diverse people. Engaging with and understanding the 'other' and understanding white and treaty privilege are methods of deconstructing the cognitive walls preventing the achievement of ecological democracy. The transformative learning necessary for solving the problems of the Anthropocene, the breakthrough that is needed, can only be achieved when people arrive at action for themselves.

Coalition Dynamics in the UNFCCC: Levelling the Playing Field for Small States?

Reference 0067

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The global negotiations under the United Nations Framework Convention on Climate Change (UNFCCC) have seen a large increase in the number of coalitions. While these coalitions originally were mostly based on geography or level of development such as the African Group or the LDCs, a plethora of new, mainly interest-based groups has emerged over the past years, such as the Coalition for Rainforest Nations or the Climate Vulnerable Forum.

Although the UNFCCC negotiations are based on consensus and the equality of Parties, they are far from a level-playing field. Negotiation theory suggests that coalition-building can be a valuable strategy particularly for small states with limited human and financial resources. Through cooperation with others, they can pool their resources and make their voice heard. This is how the Alliance of Small Island States became a surprisingly influential player in the climate negotiations. On the other hand, too many coalitions may disadvantage smaller states that lack the resources to participate in and coordinate with different groups. In this case, small states lose opportunities to have their voices sufficiently represented in the negotiations.

What does the emergence of new and overlapping coalitions then mean for procedural justice at the negotiations? What type of coalitions do we see, who participates in them, and how does this affect negotiation dynamics? Using UNFCCC documents and other secondary sources, we examine the evolution of coalitions in the global climate negotiations. Our analysis proceeds in three steps: We first map the coalitions in the climate negotiations since COP1 in 1995. In a second step, we develop a typology of coalitions based on their purpose and degree of formal organisation. We distinguish on the one hand between coalitions whose main purpose is external to the negotiations (such as the LDCs), and coalitions whose purpose is based on common interests (such as the Climate Vulnerable Forum). On the other hand, we also distinguish between formal and informal groups. Finally, we explore trends in coalition membership – for example, whether larger and more powerful countries (or smaller and less powerful

ones) tend to join more coalitions or specific coalition types –, and implications for states' meaningful access to the negotiations.

By offering new insights into the role of coalitions for procedural justice in environmental negotiations, we expect to contribute to thematic stream 1 on environmental justice and thematic stream 2 on conceptual understandings and progress on inequality and access in ESG.

Contributions of Social Learning to local public planning on adaptation to climate change in Brazil

Reference 0079

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The research aims to understand the potential contribution of the Social Learning approach for the elaboration of municipal plans of adaptation to the climate change in Brazil. Local governments are called upon to lead and coordinate climate resilience building at the local level, but the public managers face the lack of institutional capacity, knowledge, methods and tools to leverage and maintain political and social processes that can reduce vulnerability and respond to impacts on the territory. Furthermore, the adaptation agenda is considered a wicked problem as it requires the involvement of multiple actors from different scales and levels, has interface with many other themes, requires long-term vision and involves a high level of uncertainty in decision-making. Social Learning has been gaining ground in the international literature on environmental management, especially on the adaptation agenda, for its potential application by public managers to address the challenge of scale, to promote equitable participation and commitment among different actors, specially the most vulnerable groups, and to set up institutional and governance arrangements conducive to a higher level of shared understand and commitment to the agenda within the complex social system. These seem to be crucial condition for the public policy following stage: the implementation of the plans. In Brazil, the references on social learning are scarce. Based on critic review of national and international literature and study of practical experiences in United Kingdom (UK), the research points out an approach and a framework for Brazilian public managers. It got clear that more than appropriate methods and instruments, it is crucial for the adaptation planning leaders to promote a horizontal and flexible governance structure, capable to include the commonly marginalized groups in its formal instances, but also to embrace – without threatening - informal arenas and communication mechanisms. Governance structures were analyzed considering their potential to foster the main elements of social learning - communities of practice, co-management and boundary organizations. In this way, the paper offers a valuable contribution for the social learning literature and for the adaptation agenda, connecting the social learning components – methods and instruments – to the governance discussion in the context of a medium sized municipality. The fact that local adaptation strategies and plans are still to

be formulated in Brazil, and municipal organs are craving for information and guidance for such, denotes the welcoming scenario for the research.

The flows of gender mainstreaming from international formation to local implementation in climate change adaptation. The case from Southern Malawi.

Reference 0091

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Climate justice is concerned with addressing the disjunction between climate risk and responsibility across scales, places, spaces, and temporalities. Those who have contributed the least are projected to lose further social, economic and physical security. High-emitting countries are recognised for creating climate change and have a duty to compensate local level actors in low-emitting countries. The provision of finance for adaptation is one method for this, and is a key commitment made under the Paris Agreement. In theory, the delivery of finance for adaptation to climate vulnerable regions should be distributed to those most impacted within society.

Furthermore, Gender equality is a core dimension of climate justice. Due to the representation of women's vulnerability to climate change compared to their male counterparts by scholars and development agencies alike. In the process of moving towards a human rights based approach to climate change, we have seen the addition of gender considerations within climate change adaptation policy. Again, achieving gender equality in climate action is enshrined in the Paris Agreement.

However, to date there has been limited research conducted on the impact of current practices of gender mainstreaming in climate change adaptation. In response, by using an intersectional feminist lens, this paper assesses how gender is addressed in adaptation policies and the follow-on finance at international level and how this translates into national policy and sub-national distribution within Malawi. Moreover, the paper presents, from local level data, the differentiated experiences of different types of men and women to understand how to better to include marginalised voices in policy. The case study analysis of the climate change-adaptation-gender nexus in Malawi is particularly pertinent. Existing research has identified Malawi as a country where finance for adaptation flows from source to a nation based on vulnerability, but it is unclear whether the sub-national distribution of such funds is equally just in terms of gender and vulnerability.

This paper finds that although there are disparities in gender considerations across scales, there has been increased gender mainstreaming within policy and implementation in Malawi. However, the scope of gender mainstreaming remains limited to a male/female divide and only targets particular groups. As a result those 'other' groups, such as youths, elderly and disabled are becoming more climate vulnerable and marginalised.

Assessing the Vulnerability of Urban Poor to Climate Change in India

Reference 0093

Pritee Sharma, Anup Karanth, Megha Burvey, Amit Dubey

Indian Institute of Technology, Taru Leading Edge Pvt. Ltd., Taru Leading Edge Pvt. Ltd. Taru Leading Edge Pvt. Ltd.

The objective of achieving sustainable development cannot be imagined without development of urban infrastructure in the developing world, particularly Asia. In India, by the end of the first quarter of the century, more than half of the population would be living in the cities and this requires access to basic amenities like water, electricity, food, drainage, sewerage, solid waste disposal, healthcare and transportation for all. On the other hand, these cities are also facing the challenges in infrastructure development due to the problem of ever-changing land use, emerging high-rise buildings and walled-townships along with the mushrooming slums across the metropolitan areas. These developments render the urban-poor-migrant populations vulnerable to diseases, accidents, loss of assets and daily struggle to live without basic amenities. Moreover, the same populations are also prone to incurring severe economic and non-economic losses due to climate change events. These events can be the regular slow onset events like heat waves, declining winter temperatures; or it could be the extreme climate events like cyclones, floods, etc.

In the present paper, a case study of Indore city in Madhya Pradesh (Central Province) of India, is undertaken and presented. City of Indore, which has been historically known for its pleasant climate now faces extremely hot weather during summer. Indore has also been a water scarce city located in the semi-arid central plateau of the country, which now, for past one decade or so, has seen changing patterns of rainfall leading to unusual phenomenon of waterlogging and floods during monsoon season. The urban poor are further pushed to the margins as they depend on the fragile public infrastructure for drinking water, transport, electricity, drainage and sewerage, which all collapse during floods. This study provides estimates of economic losses in terms of assets and loss of productivity due to waterlogging and floods, particularly for the urban poor.

The lack of institutional mechanisms, the nature of "non-inclusive" economic growth, "socially excluding" urban landscapes and "discriminative access" to public services add to the vulnerability of the resource-poor and marginalized informal settlements of slum dwellers. The estimates presented in this do not

include the non-economic losses in view of the concern of value-based judgements associated with such estimations. The economic losses were estimated on the basis of identification of impact factors and coping/resistance factors which indicate the vulnerability of the poor in case of climatic vulnerability.

Non State Actions in Agenda 2030 and Paris Agreement Implementation: Exploring Nigerian non state actors in partnerships.

Reference 095

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Partnerships for Sustainable Development (PSD) are vigorously promoted as a tool for actualization of the twin global agenda of meeting the Sustainable Development Goals (SDGs) and implementing the "Paris Agreement". It is assumed that groundswells of non-state and sub-national actions will facilitate the actualization of the agenda. However, a geographical analysis of partnerships shows that developing countries are grossly underrepresented, with initiating actors predominantly originating from developed countries. As initiators, they, among other things, frame the partnership agenda, institutional design and governance structure. Although most of the partnership agenda is framed around issues peculiar to the sub-Saharan African region, actors from the region are mere adopters of partnerships. This hinders effective engagement of stakeholders from the region towards implementation of actions crucial for actualization of the agenda. Specifically, this raises questions about the legitimacy of partnership actions and perception issues that substantially impacts on the implementation of non-state and sub-national initiatives in the region. In this context, drawing on a case study on Nigeria, the proposed paper seeks to explore partnerships implementing in the region that focuses on meeting the SDGs and Paris Climate Agreement. Nigeria is the most populated country and largest economy in the region, yet with varied and pressing sustainable development issues. The country has recently constituted a team to facilitate private sector participation in the implementation of the SDGs through partnerships. Therefore, this paper will first present an analysis of about 40 partnerships implementing in the country, and the Nigerian non state actors participating in PSDs. Second, the paper will explore and seek to understand how Nigerian actors participating in partnerships perceive the legitimacy of PSDs. Understanding the legitimacy of PSD actions in the region will contribute towards achieving effective stakeholder engagement in partnership orchestration, design and governance. From a policy perspective, the paper will recommend strategies for stakeholders' engagement in partnerships in the SSA that will overcome legitimacy issues thereby promoting access and ensuring equity.

Environmental Justice and the Accountability Mechanisms of the Multilateral Development Banks

Reference 0104

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Can environmental justice be achieved through the accountability mechanisms of the Multilateral Development Banks? Pushed by transnational environmental advocacy networks the Multilateral Development Banks created environmental and social 'safeguard' policies to protect communities and the environment from harm during MDB-financed development projects. As a backstop environmentalists demanded the creation of accountability or grievance mechanisms to enable affected people to provide recourse should the Banks not be following those policies leading to harm. In the 1990s all of the Banks instituted such accountability mechanisms: the World Bank, the African, Asian, Inter-American Development Banks and the European Bank for Reconstruction and Development. Overwhelmingly claims to the mechanisms have been on the Banks lack of proper environmental assessment. Yet the data on whether environmentalists have achieved environmental justice through the use of these mechanisms remains unclear. This article seeks to do just that. The paper investigates the concept of environmental justice and applies it to twenty years of the operations of the accountability mechanisms. Through a method of process tracing the article examines the extent to which the design and use of the accountability mechanisms of the MDBs is a useful means of gaining justice for the environment or whether there are better alternative sites for realising environmental justice.

Examining Vulnerability in a Dynamic Urban Setting: The Case of Interstate Migrant Waste Pickers in Bangalore

Reference 0109

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The political economy of climate change in India depicts multiple and complex intersections with the current development paradigm and the emerging patterns of socioeconomic inequality in the country. The neo-liberal reforms in India have been socially divisive leading to land dispossession, loss of livelihoods and decline of agricultural incomes in the villages exacerbating poverty and inequalities. This has created a mass exodus of rural workers (agricultural and non-agricultural) into the cities. This migration has been an outcome of climatic factors like erratic rainfall patterns, floods and cyclonic storms among others as well as non-climatic factors associated with agrarian distress and oppressive socio-economic divisions on the lines of class, caste and income. Lack of skills restrict their entry into the formal labour market in the city and they end up as waste workers residing in hazardous locations. These workers often end up in the informal settlements of the city where the effects of climate change are more subtle as it often intersects with their livelihoods and living conditions altering them on a daily basis. The paper examines complex intersections between a multitude of factors like climate change, agrarian distress, exclusionary patterns of urbanisation and the resultant mal-recognition that shapes and reshapes the vulnerability and adaptive capacity of a certain group of people. We illustrate these intersections in the paper using a case study of interstate migrants from West Bengal residing in informal squatter settlements of Bangalore city working as waste pickers. Our findings indicate that while the root causes of their vulnerability can be traced back to the socio-economic and ecological conditions in their homeland, exclusionary urbanisation patterns in Bangalore renders them access to a livelihood that has severe implications on their health and identities. In addition, they reside in extremely hazardous zones amidst heaps of garbage with an erratic rainfall likely to have severe implications on their health and incomes. However, they also provide an essential ecosystem service to the city from a mitigation perspective by handling and processing a large amount of waste generated by the city. Using the interstate migrants as an example our study illustrates the importance of recognising the need for bringing a climate justice lens to the city by recognising the existing forms of marginalisation's and how climate change can exacerbate it.

Moral duties of carbon majors: Implications for global climate governance

Reference 0112

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In 2014, Richard Heede published a fundamental study that traced most of global carbon emissions to specific actors. Ninety largest fossil fuel companies and cement producers, known as 'carbon majors', were found to be responsible for as much as 63% of global industrial carbon dioxide (CO₂) and methane (CH₄) emissions between 1751 and 2010. The top world emitters include investor- and state-owned entities, such as Saudi Aramco (Saudi Arabia), Chevron, ExxonMobil, and ConocoPhillips (USA), BP (UK), Total (France), Shell (Netherlands), National Iranian (Iran), Petrobras (Brazil), and others. Carbon majors are like an elephant in the room of global climate governance: the harmful consequences of their actions are recognized, yet, remain unchallenged. The overall objective of this analysis is to develop an ethical framework able to accommodate the special position of carbon majors in the global efforts of climate change mitigation and adaptation. To this end, the research first justifies the attribution of moral duties to carbon majors and then discusses the implications of such duties in global climate governance. The first normative part of the analysis concludes that carbon majors have a duty of decarbonization and a duty of disgorgement. The duty of decarbonization originates from a demand of distributive justice since it is, in essence, a matter of redistribution of carbon abatement burdens grounded in prioritarian principles of justice. As such, it implies a broad ethical commitment of carbon majors to sustainability, which would ultimately lead to reduction and eventual elimination of their CO₂ emissions. The duty of disgorgement is grounded in corrective justice and based on a Beneficiary Pays Principle (BPP). Such duty requires that carbon majors relinquish financial resources in the form of payment to the victims of climate change for the wrongly appropriated benefits related to their activity. The work then discusses policy relevant implications generated by carbon majors' moral duties. First, it focuses on a "utopian" scenario: what should happen based purely on the requirements of distributive and corrective justice. Then, it turns to a discussion of the key obstacles on the way of justice that are impeding the process of including carbon majors into the global efforts of climate change mitigation and adaptation, and proposes possible governance measures for addressing such problems.

Accountability without frontiers: global review for the 'Global Goals'?

Reference 0115

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This paper considers the accountability of states, and the state of accountability, in the global review process associated with the new UN Sustainable Development Goals (SDGs). Much has been claimed for the importance of accountability in this context: in 2015 the UN Secretary General, for example, held that accountability of all actors "to the people themselves... is the real test of planet-sensitive, people-centred development". Taking accountability as the idea "that some actors have the right to hold other actors to a set of standards, to judge whether they have fulfilled their responsibilities in light of these standards, and to impose sanctions if they determine that these responsibilities have not been met" (Grant and Keohane, 2005), there are general reasons why international politics resists the application of accountability outwards and upwards from states. These are all applicable to the SDG context: for instance, the SDGs inherit a lack of formal sanction by virtue of their inter-state character. But this paper also identifies specific challenges in the nature of the SDG framework itself. In particular, the SDGs fail to identify who should do what, and comprise an unstable mix of universally applicable global goals and voluntary, nationally-differentiated responses.

Democratic theorists have responded to the distinct theoretical and pragmatic challenges of global accountability as opposed to inwards accountability within states - for instance, in John Dryzek's vision of 'narrative' and 'deliberative' accountability within a 'deliberative system'. In the body of the paper, I assess the applicability of such an account to the SDGs. I argue that the absence of standards in the SDGs, and the corresponding weaknesses of the review framework, together call into question the realisation of such modes of accountability between states and stakeholders. In so doing, I develop a more general understanding of the importance of standards and responsibilities for deliberative and narrative accountability. Overall, I suggest that this is as potent a problem for global accountability as the absence of formal sanctions. I conclude by addressing how this gap in the SDG agenda might be filled.

Climate policy integration in rapidly urbanizing developing countries: implications for allocation and access in medium-sized Kenyan cities

Reference 0117

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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 affect allocation and access of resources 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 actors in earth system governance, this paper asks specifically to what extent climate policies are integrated in urban development in Kenya and whether this provides for equitable allocation and access of basic urban services. Building on the climate policy integration (CPI) literature the paper explores enabling and constraining factors for an equitable alignment of national climate policies with subnational 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, following major constitutional reform in 2010. Against the backdrop of devolved responsibilities but limited resources and capacities at county and city levels, Kenya'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 a just distribution of collective goods in a democratic developing country.

Re-allocating Public Space: a resource for re-embedding social/environmental justice values into the politics of the common good

Reference 0120

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This paper is based on results from a three-year EU project ITSSOIN.EU that investigated impacts of Third Sector as Social innovation in a variety of societal fields. The findings discussed are for the field of environmental sustainability in Cities. The project's empirical work related social innovation to a spatially-based city context and made a cross-country/city comparison of examples of social innovation activities in cities of four selected European countries. The specific cases concerned sharing space for the promotion of bicycle use and mobility, which in many cities is a task undertaken not only by state and private actors but includes a strong interplay of civil society organizations with great variations and different degrees of success and failure. The study focused on elements of social innovativeness created in the interplay of actors and on the tensions and issues arising in particular from civil society involvement in advancing practices of sharing public space. The study followed actors and practices using process tracing methodology to produce a thick story for each city. The story traced the evolution of forms of social sharing and identified moments of contention, within which the actors' influence and the narratives produced over time became apparent. The cases traced four European cities Copenhagen, Frankfurt, Milan and Bruno. The most successful case-Copenhagen- demonstrated a long-term build-up of social innovative practices which at their core recreated social values such as reciprocity and mutual help, as critical components in the formation of new narratives in the use of space. In this way unlocking practices and demonstrating new possibilities within which the use of bicycles became merely a social instrument demonstrating visions of the common good and why they need to gain political voice and public space. The social innovation re-allocated public space not just as way of provision of material services, but creating a venue for re-embedding of social/environmental values and norms (right to enjoy outdoor life for old people, use of spare time, mutual help/reciprocity, participation, quality of life) in the interplay of actors and practices. This discussion can as well be linked to debates about what are conditions contributing or failing to re-create a civic life and how practices of social innovation for sharing space, may succeed (or fail) in becoming vehicles to re-introduce social (reciprocity, re-enacting o the public sphere)

and environmental values by means of helping in the construction of 'new imaginaries' for progressive social and environmental change.

Integrating Indigenous Knowledge and Atmospheric Science in the Study of Climate Change: A Case from the Cordillera Blanca in the Peruvian Andes

Reference 0122

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Earth system governance rests in part on environmental information, which is often characterized by unequal access to information and unequal incorporation of indigenous knowledge. The integration of different types of knowledge can promote fuller participation of marginalized groups, and in this way establish new pathways, particularly in the realm of climate change adaptation.

A recent research and applications project in the Peruvian Andes has addressed the information gap which separates climate science and indigenous communities in the region. This gap has negative consequences for both parties: the climate scientists lack access to the observations, knowledge and understandings that the indigenous communities have developed, and the indigenous communities lack access to the scientific information and forecasts which could promote their decision-making around adaptation issues.

In Peru, several institutions have established meteorological stations which have collected weather data for many decades, allowing the analysis of climate trends and the production of climate forecasts. Such datasets are particularly strong for the southern Andes. However, the northern and central Andes, particularly Ancash, lack such data; reanalysis of satellite data, though useful for recent decades, also lacks time depth. We here report on a project to draw upon local indigenous knowledge to provide information on climate trends, and to facilitate exchanges between indigenous communities and scientific organizations.

In the Ancash region (particularly the Callejón de Huaylas near the Cordillera Blanca) the NGO Practical Solutions/ITDG conducted diagnostic workshops in 2007 on the vulnerability of the indigenous population to climate change. Similarly, in 2012 CARE-Peru developed workshops for similar purposes. These both assembled information from indigenous communities on perceptions of climate change variables. In 2016, the National Institute on Glacier and Mountain Ecosystem Research/INAIGEM replicated and extended these projects through workshops, conducted in the indigenous language Quechua as well as Spanish, with each of the communities that were earlier studied. It identified meteorological and climatic variables within indigenous knowledge, such as shifting patterns of rainfall and of extreme events,

including severe frosts. These variables were validated during a workshop with 41 representatives of 5 watersheds within the Callejón de Huaylas. These data are compared with historical records from meteorological stations in Ancash (33 years) and Cusco (60 years). The results will help to compare indigenous knowledge with scientific information, generate scientific information that responds to local needs and improve the communication of climate information. A series of workshops will promote dialogue between indigenous communities and climate scientists.

Environmental justice in earth system governance and communitarian ethics: Reflecting on consequences of socio-environmental change

Reference 0125

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Though this paper argues that environmental governance is a joint duty of all players in particular environments, it essentially debates that governments ought to provide necessary directive and framework for efficient governance of the environment to ensure fair sharing of the burdens and benefits of environmental preservation. Governmental inability to provide laid down procedures for environmental order often denies society's members the chances of enjoying social goods as clean water, clean air, land, wealth, prestige, security, and good job, which may be end products of effective environmental governance. Deriving from this, inequality of opportunities and resources, not facilitating productivity, creates social inequality. In these, ineffective environmental governance negatively affects all-levels of people, posing threats to the sustenance of human environment and continual existence of future generations. To ensure environmental justice, it becomes pertinent for all players involved in environment-sustaining decisions to play their roles well for the environment to be conducive for human sustenance. By this, it can be preserved for present and future generations without endangering existence or the fair sharing of dividends of social cooperation in ensuring environmental sustenance. To achieve its aim, this work adopts communitarian ethicists' ideals of "shared meaning" and "shared understanding" in interrogating issues involved in environmental justice and combating of environmental challenges. Thus, using empirical and conceptual methods, it stresses the need for communitarian ideals in interrogating issues involving environmental justice in earth system governance. As particular (microcosm) typology of global environmental events, it explores environmental events in Niger Delta area of Nigeria and the governmental roles in addressing distribution problems in the area, by stemming the tide of conflicts through proposing solutions as the Niger Delta Ministry and granting of amnesty. These efforts did not fully pacify the people, as there are still violent resistance to the activities of government and the oil corporations in the region. Problems persist in the region because the people differ on the conceptual understanding and meanings of social goods and distributive paradigms, with respect to people's moral, social, political and economic existence. To address distributive problems in the region, a re-

conceptualisation of orientations concerning the social ideals, distributive paradigms and distributive outcomes becomes essential. Reflecting on these globally, to address environmental injustice, at the levels of perceived injustice and actual injustice, diverse perspectives on the “shared meanings” and “shared understanding” of social goods, environmental benefits and tasks, and distribution need to be re-examined.

The Implementation of Participatory Forest Management in Kenya: A Review of Livelihood and Forest Condition Outcomes

Reference 0133

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The involvement of local communities in the management of public forests through participatory forestry is a radical shift from the “command and control” regime in many developing countries. Participatory forest management (PFM) in Kenya started in the 1990s but was only formalized with the enactment of the Forests Act of 2005 (now revised as Forest Conservation and Management Act, 2016). The twin objectives of the policy shift are to facilitate local participation in public or community forest conservation and management while improving the livelihoods of the forest-adjacent communities. This paper is a synthesis of the available literature on forest governance and impact studies carried out in Kenya up to date. No such study has been carried out before despite having more than ten years of implementation of the Act and considerable research on factors determining community participation in PFM, governance and livelihood and forest condition impacts. The paper will evaluate the extent to which the two objectives of the Forests Act have been or are being met, and the extent to which rights and therefore the ability of forest-adjacent communities to derive a bundle of rights, and benefits from the forest resources has been adequately devolved. The literature review research design will be adopted and information and data will be obtained from our work in the Eastern Mau Forest Reserve, from papers published in mainstream journals and monographs, conference abstracts or papers, dissertations and other reports. The forest adjacent communities participate through formation and registration of Community Forest Associations (CFAs). Although the process of forming and incorporating the CFAs in forest co-management is clear on paper, there are a bundle of governance issues in implementing participatory forest management in Kenya, in practice. Recent literature has pointed to ambivalent support for community participation and benefit sharing. The forest-adjacent communities appear to mostly provide forest labor while the Kenya Forest Service remains in total control of decision-making and appropriation of forest revenue. This review will inform debate on forest governance in general and in particular, the implementation of the revised Forests Act and the Natural Resources (Benefit Sharing) Act which is yet to be enacted.

Key words: Participatory forest management, forest-adjacent communities, governance, Livelihood, forest condition

Meanings of forest landscape restoration (FLR) from global to local forest governance

Reference 0138

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For achieving the 1.5 degree goal under the Paris Agreement the forest sector plays a critical role. Beyond avoiding emissions from deforestation or degradation, Forest Landscape Restoration (FLR) on degraded lands may help generating significant negative emissions. Up to 80 Giga tons may be achieved if the restoration potential of 2 billion ha is fully used and if forests are maintained on a permanent basis. Considering the social, economic and ecologic co-benefits of standing forests that have the potential to leave many actors better off than without forests, it surprises that this huge potential remains heavily underutilized to date, especially since forest restoration is and was at the heart of many development cooperation interventions in forests over decades, including the CDM (Clean Development Mechanism). Recent experiences, e.g. with afforestation / reforestation under the CDM, suggest that apart from financial, administrative or governance issues, especially allegations of land grabbing or carbon colonialism have prevented such efforts from unfurling. One of the biggest challenges remains to set up FLR in a way that it mobilizes and maintains both, public and private support, in favor of standing, rather than clear-cut, forests. This requires aligning the interest of many stakeholders from global to local levels as it requires thinking of alternatives to classical top-down governance approaches. In support of earlier social scientific work we suggest that in processes, like REDD+ or FLR (the "+" in REDD), specific policy tools, actors and solutions are prioritized at the expense of marginalized others. Transcending from a simplistic, interest-based approach to FLR ('win-win'), our discourse analytical paper stresses the actual meanings of FLR for different relevant stakeholders and asks whether these are equally translated into FLR practices. Specifically, we want to trace the different existing narratives about FLR from global to local levels and how they relate to and compete with each other - departing from the seemingly dominant discourse about landscape restoration within and around the international Bonn Challenge, which is the major initiative on FLR to restore 150 million ha by 2020, or 350 million ha by 2030. Our analysis draws on participatory observation, scientific reports as well as media reporting over, policy papers by and interviews with NGO, state and business partners from different regional and societal contexts. Mapping

out the different knowledge claims about FLR we will discuss the implications for current attempts to increase the global policy ambitions through FLR.

How Civil Society Organizations Work Politically to Improve Sustainable Forest and Land Policies in Indonesia Decentralized Governments

Reference 0139

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Since decentralization era is begun in Indonesia on 2001, land and forest sectors has been allocated at the various responsibilities to local and national governments. These include aspects of spatial planning, allocating licenses for land concessions (such as for logging and mining activities, and oil palm and timber plantations), environmental safeguards, and budgets for environmental management. Compliance with existing regulations and procedures are, however, in many cases low, and law enforcement is weak.

This paper will examine how civil society organizations (CSOs) have taken advantage of the increased opportunities created by decentralization to influence the role and functions of local administrations that have forest and land issues in Indonesia. A lack of transparency in the permit process has enabled local governments to over-allocate concessions for land based industries, including in protected forest areas. Indonesia's government agency established to address corruption has taken on Indonesia's land based industries. By involving the Anti-Corruption Commission as a lead of the program, The President of Indonesia, in 2014 established a National Movement to Save Natural Resource in Indonesia in order to reduce the corruption cases on forest and land sector issues since in fact that many local election in Indonesia related with corruption cases by trading off in providing permits concession between politicians and private sectors.

The paper utilizes evidence from two initiatives on how CSO works politically to using those momentum to enforce the law and prevent the corruption to promote sustainable forest and land policies. With CSO support through advocacy on open data, the investigations found that 4,643 mining companies operating across Indonesia did not meet basic Clean and Clear standards - an Indonesian statutory requirement that a company has no outstanding royalty or tax debts, adheres to environmental laws, and the concession does not overlap with protected forests. 721 illegal mining permits - including 478 coal-mining permits - have been revoked since, with more under investigation. The paper argues that CSOs are increasingly able to influence local and national policy outcomes - regardless of the leadership qualities among elected officials - by working politically. The Paper will describe the political context of each initiative, which

varies greatly. The paper will provide evidence of how pro sustainable forest and land governance advocates expanded their capital by identifying allies, building coalitions and taking advantage of critical junctures in order to influence local and national policies. In conclusion, the paper offers the implications for development programming going forward.

Property Rights Revisited - Are Narratives the Way Forward?

Reference 0147

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The paper aims to show how property rights predominantly shape discussions about the governance of natural resources and thereby neglect questions of (collective) identities and alternative solutions to govern natural resources. The purpose is to introduce narratives as an alternative approach to the discussion about the governance of natural resources. Guided by the question of how we acquire property and what that tells us about our understanding of to whom natural resources belong to, the paper reviews the history of property rights by looking into property theories starting from Thomas Hobbes, John Locke, Adam Smith, Immanuel Kant and Pierre-Joseph Proudhon. It then takes a closer look at the TEEB study and the Nagoya Protocol with regard to property rights. Second, the paper introduces the concept of narratives surrounding property rights in the past and present. Property rights are a social and an industrialised world concept. This has strong implications when we look at the way indigenous people look at natural resources. Mostly, property rights are unknown to them but documents such as the Nagoya Protocol or the TEEB study presuppose such an understanding of property rights. A narrative approach to property rights introduces new ideas and looks beyond legislation and policies at the stories people tell about property and natural resources, at property stereotypes and identities and what this might entail for future natural resource governance. The paper fulfils a need to find alternative approaches to govern natural resources against the background of global environmental challenges.

The Strategic Approach to International Chemicals Management (SAICM): More Inclusive, More Flexible and More Effective?

Reference 0151

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This paper analyses a flexible and inclusive international governance scheme for chemicals management that arose out of a political deadlock situation in which agreeing a traditional comprehensive international convention was impossible. The Strategic Approach to International Chemicals Management (SAICM) is a voluntary policy framework to promote chemical safety around the world. Chemicals management often exerts the greatest impact on poor communities and developing countries. For this reason, it has a pronounced environmental justice aspect. Within SAICM, more than 140 countries have signed up to one general goal: Achieving by 2020 that chemicals are produced and used in ways that minimise significant adverse impacts on human health and the environment. This broad goal leaves significant scope for individual state and non-state implementation decisions and experimentation from the bottom up, which has positive but possibly also negative effects.

SAICM's contribution to global chemicals governance as well as its challenges and shortcomings are analysed in the paper. SAICM's contributions include its broader membership than the classical chemicals conventions (Basel, Stockholm, Rotterdam and Minamata Conventions) with more than 140 members and including the United States. SAICM fosters the discussion of emerging policy issues as a result of its voluntary, non-committal nature. It also has contributed to lifting chemicals management on the political agenda globally and in various countries following from the discussion of the SAICM goals. The financing mechanism Quick Start Programme contributed to improving chemicals management capacity in a number of developing countries. The involvement of non-state actors can be considered a major contribution since the inclusive SAICM process brings the chemicals industry, NGOs and policy-makers together to jointly talk about chemicals regulation. Yet, its voluntary, bottom-up and experimentalist design also poses some challenges, which will further be identified in the paper.

Building Green Fences: China, Sustainability and the New Global Political Economy of Wastes

Reference 0155

Kate O'Neill

UC Berkeley

Wastes are being transformed from risks or externalities (to get rid of) to commodities, resources, even inputs back into the production process. Circular Economy and Zero Waste discourses are shaping new policies and practices for minimizing waste outputs from production or cycling wastes back into the economy. These discourses connect with integrated approaches to global sustainability governance and practices.

Despite this welcome waste-to-resource paradigm, this new global political economy is generating risks of its own, which are changing global patterns of burdens and benefits, and pose significant governance challenges. Changing geographies of waste production and disposal, new configurations of labor and capital, and huge quantities of wastes generated in the developed, and now the developing world pose big challenges to already-stretched management infrastructures. These impacts occur across scales, from local to global, and reveal new complexities and the distributive impacts.

This paper draws on the author's current research to demonstrate such changing burdens and benefits. Recently, China has become the "world's recycler". While electronic waste grabs the headlines, China in fact is a far larger importer of scrap plastics and paper from the US and the EU, importing up to 75% of the paper and plastic sent to recycling in the US, for instance. Reprocessing these scraps helps fuel China's domestic growth and generates low-carbon energy. It is part of Beijing's own Circular Economy platform. But these practices also harm the communities in which facilities are situated, and may contribute to China's overall environmental crisis. In 2013, the Beijing government started to enforce existing import regulations, rejecting contaminated bales of paper and plastic, a program known as Operation Green Fence. The global response demonstrates unexpected dependencies and global flexibilities, and China's political-economic muscle. From scrap rapidly piling up in the US (where no new recycling facilities were built in the 2000s) to the rapid appearance of cleaning facilities in SE Asian ports. While the effects on

global scrap prices were temporary, that market also demonstrated fragility. This paper will also assess the global impacts of a new “green fence” program begun by the Chinese government in February 2017.

This case reveals many of the contradictions of recycling and reprocessing at a global scale: “shadows” of the circular economy. Local, national and global governance arrangements rarely keep up with these challenges. The paper concludes by identifying points of intervention, across and within national borders that may bridge these governance gaps.

The Role of Institutions in Access and Allocation of Emission Trade System in Central America.

Reference 0158

Cintya Molina

El Colegio de México

The benefits obtained from Emissions Trading System (ETS) have been traditionally studied from the economic scope and referred to it as an instrument that facilitates the exchange of Certificates Reductions Emissions (CER's) with the lowest transaction costs or as a set of countries as buyers and sellers. The ETS more than a market is an institution and "... the set of rules, decision-making processes and programs that dictate..." are the factors that determine the amount of CER's that are traded and the type of projects that accredit them but not only the interactions of the supply and demand. The participation of Central American countries in the ETS involves a series of institutional, economic and social adjustments that have not been fully addressed in case studies or cost - benefit analysis. The Central American region is characterized by economic, social, environmental and institutional issues, which make impossible to maximize the profits from ETS. Moreover, the ETS design does not allow to adapt it to local conditions of the hosted countries, although this instrument provides an institutional architecture, its operational framework leaves a narrow margin for Central American countries can enhance their benefits. In this sense, the proposal to be presented at the Conference is one chapter of my doctoral thesis which deals with the institutional architecture adopted by the Central American countries when they decide to participate in the ETS and how it has influenced on the economic results that they perceive through CER's trade.

Socio-ecological Justice in Global Governance: The ILO's Just Transition

Reference 0160

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Global environmental governance, particularly climate change, raises important questions of fairness and justice in green transitions. The role of governance in redressing the negative impact of climate change on our environment is not limited to the natural world but also includes the strengthening of institutional frameworks that deal with the inequalities and injustices that arise while these green transitions take place. This social focus of environmental governance is evident in the strategy of 'Just Transition' (JT), adopted by national and global labor organizations, over the years, and more recently (2015) by the International Labor Organization. The adoption of Just Transition by the ILO represents the latest development in its green trajectory and was preceded by the Green Jobs Programme (2008) and the Decent Work Agenda (1999). Hence, it is important to examine 'Just Transition' within this trajectory. How does the ILO delineate/operationalize JT and how does its vision compare to those of other organizations that have promoted JT? What does JT add to the ILO's green agenda? What were the politics behind its adoption? What are the implications for the organization in its continued effort to be relevant and effective in promoting social and ecological justice in the global governance of green transitions? To understand the political processes involved and the narrative behind the production and use of the term, analysis of the ILO documents from the ILO Office, the Governing Body and the International Labor Conference is being undertaken. To corroborate the findings from these documents, interviews with ILO officials are scheduled to take place this summer.

New wine in old bottles? The role of equity in the Paris Climate agreement.

Reference 0162

Peter Lawrence, Michael Reder

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This paper explores meanings of equity in the Paris agreement in light of notions of equity reflected in both philosophical, climate justice and international law literature. On one view, the Paris agreement spells the death knell of equity in the global climate regime. Prior to the Paris agreement, it was well-established that the UN climate regime embodied the notion of “common but differentiated responsibilities” which (put simply) imposed particular responsibilities on wealthier states to take the lead in taking action to address climate change. The Paris agreement arguably has replaced this concept with “self-differentiation” in the form of “nationally determined contributions” (NDCs) which allows states to individually decide on their (voluntary) levels of mitigation action.

This paper argues that equity will nevertheless continue to have an important role in the Paris agreement albeit in a new form, constituting “new wine in old bottles”. Thus individual countries will - either explicitly or implicitly - take into account notions of what is equitable in determining their NDCs, but also the provisions of the Paris agreement relating to the global stocktake which is to be undertaken on the basis of equity and sound science.

The paper explores two major discourses of equity which are likely to influence the way states interpret these provisions. First, equity has been developed in international law doctrine in response to references to this term (and intergenerational equity) in international treaties. This has included pronouncements by international tribunals, for example, the International Court of Justice, in relation to maritime delimitation disputes.

Secondly, is the discourse of equity as climate justice which involves the application of theories of justice by philosophers to the allocation or distribution issues which arise in relation to climate change. In this context, equity constitutes a particularly distinctive notion of justice with a long history stretching back to Aristotle. Climate justice involves both “international justice” viz international allocation issues (between states) but also “intergenerational justice” as failure to address climate change involves allocating harm to future generation for which they were not responsible.

International relations literature (e.g. Albin) shows there is strong link between the effectiveness of international environment agreements and shared understanding of what constitutes justice. Building on this insight, this paper applies the international legal and philosophical discourses outlined above to propose notions of equity which, if taken up by governments, could lead to a more effective Paris Agreement.

Feasibility of energy justice: Exploring national and local efforts for energy development in Nepal

Reference 0164

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The energy justice framework serves as an important decision-making tool in order to understand how different principles of justice can inform energy systems and policies. The realization of the urgency of providing modern energy technology and services particularly to rural areas has prompted both the Nepalese government and development institutions to focus on community-run renewable energy facilities. It is argued that off-grid and micro-scale energy development offers an alternative path to fossil-fuel use and top-down resource management as they democratize the grid and increase marginalized communities' access to renewable energy, education and health care. However, Nepal's energy development is also heavily influenced by demands from the fast-growing economies of neighboring countries such as China and India. As a result, this article evaluates the Nepalese national energy policies by applying the key aspects of the energy justice framework and showing the feasibility constraints due to geopolitical and biophysical factors to the implementation of energy just policies in this developing country context. The empirical evidence is derived from interviews during a one-month fieldwork in the Lalitpur and Katmandu districts of Nepal, site-visits, discourse analysis of expert statements, government policies and newspaper articles as well literature review on peer-review articles.

Changing landscape of environmental governance in Xi's China - Do you hear the people sing?

Reference 0167

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Environmental protests have become an important mode of political participation in China since the 1990s. Various clusters, including green groups and local villagers, have organised protests against environmental degradation. Activists have not only appealed for the protection of the environment, but also called out injustices in environmental policymaking. Unlike the conciliatory practices of the Hu-Wen era, the rule of Xi Jinping has witnessed a resurgence of 'neo-authoritarianism', reflected in the repeated repression of protests and activists. This paper presents a comprehensive analysis of environmental protests under Xi's administration, showing that the implementation of new environmental law and public interest litigation in 2015 did not result in more public participation in the environmental decision-making process, as official propaganda claimed. Rather, it has led to more state-society confrontation and, consequently, forceful suppression. This finding reveals the insufficient level of public accountability and transparency in the public policymaking process in China despite recognition of the need for a considerable degree of pluralism in environmental management.

Seeing like a (Postcolonial) State: Parks, Reserves and Peoples in Mozambique

Reference 0168

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The relationship between peoples, parks and reserves have always been very problematic in southern Africa since the later were created with an exclusionary logic that I argue still informs day-by-day workings today. In order to unpack this troubled relationship, specifically in Mozambique, I analysed the ways in which the state has constituted peoples and natures since colonial period until the present with the aim of answering the following questions: how does the state construct peoples and natures in Mozambique and how the state gaze on nature and peoples has shifted throughout the socio-natural history of Mozambique from the colonial period until the present days? In order to answer to these questions, I embarked on a history of conservation in Mozambique, focusing mostly on conservation legislations, policies and practices and also carry out semi-structured interviews, with the aim of making sense of the current legal landscape in which different actors have and are currently allowed to navigate in order to explore and conserve nature. Following James Scott's work, *Seeing Lik a State*, I argue that the current legal framework is deeply connected to colonial legacies informed by a 'high-modernist ideology' and utilitarianism in which parks, reserves and peoples are framed as separate entities. In the times of climate change a new form of governance in postcolonial contexts needs to be devised informed by local knowleges while also taking into consideration global processes towards more integrated relationships between peoples and natures.

Distributing the Benefits and Burdens of the Energy Transition: Lessons from Community Renewables

Reference 0170

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The fight against climate change requires a swift energy transition, replacing fossil fuel-based energy generation technologies with renewable ones. Energy transitions raise complex questions associated not only with reforming existing regulatory frameworks, but also with the distribution of the related benefits and burdens. In recent years polycentric bottom-up approaches to environmental governance have been put forward as a possible solution to this conundrum.

At the national and subnational level, measures to stimulate local renewable energy generation have been adopted in numerous states, rapidly turning local and rural communities into key actors in the energy transition. This shift is echoed in a recent European Commission proposal, which includes provisions promoting renewable energy self-consumption, as well as access to energy markets for community-produced renewable energy.

This paper considers so-called 'community renewables' policies as a casestudy to understand how questions concerning the distribution of benefits and burdens associated with the energy transition can be addressed and the role of law in providing solutions to these. Community renewables have been widely investigated by social scientists, who have conceptualized it as a form of niche innovation, and a manifestation of a bottom-up approach to the energy transition. This literature emphasises how greater scholarly enquiry is needed to identify the regulatory tools best suited to support community renewables.

Legal scholarship has so far paid limited attention to this matter, narrowly focussing on the role of law in overcoming resistance to the development of renewable energy infrastructure and generation, on the basis of procedural justice. This paper builds upon this literature, looking at community renewables as a casestudy to analyse distributive justice questions underlying energy transitions and the role of law in addressing these. To this end, the paper brings together evidence from a set of jurisdictions, most saliently Denmark, Germany and the UK.

The paper is divided in four parts. First, it introduces the notion of community renewables and the regulatory questions it raises, distinguishing between questions of access and sharing. The second and third part analyse how these questions have been addressed, drawing on examples from states that have predominantly relied on locally owned/managed renewables infrastructure, and states that have only recently moved towards a community-focused approach to renewable energy generation. The fourth and conclusive part of the paper reflects on what we know about community renewables and their suitability to address distributive justice questions underlying energy transitions, mapping an agenda for future research.

Ecological democracy in the Urban: Citizen municipalism in the aftermath of right to the city movements in Barcelona

Reference 0178

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Claiming the right to the city is also about claiming the right to participate in the formation and transformation of the city. This emphasis on claiming rights for (trans) formation positions right to the city-movements within the larger issue of citizenship. In this context, this paper explores the citizen municipalism in Barcelona, which has emerged as a municipal platform after Spain's 15M-right to the city movement. By mobilizing neighborhoods, citizen municipalism aims to initiate a politics of change by reclaiming institutions in order to create a sustainable society. The case of Barcelona en Comu is a unique illustration of citizen municipalism in practice as it serves both as an elected institutional body in the municipality and a platform of different social-ecological movements.

Ecological democracy underlines the responsibilities and obligations of the citizen in the framework of a sustainable society. The paper explores the role of the citizen in the politics of change and asks: How can citizen platforms foster ecological democratic principles and illustrate its limitations? What types of new policies does Barcelona en Comu have for social and ecological sustainability? What synergies and tensions occur by institutionalizing 'right to the city'? The paper concludes that such initiatives can contribute to the development of participatory political space and citizenship practices while enabling institutions and policies for a change towards a more sustainable society. The analysis is based on the empirical evidence derived from semi-structured interviews and observations in Barcelona.

What paths from foresight to robust and inclusive policy? Comparing three methodologically distinct scenario processes in Bangladesh

Reference 0191

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Scenarios can be an effective foresight approach for exploring future climatic and socio-economic uncertainties and their consequences for policy. In the face of pressing policy concerns around climate change adaptation, mitigation and development, the need to integrate scenarios within governance and planning processes is high, a greater understanding is needed about how such links could be made more effective.

This research paper gives a detailed account of three different types of scenario processes that have been carried out by three different groups in Bangladesh, a country characterized by significant challenges in terms of climate adaptation and development. These processes provide unique cases of comparison because they each focused on specific policy development goals and involved direct participation from policy makers. The General Economics Division (GED) of the Bangladesh Planning Commission has been engaged with the use of scenarios through 1) the CGIAR's Climate Change, Agriculture and Food Security (CCAFS) Scenarios team, 2) the Ecosystem Services for Poverty Alleviation (ESPA) Deltas Project and 3) the Bangladesh Delta Plan's (BDP) work with scenarios.

The research presents a detailed overview of the three processes and scenarios; it will critically assess the different types of scenario methodologies used with an aim to understanding the impacts they had on the relevant policies and the policy and governance space in Bangladesh. Such a comparative evaluation of foresight approaches in a single country has not previously been conducted – it offers a unique opportunity to understand and improve how foresight can support processes of governance in the face of future environmental and socio-economic challenges. The scenarios were formulated to help policymakers make informed decisions on issues of allocation and access by constructing plausible futures with differing socioeconomic and climatic outcomes, this paper will thus contribute to the 'environmental justice in earth systems governance' stream.

The paper reports that on the whole the parallel processes created some confusion for the stakeholders while also functioning separately in the policy sphere. The CCAFS Scenario were used for a medium-term plan, the short-term nature of the process was both helpful and difficult. The BDP Scenarios were developed for a long-term plan (BDP), which also benefitted from a more longer term development process. While the ESPA Deltas Scenarios provided policy makers from the GED with evidence of possible development trajectories within the coastal delta plain without targetting any specific policy, making it difficult to assess its impact on any particular policy.

Bringing Human–Nature Relations into Ecological Democracy through Empathic Rationality

Reference 0203

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This paper engages with debates that attempt to (re)think human/nonhuman entanglements and power relations and what this (re)thinking implies for (ecological) democracy. The paper draws on feminist theories, on intersectionality (Lykke 2005), ecofeminism (Plumwood 1993), critical animal studies (Birke 2012) and posthumanism (Alaimo 2010, Alaimo and Hekman 2008). Common to this literature is a critique of the predominant, dualistic representation of humans and nature. Humans and nature are made meaningful in relation to categories of difference embedded in dynamic intersectional relations of power (Kaijser and Kronsell 2014, 2016). Conceptualizing these relations is necessary as equality and equity can be assumed crucial to ecological democracy and the paper contributes to this conceptualization. This paper suggests that feminist ethics of care theory (Barnes 2012, Donovan and Adams 2007, Engster 2009, MacGregor 2004, Robinson 2006) can provide an important starting point in developing alternative ways of including earth-others in ecological democracy. This builds on what Kronsell and Stensöta (2015) have argued previously, that core notions in the ethics of care, are relevant for advancing thinking on ecological governance regarding human relations to the ecosystem, and to future generations. Building on those insights, this paper suggests that ethics of care, informed by an intersectional understanding of human–nature relations, can be a useful normative foundation for democratic governance in the future green and sustainable state.

Environmental Justice in India

Reference 0208

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The political economy of environment in India faces multiple challenges amid increasing population and unsustainable growth model. After independence, India had to adopt mixed economy model with public sector in lead role, as private sector was too weak to take charge. During late 1980s and early 1990s, aggressive privatization took place. Economic policies are in direct conflict with environmental justice. India has signed almost all international conventions and treaties. Consequently, it has put in place highly centralized environment justice machinery like single window clearance system. It is one among many demands of global and domestic investors. Evidence suggests that tribal, dalits (Scheduled Castes), women and other subaltern sections of the society are often at the receiving end where state victimizes instead of protecting them. Under political pressure, public institutions like Ministry of Environment, Forest and Climate Change and National Green Tribunal often serve corporate interests. The role of Indian state in Bastar (Jharkhand), Niyamgiri hills (Odisha) and succumbing to corporate demand to dilute mineral, mining laws, tribal land acquisition law, Chota Nagpur Tenancy Act and Santhal Pragana Tenancy Act (Jharkhand), environment pollution through open cast mining in southern India and tweaking forest rights and land acquisition law in favour of business community is very perturbing trend in environmental discourse. The State has forcefully crushed people led peaceful environmental movement like Anti Posco movement, Niyamgiri Hills protests, Anti mining movement, Chipko movement, Jungle bacho andolan, Appiko movement, Narmada Bachao Andholan and Silent Valley project etc to name a few. As if protecting and preserving environment is fiefdom of the State. It is against environmental ethics and justice. The environment concerns are no doubt real. But the propaganda surround is certainly not real. Environment agenda is itself becoming a huge industry. Investors across the globe are in rush to invest without least concerned with ethical environmental considerations. They are mainly interested in exerting their cultural hegemony in this sphere. Any reductionist approach with regard to environment, which excludes subaltern people, would prove to be counterproductive. The environment agenda must acknowledge people's genuine right over natural resources and people's participation by decentralizing environmental institutions. India needs to revisit present unsustainable growth model vis-à-vis

environmental praxis. The present paper uses the case study approach to highlight these aberrations in environmental discourse in India with especial reference to post Liberalization, Globalization and Privatization era.

Climates of Justice: Navigating a Contested Terrain

Reference #REF!

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During the past decade global climate politics has witnessed the rise of a social movement that is campaigning in demand for a more eco-centric and just world order. Under the label “climate justice” this broad network of activists and grassroots organisations is contesting the liberal environmental order upon which UN climate policy rests and calling for more radical responses to the challenges of climate change. However, as the social groups involved in this movement have multiplied so have the modes of engagement and the stories told about just environmental relations. As documented by a growing scholarship, the term climate justice is today a terrain of contestation and multiple interpretations. In this paper we review previous work on the climate justice movement, map the social networks that make up this movement, trace justice claims made by activists, and analyze the political strategies these claims give rise to. Our analysis is informed by an extended interview and observation study at five UN climate summits during the past decade. In particular we draw upon 30 interviews with climate justice activists present at the 23rd UN Climate Conference in Marrakech in November 2016, including voices from environmental and development NGOs, women’s groups, youth organizations, and indigenous peoples. Our paper depicts a heterogeneous movement that makes use of UN climate summits to mobilize grassroots engagement for long-term system change, and yet struggles to maintain a critical distance to global climate policy-making by balancing insider and outsider strategies.

From citizen participation to government participation?

Reference 0216

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Extensive research has been conducted on how and to what extent citizen participation takes place in the decision-making and implementation of environmental policies. However, research on how the roles of local governments change with extended citizen participation is still limited. How and to what extent do local governments take on more facilitating and enabling roles? (How) do local governments participate in societal initiatives that are governed by citizens? What does this shift of government roles, from rowing and steering to facilitating and enabling, mean for social justice and equity? These novel questions are addressed in the study of four local climate change adaptation initiatives in four different European countries in which citizens were engaged. These cases represent bottom-up initiatives which have dealt with the reduction of vulnerability to flooding in cities in France, Ireland, Austria and The Netherlands, hence under different institutional contexts regarding flood risk governance. Analysis and comparison of these cases was done through 36 in-depth interviews with representatives of key stakeholders. The paper demonstrates that local governments are struggling with letting go and taking up those new roles. It argues that the social justice implications of increased citizen participation and decreased government steering are hardly addressed, let alone resolved. The paper ends with an agenda for furthering research on the shifts of responsibilities of local governments and their social justice implications. The paper directly links to the conference theme of Allocation and Access in a warming and increasingly unequal world, and specifically the thematic stream of justice and equity in earth system governance.

Targeting environmental injustices in the Niger Delta Region of Nigeria: A question of Human Rights

Reference 0219

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This paper offers a critique of the several approaches that have been planned or adopted in dealing with the multiple cases and decades of environmental injustices in the Niger Delta Region of Nigeria, with emphasis on the contributions of the communities, Nigerian government and multinational oil companies operating in the region. We explore the specific conditions that generated the decades of environmental injustices in that region until the present day. It also x-rays the efforts of Nigeria government, international agencies, human right organizations, NGOs, etc. We examine the strategies and roles of regulatory system, that failed to address the crux of the matter. It was evident that one approach after another has failed, or is delayed, to protect the health of vulnerable communities and their environments from destruction. We maintain that the Niger Delta Region of Nigeria has remained the albatross of the international community in all cases of environmental injustice crises. They seek relief from injustice, injustice for their human rights which have been severally and brutally violated in the preceding decades. We advocate review and re-visitation of the erstwhile strategies and evolution of a more virile global action-agenda to address the problem.

Engaging with citizens: how to reorganize governmental organizations to facilitate citizen participation in climate adaptation?

Reference 0238

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While currently local governments are still taking the lead in the planning and implementation of climate adaptation measures, the trend in several (neoliberal) countries is that citizens should participate in and take responsibility for climate change adaptation. Citizens play an important role by taking measures on private property and/or by participating in the planning, implementation and maintenance of adaptation measures in public space. Various studies show that local governments are struggling how to engage with citizens. Changes within the governmental organization are necessary to facilitate and empower citizens in taking adaptation measures. Therefore, in our research, we gain insights in how local governments can change their organizations. In two 'backcasting' workshops, we challenged over 20 local governments in the Netherlands to think differently about three relevant themes: (1) changes needed within their own government organization, (2) changes needed in the organization of participation between government and citizens, and (3) changes for citizens to become active on their own property. Representatives of local governments were asked to develop future outcomes for each theme by 2030, and to work backwards by thinking of concrete events and policy actions connecting the future outcome to today. Findings illustrate that local governments have many ideas on active citizenship regarding adaptation measures on private property, and also on reforms within their own organization. Yet, much disagreement exists on empowering citizens in the planning process of adaptation measures in public space. There is a discrepancy in what local governments believe citizens are capable of, and in the extent to which governments want citizens to participate in public processes. Local governments seem both to be willing and afraid to allocate responsibilities to citizens. This anxiety can be explained by prospects of citizens abandoning their responsibilities (due to other personal agendas). They also fear that measures taken by citizens interfere with related government responsibilities (own discharge systems that outflow to the public ground water). This paper discusses this (re-)allocation of responsibilities between government and citizens, and concludes with the relevant changes in governmental organizations for empowering citizens in planning processes of adaptation measures in public space.

Multi-stakeholder initiatives (MSIs) for sustainable global value chains: understanding legitimacy challenges in the global South

Reference 0246

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Multi-stakeholder initiatives (MSIs) are recognized as important innovators in global value chains by developing and implementing sustainability standards. MSIs are mostly initiated by Northern-based multinational corporations and NGOs, with the objective to change the conditions of agricultural and food production in the global South. These initiatives are generally perceived as 'best practice' in setting sustainability standards as they bring together key market and social and environmental NGOs to jointly tackle severe global sustainability challenges. Nevertheless, MSIs face several challenges constraining their acceptance as legitimate private governance arrangements, which relate in particular to the Southern stakeholders of MSIs. Research shows that MSIs specifically face challenges in connecting to producers and Southern governments, who often perceive MSIs as neo-colonial attempts to control production practices in the South. These legitimacy challenges constrain the ambition of MSIs to sustainably transform entire sectors of industry.

This paper uses fuzzy-set Qualitative Comparative Analysis (fsQCA) to study configurations of conditions that can explain the legitimacy challenges faced by MSIs in relation to Southern stakeholders. QCA is especially appropriate for research of a small to medium number of cases where standard qualitative methods for comparison are not sophisticated enough and mainstream statistical techniques are not suitable. For this study eleven MSIs have been selected on the following criteria: the MSI targets global value chains; exists only of private actors (businesses and NGOs), works on sustainability issues regarding food and/or agriculture by developing and implementing sustainability standards. By using these selection criteria a number of relevant explanatory variables is held constant. To provide suitable and in-depth data for the fsQCA, secondary data of existing case studies is used, which allows for a large set of cases to be included and avoid duplication of research efforts. Furthermore, MSI minutes and documents are analysed to provide additional input data for the fsQCA.

This paper advances current theories on private governance by studying how configurations of legitimacy criteria determine the ability of MSIs to connect to specific stakeholder groups. Moreover, the results of

this research will enable us to explore how MSIs can overcome legitimacy challenges related to Southern stakeholders and to generate critical knowledge on how to rethink the governance of global value chains.

Explaining changes in climate related policy paradigms: a study on influencing drivers & modes of policy change in Bangladesh & Nepal

Reference 0249

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Climate change poses serious challenges to least developing countries such as Bangladesh and Nepal. Planned climate policy efforts are therefore necessary and the government of Bangladesh and Nepal is making continuous efforts to increase the resilience of vulnerable communities. In the last two decades, the climate related policies of the two countries have been gradually changing and continue to develop, using different policy paradigms. The aim of this paper is to explain the changes in climate related policy paradigms (CRPP) in Bangladesh and Nepal. The paper answers three questions to achieve the aim. First, what are the different CRPPs emerged in the last two decades? Second, what are the drivers and how do they influence the policy paradigm change? Lastly, what different modes characterize the policy paradigm change.. The methods used to answer the questions include analysis of the policy documents and closed door interviews with key policy actors in Bangladesh and Nepal. The analysis highlights the key CRPPs and explain 'why' and 'how' policy paradigm changed due to the influence of drivers between 1997 and 2016. Based on the empirical evidence, we conclude that CRPPs have changed in the last two decades, characterizing the policy change as 'layering' of policy paradigms, but not realizing any transformative change. The results indicate that the policy layering in this research is attributed to the drivers such as unstable political situation, lack of financial support, influence of national NGOs, global policy frameworks, extreme weather events, and interest of political leaders. Lastly, we discuss that the political drivers play a significant role in influencing change in CRPPs of Bangladesh and Nepal.

Climate Change Adaptation in agriculture sector: An analysis of governance challenges in two Pakistani provinces

Reference 0256

Muhammad Mumtaz

Fundação Getulio Vargas

Climate adaptation policies are a key to protect farmers from future climate vulnerability. However, what are the implementation challenges of those policies at the subnational level? This study develops a framework to understand response of subnational governments to climate adaptation policies using the case of Pakistan, looking at the province of Punjab and the province of Khyber Pakhtunkhwa. Pakistan is one of the most vulnerable countries to climate change and its agriculture sector is highly exposed to the adverse impacts of climate change. In Pakistan, the responsibility of implementation of climate change policies and action plans rests with respective provinces. The scope of the present study is to explore the prominent initiatives of provincial government of Punjab and Khyber Pakhtunkhwa for adaptation of agriculture sector to climate change. More succinctly, the study investigates the autonomous adaptation to climate change for agriculture sector in the provinces. The most important initiative of Punjab government, inter alia, is launching awareness campaign about climate change adaptation by publishing related literature in local languages, establishing a radio station, arranging farmer day, and writing articles in newspapers. One notable initiative by Khyber Pakhtunkhwa government is the development of provincial climate change policy.

The differences in initiatives in these provinces are subnational climate policy, research untaken, and institutional capacity. Khyber Pakhtunkhwa government has developed provincial climate change policy whereas the Punjab government is in the process of formulating its policy. Punjab, however, is leading in terms of carrying out research work and developing institutional capacity.

These differences 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 of two provinces are essentially similar and are majorly driven by the previous experiences of farmers, sustainability in agriculture production, and the knowledge sharing. Moreover, both provincial governments are giving training to farmers for agriculture adaptation. Additionally, the government of Punjab is practically enhancing capacity building by arranging training programs.

The study finds that local farmers are actively involved in autonomous adaptation in the both provinces and the subnational governments also encourage engagement of farmers in climate adaptation policies. 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. These factors include past experiences and knowledge sharing of farmers.

The Practice of Multilateral Climate Governance: Redefining and Sidelining Equity?

Reference 0259

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Equity remains a deeply contested concept in the evolution of multilateral climate governance, tracing back to the 1992 United Nations Framework Convention on Climate Change (UNFCCC). Academic debate and geopolitical conflict alike has focused for the last three decades on how to operationalize the principle of "common but differentiated responsibilities and respective capabilities" of industrialized and developing countries in combating climate change, enshrined within the UNFCCC. In the first two decades of multilateral climate governance, the scholarly focus was on advancing notions such as a global carbon budget, and ways to fairly distribute it. Much attention was devoted within political and policy analyses to innovative ways of conceptualizing responsibility and burden-sharing in the context of multilateral climate governance. These debates remain, however, somewhat disconnected from recent practices of current multilateral climate governance. In this paper, I take a different approach to analyzing equity, by scrutinizing the implications of three key trends that are increasingly center stage in multilateral climate governance: a growing embrace of transnational (non-state actor-led) climate action within the multilateral context of the UNFCCC; a growing reliance on transparency (particularly as measuring, reporting and verification of climate actions) as a central tenet in multilateral climate governance; and finally, the increasing centrality of anticipation processes, i.e. scenario building, climate modelling and foresight exercises, intended to imagine transformative climate futures, particularly in the context of a global goal of keeping average mean temperatures to below 1.5 degree centigrade. These trends, I argue, are recasting notions of equity, with important consequences for ambitious climate action. Each trend appears unproblematic and even essential to an ostensibly shared global project of stimulating ambitious climate action from all. Yet, their equity implications require critical scrutiny, including whether and how the embrace of transnationalism within the UNFCCC further exacerbates, rather than bridges, North-South divides; how the focus on transparency (i.e. making visible who is doing what) becomes a politically contested site wherein notions of burden sharing and responsibility for climate action are (re-)negotiated; and the political and equity implications of seemingly technical processes of anticipating alternative

climate futures (and pathways to realize them, including controversial new options such as climate engineering). In scrutinizing the equity implications of these trends in multilateral climate governance, I also consider the consequences for UN-led multilateralism to (still) deliver on climate justice and equity.

Why we should not miss the monkeys for the trees - defaunation as the Damocles sword in forest governance

Reference 0260

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In December 2015, the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21) in Paris highlighted once more that reducing deforestation and forest degradation is of global importance. However, forests and forest fauna are increasingly under threat worldwide in many places, due to increasing exploitation of forest resources, habitat loss and overhunting. While human activities directly affecting forests, including deforestation (e.g. clear cutting) and degradation (e.g., selective logging) have received increasing attention at the UNFCCC, a third “de” - defaunation has to a great extent been overlooked. Human-induced faunal loss does not only reduce tree species diversity, but also significantly erodes key ecosystem services and functions. Despite this, global forest conservation initiatives currently mandated by the UNFCCC are mainly concerned with preserving tree cover.

The main objective of this paper is to analyze defaunation in the context of global and domestic forest governance. We argue, that the lack of holistic approaches to forest governance, in which the preservation of fauna is adequately considered, threatens the long term effectiveness and equity of global and local efforts to protect forests. Ultimately, this lack also gives rise to environmental injustices where those who depend more directly on forest resources are more likely to lose access and the benefits to the resource base, for example animal species important for local food supply. In turn, the decrease in forest resilience and tree diversity also reduces the long-term availability of non-timber forest products, that is fruit and nut bearing trees, who need forest fauna for their regeneration. To further explore the impacts of this major gap in international forestry governance, we zoom in on a case study in Nigeria’s Cross River State. Here we analyze how the current foci and gaps of forest governance across scales affect allocation and access of environmental benefits and burdens in the region. In addition, we discuss how an equitable and locally appropriate distribution of the costs of forest conservation and the benefits from collectively owned forest resources could look like in Cross River State and beyond.

Yasunization, climate and environmental justice: toward a social foot print of oil operations. Reflections from a study case.

Reference 0261

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Since the Rio Conference (1992), by way of the Millennium Ecosystem Assessment (2005) and Sustainable Development Goals (2015), societies and scientists are investigating and debating about the multi-scale relationships and dependences between social and ecological spheres. Moreover, they highlight also the pressure on ecosystems of human activities and the consequent increase of climate change and loss of biodiversity and human well-being.

Among these anthropic activities, impacts of fossil fuel operations are widely recognised in scientific literature, together with the need of more effective politics and projects to avoid or minimize these effects.

One of the few oil-related political experiments in the world is the so called “Yasunization”, a neologism coined in Ecuador to define an initiative to avoid the extraction of fossil fuels, combining the fight against climate change, community engagement, biodiversity conservation, promotion and protection of human rights, environmental justice.

Starting from these considerations, we carry out a study project which aims are: 1) to analyse and map overlaps and interactions between oil & gas activities and biological and cultural aspects in a high sensitivity area; 2) to investigate socio-ecological impacts and benefits of oil & gas projects at different scale; 3) to define criteria and guidelines to apply “Yasunisation politics”.

Methodology is based on the construction of a geodatabase of the study area collecting all available ecological and anthropic data derived from fieldworks and secondary sources; GIS analyses of the overlaps and interactions between selected socio-ecological indicators and oil & gas features; a review process of all available documentations concerning these aspects.

We focus on the Amazon area between Ecuador and Peru, a territory worldwide recognised for its high biological and cultural diversity and its importance in provisioning ecosystem services, globally and locally to a variety of indigenous groups. Here different oil & gas activities are in developing since 1970, covering

nowadays more than 50% of the territory and creating several direct and indirect impacts on ecosystems, health and local socio-cultural structure, while often economic benefits derived from oil are consumed far from here. The situation is particularly critical for the overlaps with suspected uncontacted people territories that are excluded from decision making processes and economic benefits.

Results show several overlaps and impacts between hydrocarbon activities and high ecological and cultural areas, highlighting the urgent need of more effective politics to reach environmental justice and sustainability, where Yasunisation projects can lead transitions to an unburnable, more equitable world.

"Successful" low-carbon energy transformation at the community level? An energy justice perspective

Reference 0263

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The aim of this paper is to critically analyse so-called "successful" low-carbon energy transformations under the energy justice magnifying glass. Drawing upon insights from ethics, economics and justice, we focus on two case studies that have been arguably referred to as successful local energy transformations: Samsø (Denmark) and Feldheim (Germany). Samsø, the world's first 100% renewable energy-powered island, is labelled as one of the most inspiring cases for "sustainable energy communities". Feldheim is the first energy-autarkic settlement in Germany with a community-owned electricity grid that is completely supplied with local renewable energy. Feldheim is portrayed as an "energy transition model" for small communities.

The analysis goes beyond the traditional technology paradigm that dominates the existing literature. It offers community perspectives and causal inferences about energy (in)justice in relation to the transformation of local energy systems. Theories of justice and process tracing form the core of our research methodology. We analyse the cases from two perspectives: procedural justice and distributive justice. We use process tracing as qualitative analytical tool to systematically identified and examine 'diagnostic evidence' in relation to four main areas: a) decision making, b) consultation processes, c) information flow/sharing, and d) outcomes. Preliminary results show that in the case of Samsø, the decision making process -including consultation and information sharing- was highly consistent with aspects of procedural justice. However, with regard to distributional justice, findings show that certain groups benefited more than others. Farmers benefited on multiple levels, such as better investment opportunities due to tax reductions and a strong influence on siting decisions of infrastructure due to land ownership. In Feldheim, the tight social networks supported the achievement of more just outcomes. Consultation processes took place first with all the inhabitants of the village and then with the regional authorities or project developers. The flow of information was facilitated by local community leaders. Information was catalysed and made accessible by people from the community with specific qualifications.

Decision making was very inclusive but not free of conflict. Nonetheless, benefits were distributed within the community according to what was considered fair outcomes.

In all, and despite the fact that the local communities perceived the outcomes of the energy transition were particularly beneficial to some groups, acceptance levels were found to be very high. We conclude that perceived fairness of the procedure as seen in both cases leads to increased perceived legitimacy of the outcomes.

Access to Governance: Explaining the Trajectory of Certification Schemes Across Markets and Producer Groups

Reference 0273

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Global value chains can improve the lives of developing country subsistence producers, yet often exacerbate inequality and environmental burdens in these communities. In an era of declining willingness or ability of national governments to govern global markets, non-state transnational certification organizations are increasingly emerging to fill this governance gap by launching programs to empower producers to improve practices and connect to consumers demanding ethical products.

To date, however, only a small subset of producers have access to such programs. Coffee, timber and seafood producers, for example, are eligible for certification, but producers from other sectors (e.g. rubber, diamonds, pets) are excluded from this governance system. What explains this variation in access, and certification's trajectory across markets? Much has been written about certification and market activism, yet why certification organizations decide to govern some markets, but not others, remains an open and important question. Understanding what makes markets a good match for certification sheds light on the breadth of the global economy for which certification may be a good institutional "fit," a critical component of effective earth system governance.

Drawing on process tracing and discourse analysis of original interview data from leading certification organizations, the paper finds that when evaluating candidate markets, product activist attributes matter most, followed by organizational culture and product attributes, while political opportunity structures (surprisingly) matter the least. Organizational cultural inertia drives organizations to further their vested interests by certifying products already sold by existing clients or that pose issues they are already working on. They further prefer perishable goods with concentrated supply chains and predictable production levels that are non-luxury goods, since consumers are more price sensitive than previously believed and use different moral calculus for hedonic and utilitarian purchases. However, both factors can be overcome if product activists maximize their persuasive power by: 1) using stereotypes strategically, 2) doctoring their discourse to resonate with organizational desires, and 3) offering resources to lower the cost of market entry.

This argument unfolds via data on several market decisions, but particular attention is paid to the case of artisanal and small-scale gold mining, the leading cause of global mercury pollution and one of the most recent and unique markets to become certified. By filling the gap on certification trajectory in the private governance literature and employing an agentic, discursive institutional analysis, the paper contributes fresh insights that complement existing structural and rational-choice oriented research on institutional change.

Financing Loss and Damage Resulting from Climate Change

Reference 0275

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The negative impacts of climate change that are not mitigated, or appropriately coped with, are referred to in international climate change discourse as 'loss and damage'. At the moment the costs of loss and damage are largely born by the affected populations themselves. There is no international instrument stipulating with whom responsibility for loss and damage lies, or how it can be effectively addressed. The Paris Agreement adopted in 2015 provided a breakthrough in international climate governance with its inclusion of an article on loss and damage, calling on all parties to 'enhance understanding, action and support ... with respect to loss and damage'. The Agreement also enshrined the Warsaw International Mechanism for Loss and Damage (WIM) as the dedicated United Nations body for dealing with loss and damage. However, it left the WIM unsupported by the Agreement's institutional arrangements on finance, technology transfer, capacity building, transparency and compliance. Moreover, none of the 26 existing international climate funds is dedicated to loss and damage. This paper examines how the provisions on loss and damage contained in the Paris Agreement can be effectively operationalised, focusing on the question of finance. The first part of the paper reviews the literature on the scale and scope of loss and damage and grapples with questions of causality and spacial, temporal and institutional fragmentation. The second part of the paper examines the architecture of existing international funds and their potential role in financing loss and damage, as well as the potential role of insurance schemes and innovative concepts such as aviation levies or a fossil fuel levy. The paper demonstrates that existing funds are inadequate for financing loss and damage, while insurance schemes can provide risk transfer and assessment but still require additional solutions to ensure the payment of premiums. Innovative concepts could mobilise significant private finance while depending on new or existing public institutions for effective disbursement. The paper concludes that the most promising approach to financing loss and damage entails a combination of traditional and innovative governance mechanisms that link local resilience-building initiatives with major finance flows.

'Three extra minutes'. Contesting Complete Streets in Ottawa

Reference 0277

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This paper explores the attempts to reconfigure urban space in low carbon directions through the concept of 'Complete Streets'. It explores a project to construct a Complete Street on Main Street in Ottawa. The analysis shows that the 'stickiness' of a high carbon world occurs principally through the political articulation of desires for existing (high carbon) practices, namely commuting by car, combined with the path dependencies of technical infrastructures, specifically low density spatial planning and separation of residential areas from city centres as places of work. Planners presented the implications of projects in largely technical terms and this depoliticisation strategy was undermined by the repoliticisation that occurred principally over the question of how much time commuters would lose. The politics of this low carbon intervention thus occurred between those living around the Complete Street plan, who mobilised for it, and those who saw that location merely as a place of transit. The project itself succeeded, but the long-term success of such interventions depends on tackling the question of desire more explicitly, not attempting to depoliticise interventions as 'merely technical'.

F-Oil: A fair-trade standard for oil?

Reference 0278

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Oil production and use has dramatic impacts on the local and global environment and communities. Against the background of discussions on energy justice, often encompassing philosophy, ethics, economics, justice this paper aims to think the unthinkable: what standards should apply if we wanted to create a fair-trade label for the most important fossil fuel, oil. The paper has three parts. In its first part the paper discusses whether oil can ever be said to be fair-traded. It argues that from the perspective of energy, economics and climate justice, oil can never be 100% just or fair. However, this axiom should not lead to abandoning the pursuit of a fair and more just exploitation of oil as compared to the status-quo, in particular if we consider the radical societal and economic changes that the Paris Climate Agreement and any transition to renewables sets upon us. This section also discusses fairness and sustainability considerations that are placed upon renewable energy to provide some orientation for any fair-trade oil standard. In the second part, the paper explores different aspects that a fair-trade certification would need to take into account. This part is based on the three elements of energy justice: procedural and distributional justice as well as justice of recognition. It explores these themes with regard to the local population, the local environment and explores which standards should apply beyond the point of extraction for example to issues surrounding the transport of oil. The final part examines the first certification in this area the EQ100 standard adopted by the NGO Equitable Origin. It takes this standard as a starting point for discussion and examines to what extent it complies with the requirements of justice elaborated on in the second part. Finally, the paper compares the EQ100 standards to other fair-trade standards in order to highlight the dimensions and gaps that a fair-trade standard for oil should cover.

Emerging conflicts and dimensions of justice associated with the renewable energy transition

Reference 0281

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The world is seeing an unprecedented level of investments in renewable energy. This is driven by the need to decarbonize the global energy system, to increase the global access to modern energy technologies as well as to secure the uninterrupted availability of energy sources at an affordable price in an uncertain world. This research takes off from the emerging body of literature discussing dimensions of space connected to peaking fossil fuel stocks where the energy transition is claimed to be a main factor driving societal land needs. While the dominant discussions around the rush for land and resources in the context of low carbon energy transitions are associated with feedstock production for biofuels, increasingly debates of potential or existing land conflicts linked with the development of large scale solar, wind or geothermal energy projects as well as emerging conflicts over scarce minerals are occurring. We foresee that struggles involving different interests and groups of actors related to use of space for renewables will increase and therefor propose this research to address less investigated concerns of justice. By investigating these aspects we assume that such unintended consequences occurring along the lifecycle of low carbon technologies can be better foreseen and tackled and incidents of conflicts reduced.

The concept of energy justice has emerged as a crosscutting agenda seeking to apply justice principles to various issues of energy policy, production and consumption. Distributional justice aspects are particularly suited to address spatial components of the physically unequal allocation of environmental benefits and ills associated with energy projects. We therefore aim at bringing forward neglected or emerging dimension of (un)equitable allocation of risks and opportunities specifically associated to renewable resources and technologies. More specifically we will be starting from a brief overview of resources required along the full lifecycle of important renewable energy systems and from here identifying the most salient resources at risk for conflicts. Examples includes the need for rare earth metals, other critical minerals (e.g. lithium), appropriation of “degraded” land as a bioresource and e.g. sea resources increasingly explored for energy purposes.

We expect to find that conflicts related to energy will shift geographically with a transition to a renewable energy system. Further we assume that the demand of land and the people impacted will differ widely based on which renewable resource/technology is explored, and where the appropriation of previous “idle land” or “low value resources” will be important.

Planetary Justice - Towards a more equitable discourse in climate change governance

Reference 0291

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Equity- and justice-related concerns are becoming central in climate change governance. For the first time ever, the Intergovernmental Panel on Climate Change (IPCC)'s Fifth Assessment Report of 2014 includes an entire chapter on equity, thereby acknowledging its importance for future policy decisions on climate change in a global context. Yet, while this 'justice turn' is welcome, we know very little about which conceptualization of justice is most prominently reflected and why. This is problematic for two main reasons. First, the IPCC reports ultimately provide a scientific and consensus-based frame for climate change – with the power to greatly influence the outcome of climate negotiations. Accordingly, how justice is perceived will likely affect how justice will be pursued in practice. Second, related and recent findings highlight an enduring dominant role of Northern authors within the IPCC with mainly economic and technical backgrounds. This invites scrutiny as to how Southern voices and demands for justice are portrayed (or not) in the report and with which implications for equitable climate governance. Accordingly, this paper provides valuable insights in the way and extent to which the IPCC Fifth Assessment Report conceptualizes and frames justice. The paper pursues its analysis on the basis of the 'planetary justice research framework', which distinguishes five major philosophical traditions: liberal egalitarianism, cosmopolitanism, libertarianism, capability approach, and critical perspectives (i.e.: feminism, Marxism). By doing so, each theory's key principles, subjects, and mechanisms of justice are identified – ultimately allowing to more accurately distinguish different views, pinpoint inconsistencies, and illuminate overlaps, agreements, or potentially missing viewpoints. Empirically, the analysis focuses on selected chapters of the IPCC Working Group III (Mitigation of Climate Change). The results reveal a remarkable variation of normative conceptions within and across the examined chapters. Overall, we observe that certain justice notions appear to attract more attention, while critical perspectives, in particular, and associated concepts, and mechanisms are almost entirely neglected. Such normative shortcomings may gravely undermine effective and legitimate climate action. We explain our findings on

the basis of hegemonic authorship patterns, suggesting that strengthening procedural justice may be a prerequisite for a more equitable discourse on climate change for the globe.

Governance and the access and allocation of forest protected area (FPA) resources in Zimbabwe

Reference 0297

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Forest protected areas in Zimbabwe are rich in biodiversity that contributes towards local communities' livelihoods sustenance, climate change mitigation and national economic growth. This paper analyses the governance of access and allocation of FPA resources at the forest level from both historical and contemporary perspectives and how these have led to forest degradation and unsustainable local communities' livelihoods. The governance and management approaches are characterized by unfair legislative and policy frameworks, low levels of community participation, weak rule enforcement, lack of compliance with rules, forest management's lack of procedural legitimacy and highly restricted access to FPAs. The paper concludes that poor FPA governance is prevailing at the forest level disadvantaging mainly local communities. The paper goes on to explore governance arrangements that may address resources distributional problems whilst enhancing FPAs' triple objectives of biodiversity conservation, enhancement of local people's livelihoods and climate change mitigation.

"Georgetown ain't got a tree. We got the trees"-Amerindian Power & Participation in Guyana's Low Carbon Development Strategy

Reference 0306

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International bi-lateral agreements to support the conservation of rainforests to reduce greenhouse gas emissions are growing in prevalence. In 2009, the governments of Guyana and Norway established Guyana's Low Carbon Development Strategy (LCDS). We examine the extent to which the participation and inclusion of Guyana's indigenous population within the LCDS is being achieved. We conducted a single site case study, focussing on the experiences and perceptions from the Amerindian community of Chenapou. Based on 30 interviews, we find that a deficit of adequate dialogue and consultation has occurred in the six years since the LCDS was established. Moreover, key indigenous rights, inscribed at both a national and international level, have not been upheld with respect to the community of Chenapou. Our findings identify consistent shortcomings to achieve genuine participation and the distinct and reinforced marginalisation of Amerindian communities within the LCDS. A further critique is the failure of the government to act on previous research, indicating a weakness of not including indigenous groups in the Guyana-Norway bi-lateral agreement. We conclude that, if the government is to uphold the rights of Amerindian communities in Guyana, significant adjustments are needed. A more contextualised governance, decentralising power and offering genuine participation and inclusion, is required to support the engagement of marginal forest-dependent communities in the management of their natural resources.

The Impact of Chinese Foreign Direct Investment and Government Transparency on Natural Resource Depletion in Sub-Saharan Africa

Reference 0311

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Since the global financial crisis in 2008, Chinese foreign direct investment (FDI) in Africa has overtaken the FDI of traditional 'Western' donors, reflecting the increasing demand of the Chinese government for natural resources. One of the controversial issues regarding the increasing Chinese FDI is whether the weaker conditionality causes adverse environmental effects on sustainable natural resources management in Sub-Saharan African countries. Several previous studies claim that corrupt national elites in this region prefer the weaker conditionality of Chinese money. In this sense, the level of transparency of Sub-Saharan African governments could be another crucially influential factor to the natural resources degradation in this region. However, most previous literature focuses on either the impact of Chinese FDI or the impact of governmental corruption. This paper explores the impact of Chinese FDI on natural resource depletion in Sub-Saharan African countries and the role of government transparency in sustainable natural resources management comprehensively to better understand threats to sustainable environmental governance in this region.

Applying a multiple regression model, this study observes the correlation between the amount of Chinese FDI, the level of government transparency and the level of natural resource depletion in twenty-two Sub-Saharan African countries in the period 2005 to 2010. The results show that high levels of transparency are associated with low levels of natural resource depletion. On the other hand, there is no statistically significant correlation between Chinese FDI and natural resource depletion. These results challenge the argument that Chinese FDI aggravates natural resource degradation and suggest that policies to advance the level of transparency of the Sub-Saharan African governments - for example, global supports to eradicate corruption or capacity-building programs for democratic and transparent government - can lead to more sustainable natural resources management in this region. This research highlights the significance of the norm of transparency for sustainable development in Sub-Saharan Africa.

Intended Nationally Determined Discursive Contributions: A discourse analysis of INDCs from top emitters and the climate vulnerable forum

Reference 0316

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In the lead-up to the 2015 Conference of Parties meeting in Paris, 186 countries representing over 95% of global emissions, submitted Intended Nationally Determined Contributions (INDCs). These documents outline national goals for greenhouse gas emission reductions and state financial needs for unfolding mitigation and adaptation efforts. These climate action pledges, however, are more than just goal setting reports. They are important socio-political documents that are contested, negotiated, and ongoing. In this paper, we conduct a discourse analysis of submitted INDCs from nineteen founding nations of the Climate Vulnerable Forum (CVF) as well as the top ten greenhouse gas emitters. In particular, we identified the following pervasive discourses that undergird the INDCs: 1) most countries highlight their unique and exceptional vulnerability to climate change, 2) countries within the CVF carefully construct their readiness to receive climate finance, 3) countries have divergent discourses about the use of markets, 4) both top emitters and CVF nations rely heavily on renewables and land use to reduce emissions, 5) implementation and accountability mechanisms are vague or non-existent, and 6) CVF countries and emerging economy countries clearly assign responsibility to historical emitters while only Japan directly acknowledges historical emissions. These INDCs are ambitious goal-setting documents that are central to the continued global efforts to address climate change. Our analysis reveals areas of tension, highlighting potential future challenges to the implementation of the INDCs.

Representing whose interests? Stakeholder perceptions around allocation and access in climate policy initiatives

Reference 0324

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This paper presents a synthesis of findings from quantitative and qualitative investigations of stakeholder views regarding their involvement in climate governance, conducted over the period 2010. An established framework of principles, criteria and indicators (PC&I) is applied to the United Nations Framework Convention on climate change (UNFCCC) overall, and the initiative referred to as 'Reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests, and enhancement of forest stocks in developing countries' (REDD+). Assessment focuses on the nature of stakeholder participation and interest representation in particular – in terms of inclusiveness (access) and resources (allocation). Stakeholder views are evaluated at both the international level and in selected case study countries (Nepal and Papua New Guinea). The paper begins by outlining the nature of participation of both state and non-state actors within the UNFCCC, as well as REDD+, and continues with a delineation of the approach and methods utilised during the study period, including a breakdown of survey participants, and country profiles. Presentation and analysis of the survey results follows, using a developed/developing country frame. A selection of qualitative comments is also included. The study reveals a consistent set of results across stakeholder groups, with inclusiveness receiving the highest score of all indicators, and resources the lowest. Views regarding perceptions of equality (and inequality) were more varied. Developing country participants – possibly due to their more direct involvement with climate governance 'on the ground' universally – provided higher ratings overall. These results indicate that while the UNFCCC and initiative such as REDD+ can be seen to be inclusive of various stakeholder interests, the allocation of resources to facilitate their active participation continues to be elusive. Previous studies suggesting the existence of a 'South/North' divide appear to be confirmed, with implications for the future implementation of activities aimed at reducing global greenhouse gas emissions, notably under the Nationally Determined Contributions of the 2015 Paris Agreement.

Investigating the influence of global norms on natural resource and development conflicts: lessons from Nepal, Uganda, and Sudan

Reference 0325

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This paper explores the influence of global norms upon local struggles and international mobilisations related to conflicts between 'development' and the sustainable use of natural resources. The data comes from two carbon forestry projects in Uganda and Nepal, and a hydropower project in Sudan. The analysis tracks the use of norms by people directly affected by the conflicts and engaged in the local struggles, as well as by people mobilised around the issue internationally. Common to each case is the very influential role of intermediaries and the strategic choice of norms drawn upon (e.g. justice, human rights, international standards related to participation), target audiences (local or national government, or international community), and fora for expression of the conflict (whether courts of law or of public opinion). The travel and translation of norms is found to differ in each case, largely as a result of political barriers to expression of norms and the nature of accountability of the state. International norms drawn on by those involved in the struggle can have considerable or minimal effect on the outcome of the conflict, in other words, if the state is responsive to or dismissive of the pathways of norm travel. Top-down REDD+ projects travel much more smoothly in Nepal, for example, than in Uganda, while norms related to hydropower in Sudan have much less – though not negligible effect. Amongst other findings, the paper concludes that international norms and fora that are attentive to the local expressions of the struggles are more likely to reduce tensions between the various actors, and so more effectively bridge the tensions between conflict and 'development'.

Navigating the normscape: the role of intermediaries in bringing local justice claims to global forest governance

Reference 0326

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This paper explores the enduring dissonance between representations of justice in global environmental policy and justice claims related to environmental issues made by people in developing countries. For example, local struggles for recognition of customary land tenure may receive little attention in international policies, which may instead focus on financial incentives or standards for participation. With a focus on REDD+, we investigate how intermediaries as individuals and organisations seek to mobilise the justice claims of affected people from the bottom up and represent them at higher scales to influence policy. We combine qualitative interview data from local, national and international levels to explore the process of scaling-up justice claims. We track this journey empirically from claim-making among rural forest-adjacent villagers in Nepal and Uganda, upwards through specific civil society intermediaries who mobilise and attempt to navigate different institutions, forums and negotiation processes (including UNFCCC COP22 in Marrakech) to attain greater recognition. At the most general level, we find that intermediaries perceive a low likelihood of substantively advancing recognition through national or international climate and forest policy debates. Although justice norms in mainstream or internationally-sanctioned processes focus on material distribution and formal aspects of participation rather than recognition, most intermediaries adapt their normative strategies to operate within that political space. However, those who prioritise complex recognition issues such as preserving customary tenure or traditional land use practices select riskier strategies and channel resources towards alternative pathways and networks which compromised much less the norms underpinning local justice claims. A minority of intermediaries try to bring legal action in courts because they perceive national political space to be restricted and civil society coalitions relatively impotent. Others seek to influence national policy indirectly by drawing on international networks to shape national debate with norms relating to rights and tenure recognition, sometimes termed the 'boomerang effect' of norm travel. We provide specific examples of mobilisations in each country and discuss implications for making climate-related forest governance processes more effective channels for promoting environmental justice.

Internal politics and the Recognition of Environmental Justice Claims: the Case of the Merowe Dam in Sudan

Reference 0327

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This paper investigates the dynamics of activism and environmental justice norm recognition in the specific context of undemocratic governments. Through an examination of different struggles of people displaced by the Merowe Dam in Sudan which gave rise to regional and international litigation initiatives, we test norm diffusion theories that assert that international pressure is a major factor in the success of domestic struggles against non-responsive governments. Norms tested include global environmental and human rights norms relevant to the construction of dams. We use a combination of discourse and legal analysis and semi-structured interviews with stakeholders to demonstrate that the recognition by the Government of Sudan of the environmental justice claims advanced by one of the affected groups is largely attributable to the unique political interplay between the group and the government. In addition to advancing knowledge of the negative social impact of the Merowe Dam on the affected groups, this paper advances our understanding of the limitation of the boomerang model of mobilization in the context of authoritarian governments. One of the implications of this analysis is a required shift from the traditional focus on transnational activist networks (TANs) to exploring the relationship between local activists and/or stakeholders and their respective governments.

Decolonizing Environmental Justice

Reference 0328

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The concept of environmental justice emerges in the late 1970s and 1980s in the United States, with the struggles of afro-american communities against unequal spatial distributions of toxic pollution. Following the development of related conceptual frameworks, in particular David Scholsberg's (2007) three-dimensional environmental justice framework, scholars have increasingly used it to analyze environmental injustices in the Global South. Yet, despite the historic relation with racial issues, and despite the more recent geographic focus on the Global South, there's been surprisingly little engagement with decolonial thought.

This paper attends to this gap by applying a "decolonial reduction" (Maldonado-Torres, 2001) to the now widely used three-dimensional environmental justice framework (distribution, recognition and representation). It introduces the concept of "coloniality of justice" to help identify some of the colonial pitfalls an environmental scholar may encounter when addressing justice concerns. Drawing on decolonial thought, it asks if and how environmental justice can be used to address the injustices caused by the project of modernity and coloniality. It shows how using Western justice theories to conceptually frame environmental justice, whilst potentially useful, can also produce new injustices or perpetuate existing ones. The authors argue that if it wishes to serve the need of the global poor, environmental justice research will need to engage more thoroughly with the colonial difference.

Which REDD+ and for whom? Competing claims and justice rationales in Mexico, Nepal and Vietnam

Reference 0329

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Reducing Emission from Deforestation and Forest Degradation (REDD, as well as REDD+) national strategies, pilot projects and activities land in complex political, social and cultural environments where there might be historical disputes around forest governance and where inhabiting actors will articulate a series of claims about REDD+. In this article, we draw on semi-structured interviews with social actors involved in the design of the REDD+ national strategy and project initiatives in Mexico, Nepal and Vietnam to understand which forest governance and REDD+ issues have generated more competing claims and consensus in early policy design and implementation, why this has been the case, and how each of these actors' claims mobilize distinct or similar dimensions and notions of justice. Our analysis demonstrates that several actors across the three countries disagree on the quality and extent of participatory REDD+ processes to date, and they express concerns on the procedures and distributive outcomes of REDD+ benefit sharing mechanisms. Vietnam is the country where social contestation over forest ownership and over the control of REDD+ activities is more intense, while many actors across the three countries hold opposing views about how much focus REDD+ activities should be put on carbon accounting and monitoring as a means to generate revenues, and who should control such revenues. Actors are aligned in relation to their preferred types of policy strategies and incentives to realize REDD+, including locally tailored rural development and forestry programs in Mexico, community forestry in Nepal, and Payment for Environmental Services in Vietnam. In the light of these findings, we suggest that competing claims and conflict in REDD+ result from the very distinct justice rationales regarding the type of participation approaches and suitable forums for REDD+ decision-making, the allocation of forest and carbon rights and any resulting revenues, and from the identities and values that REDD+ should respect or embrace. This, in turn, leads us to cast doubt on the extent to which REDD+ as currently thought can transform some of the injustices in resource access that persist in the studied countries and that REDD+ might have unwillingly resurfaced.

Global opportunities and local threats of renewable electricity systems- a spatial analysis in support of reaching UK's climate targets

Reference 0332

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The decarbonisation of the power sector with a possible large scale deployment of variable renewable energy source (VREs) is key for reaching the UNFCCC Paris agreement goal of limiting global mean surface temperature rise to well below 2°C. The UK committed itself to a reduction of greenhouse gas emissions of 80% relative to 1990 levels by 2050. While in the UK national support for VREs is high; environmental, social and technical effects are location dependent where they are facing large opposition.

Energy planners and modellers usually aim to find the cost-optimal solution for the entire energy system of a country to meet a certain climate target. The answers they find do not consider locally specific social and environmental externalities and resulting opposition threatening to reach decarbonisation targets at the costs expected by decision makers. As a result the local social and environmental acceptance of energy solutions will decide on the success of mitigating climate change. The question how social, environmental and technical constraints influence high renewable energy scenarios in terms of costs, as well as emissions has not been answered in the literature. To close this gap in knowledge we use the following approach: (1) spatial analysis to develop 27 scenarios with low, medium and high social, environmental and technical constraints for VRE development; (2) input the scenarios into the high spatial and temporal resolution electricity system model highRES and, (3) comparison of costs and emissions across scenarios.

We find that costs of highly renewable energy systems are considerable cheaper for the entire population if the system optimal sites are developed. While these benefits accrue for the entire country, the negative local externalities are usually not considered or compensated. In order to develop those sites and achieve higher public support for VRE it is paramount to include those affected by VRE deployment into the planning, development and operation. Our results suggest that it is only fair that the money "saved" from developing the better sites is distributed locally. Only when turning local threats into opportunities can we reach UK carbon targets.

Can nature-based solutions address social processes underpinning vulnerability? Evidence from Sri Lanka

Reference 0334

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The aim of this paper is to understand how Ecosystem-based approaches to climate change Adaptation (EbA) may provide opportunities for empowerment of the social groups with least capabilities to address climate change. Claims are increasingly being made that EbA is capable of delivering social outcomes, such as empowerment of marginalised groups and social cohesion besides its ability to address the impacts of climate change. If these claims are well-founded, EbA could be in an enviable position of being able to simultaneously address climate impacts on agriculture, water security, and hazard regimes, whilst also addressing the contextual factors that contribute to social vulnerability.

Broadly this work is an attempt to understand the relational and processual dimensions of climate change adaptation, with attention to cross-scale social and ecological interactions. The conceptual framework used to address this study encompasses environmental entitlements, livelihoods, and ecosystem services. An analysis of this sort is capable of delivering an interdisciplinary appraisal of the ability of ecosystem-based approaches to societal problems (nature-based, ecosystem-services or ecological infrastructure) to contribute to social change.

The empirical work is drawn from the author's study of several Sri Lanka communities vulnerable to increased floods and droughts under climate change. The methodologies comprises participatory and qualitative data alongside quantitative survey data.

The expected outcomes are based around 3 research foci; the way in which social and ecological dynamics interrelate in ways that influence people's capabilities; the role of EbA interventions in influencing those dynamics; and the context-specific ways in which ecosystem-based approaches may be improved in order to better contribute to the capabilities of the most vulnerable.

I believe that my work is relevant to a wider group of adaptation and resource management scholars interested to understand the links between environmental and social change, and especially how these interactions occur across scales and have consequences for capabilities of the most vulnerable people.

Environmental Rights and the Perils of Intergovernmentalism: Assessing ASEAN Cooperations on Environment (1977-2017)

Reference 0335

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This paper aims to explain as to whether Association of Southeast Asian Nations (ASEAN), the largest regional organisation in Southeast Asia, has been able to accommodate the idea of "environmental rights" in its various forms of cooperation. Whilst many research on ASEAN environmental cooperations has investigated the extent to which ASEAN could effectively establish environmental regimes and institutional framework in regional level, none has by far attempted to relate the cooperation with a broader question on environmental rights. This paper attempts to investigate the linkages between international cooperation and environmental rights. It seeks to address three key questions: (1) what is the main logic/discourse that shapes ASEAN cooperations in environments from 1977 to 2017? (2) Does ASEAN cooperations on environment promote environmental rights and why? (3) What could ASEAN do to deal with some problems related to ASEAN cooperations on environment?

By introducing the idea of "environmental rights", which extends the idea of "Human Rights" to cover not only the anthropocene but also "global biopolitics of nature", this paper will study numerous documents related to ASEAN cooperations on environment and the extent to which these diplomatic negotiations accommodate "environmental rights". This paper argues that intergovernmental mechanism that is embedded in the historical construction of ASEAN environmental cooperations since 1977 has constrained the fulfillment of "environmental rights" in the regional level. This limitation occurs due to ASEAN's strong reliance to the idea of "environmental sovereignty" that lies at the heart of ASEAN's intergovernmental mechanisms. Consequently, any cooperations to resolve environmental problems (such as Haze or Climate Change) has been brought back to state authority and undermining a more broader regional initiative. This paper furthermore argues that establishing a democratic regional governance in environmental sector, which acknowledges the multiplicity of stakeholders in environmental issues, could offer solution to remedy this problem. To prove the arguments, this paper will be drawing upon emerging literatures on deliberative global governance to assess the specific policy and institutional framework of

existing ASEAN cooperations on environment and, furthermore, to make the case for a 'rights-based' approach of regional environmental cooperation in ASEAN.

Stream 2: Conceptual understandings and progress

The 2017 conference will continue the discussion of our 2016 Nairobi conference on inequality and will now focus on conceptual understandings and progress on inequality in allocation and access. Inequality has many dimensions that range from procedural access and democratic aspects of legitimacy, transparency and accountability to consequences like distributive injustice or imbalances of environmental, social and economic outcomes. In this stream we return to some of the foundational questions of the Earth System Governance Science Plan: What is the relevance of questions of allocation and access to earth system governance? How can we reach agreement on interdisciplinary conceptualizations and definitions of allocation and access? What are the normative issues at stake in the relationship between environmental sustainability and social justice in earth system governance? What (overarching) principles underlie governance of allocation and access? How can allocation and access be reconciled with governance effectiveness?

Environmental Governance and the Armed Forces: An Indian Perspective

Reference 0002

Dhanasree Jayaram

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The militaries of the world are regarded as one of the most environmentally destructive forces. Yet for long, they have largely been kept out of the environmental governance regimes asince they are considered sacrosanct agencies that require the requisite amount of energy and autonomy to defend the state against external aggression. For both the security and governance agencies, territorial security comes above environmental security. However, environmental (in)security, that had long been disassociated with national security, has now emerged as an international security challenge that impinges on a country's military at the tactical/readiness, operational and strategic levels. Besides, the military being self-sufficient and multifaceted is being viewed as an agency that could lead a whole of government approach to green governance. Although this can be called an experiment because countries around the world are still struggling to balance the civil-military relations in environmental security governance, the fact of the matter is that it is a necessity more than an experiment. What constitutes the experiment in this case is to fix the modus operandi of involving the military in this process. In India, environmental issues form an important part of academic and policy circles, yet there is a sense of reluctance in associating security with environmental disruption or aligning issues related to environmental security with military objectives. At the same time, the military's role in several activities such as Humanitarian Assistance and Disaster Relief (HADR) and conservation has been prominent, albeit the role is relatively less-institutionalised and is considered ad-hoc in most cases. Constitutionally too, the role of the military is rather restricted. The paper will, therefore assess the challenges posed by environmental change to India's national security by exclusively analysing linkages between environmental security and the military. It will examine the existing views on involving the military in environmental security in the country among various sections of policy significance and the challenges (such as civil-military relations, constitutional provisions, political/bureaucratic state of affairs, and military organisational dynamics) in further institutionalisation of this strategy/policy. By using specific case studies and case-in-studies of its engagement in ecological and environmental tasks, the paper will highlight the Indian military's current position and the probable

policies that it could execute (both autonomously as well as under the auspices of the civil government) in advancing environmental and climate security governance in India.

Exploring the impact of training on community governance for bui communities affected by bui dam construction

Reference 0008

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This paper contributes to the discussions by focusing on thirteen communities nearby Bui dam and Bui National Park in Ghana to address the impacts of dam construction and related resettlements through analysis of community competence training. The paper assesses the impacts of Bui dam and resettlement on community leadership, the impact of Bui Dam construction on traditional leadership, and the impact of Bui Dam resettled communities on the management of Bui National Park. For each of these questions, further analysis was undertaken to assess the role of resettlement, ethnicity, age, livelihoods, and gender. Data was gathered through multiple methods. In the design of a survey, administered to 339 respondents across the thirteen communities, document analysis and interviews were conducted. Interviews were conducted for 24 key informants and used for data collection. ANOVA and Scheffe test scores were used to assess impacts of Bui dam and resettlement. The paper resolved that people perceive training opportunities in community leadership to have failed to meet the core needs and focus of the impacted communities. The number of training modules were few, and the modules failed to focus on the core skills domain of traditional leadership, management of Bui National Park, and structures to build the livelihood needs of communities. Training opportunities did not provide adequate inputs to explore opportunities in areas such as traditional leadership, and management of Bui National Park. Ethnicity (Nafana, Ewe, and Mo) and relocate were perceived to provide weak influence on community leadership skills and options available to communities to address the impacts of dam construction and resettlement. Gender and age do not predict community leadership. The need to provide practical hands-on training for communities in the phase o the construction of a hydro dam is critical in providing better coping strategies to deal with changes in traditional leadership.

The role of responsible innovation in the case of certifications of GMOs and non-GMOs soybeans facing climate change demands

Reference 0022

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This article is part of the Cosmo-climate project that was coordinated by late Dr. Ulrich Beck. In the domain of new low-carbon technologies, collective innovation networks and capabilities may give rise to 'cosmopolitan innovation regimes'. In the cosmopolitan order there is a proliferation of third party certification (TPC), private or public, on sustainability and low carbon that permeates almost all of the supply chains. Private certification bodies emerged as independent from producers and from governments.

Certification agencies are new forms of legitimation to face climate risks. In particular, the eco certifications have become crucial for private business that operate at a global scale in order to obtain legitimization facing other companies. The national states do not have a relevant role in this process. Certifications, and the standards they use, can be interpreted as central tokens in the cosmopolitization process. I will analyze 2 important certifications on soybeans that address responsible innovations in 2 dimensions, climate change and agricultural practices, as part of their standards. The certifications are Cert-ID, with its later certification Foundation,

ProTerra, and the Round Table of Responsible Soy (RTRS). Both certificate genetically and non genetically modify seeds. These are pragmatic networks, interdependent, with a shared discourse and strategy of low-carbon innovation, not free of criticism. They constitute another type/category of cosmopolitan communities of climate risk that can offer a peculiar contribution to understanding the "compulsive force" of cosmopolitization exacted by climate risks" (Beck et al, 2013, 3). I prefer to refer to cosmopolitan networks, formed by different social, political, economic and scientific actors. The issue of responsible innovation is quite central in the discourse of these certifications. What does it mean and how those certifications translate "responsibility" into standards? In the final part of the paper I will concentrate in what I define as a cosmopolitan network of climate risk that has been formed by the actors supporting RTRS. The main objectives are to characterize the network and its social and economic actors, with its

branches in South America (mainly Brazil), European Union, and Asia (mainly China) and criticism on the role of low-carbon responsible innovations among the standards developed by NGOs.

The 'Three Geos': A New Approach to Study International and Environmental Security Scenarios

Reference 0040

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From the politico-ideological faultlines that divided the world in the 20th century, especially during the Cold War, one had to come to believe that the world had moved towards a multilateral order - defined by cooperation rather than confrontation. With geoeconomics taking the centre-stage, forces of economic interdependence and globalisation had become more potent than ever before. However, with various developments like Donald Trump's victory in the US and Brexit in 2016, multilateralism has come under significant threat and with that, decades of efforts put into environmental cooperation through multilateral agencies are being threatened (as evidenced by Trump's visible discomfort with the 2015 Paris Climate Agreement). As the geophysical factors continue to reshape geopolitics and geoeconomics, together constituting - the 'three geos' could provide the basis for an international security environment, wherein factors of the earth system cannot be neglected. As the 'three geos' combine and interact, they reshape our landscape, both literally and figuratively. The Arctic is a good example where the opening of the sea route over Russia (geophysical changes), combined with China's new political and economic clout among the littoral countries of the region (such as opening of its largest embassy in Greenland and signing of a free trade agreement with Iceland) have resulted in an entirely new security situation. Environmental disasters such as the 2011 Fukushima disaster, besides affecting Japan's energy distribution and usage patterns has also had a cascading impact on its economy (reasons include import ban on Japanese fisheries products by countries in the region due to radioactive leakage), directly affecting its political position in East Asia in opposition to a politically and economically stronger China. The paper will therefore describe the approach of the three "geos" (originally introduced by Cleo Paskal) and how this has resolved the challenge of integrating environmental security - largely human-centric - with geopolitics and International Relations - mainly state-centric. It also helps bridge the yawning divide between issues related to 'traditional' security and 'non-traditional' security as in the majority of cases today, they invariably intersect giving rise to a complex inter-linked but holistic network of international security scenarios.

Capturing a moving target: de-carbonizing shipping through new forms of governance

Reference 0041

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Commercial shipping is an international mode of transport running on heavy fuel oil rather than on distillate fuels. Shipping therefore not only contributes to climate change through CO₂ emissions, but also through sulfur, NO_x, PM and black carbon emissions. While sulfur, NO_x and PM are regulated under the MARPOL Convention, CO₂ emissions from shipping were exempted from the UNFCCC or the new Paris Agreement. The secretariat of the MARPOL Convention, i.e. the UN based International Maritime Organization (IMO) was asked to develop regulations instead. The first regulations, technical and operational in nature, were adopted in 2011. In addition, the IMO is considering adopting economic instruments in the form of a levy on fuel oil or energy efficiency or a cap-and-trade system. This chapter aims to give an overview of the way in which the climate change impact of shipping is regulated as well as to reflect on the major bottlenecks that exist in moving forward in this policy domain on the international level. A conflict of interest between developing, but powerful maritime nations (such as Panama) and more pro-active European countries exist. There is a lack of incentives for technical innovation supporting the switch to more sustainable forms of energy. Pressure from society is also limited when it comes to shipping's climate change impact. However, the main challenge is capturing a mobile source of greenhouse gases through an international organization that aims to create a level playing field using a one-size fits all approach and that has limited ways to enforce its regulation. New forms of governance using market- or information-based measures might target ship's greenhouse gases more effectively. This chapter will therefore discuss how such new forms of governance might fill IMO's regulatory gaps and offer different ways of de-carbonizing a mode of transport that is vital to our global economy.

Co-Ordination Problems in Polycentric Governance

Reference 0043

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Traditionally, governing was associated with the formal institutions of the state, but the term is now employed to capture governing that does not rest on the authority and sanctions of government alone. This sees greater use of market instruments for steering, a rise in private governance systems, and more public-private collaboration, often devised through network arrangements. The EU context sees enhanced engagement of multi-level jurisdictions. This poses several challenges, including how traditional institutional systems have adapted to their new roles when direct control over decision making is reducing but where demand for coordination is expanding. The term polycentric governance was originally introduced by Ostrom, Tiebout and Warren (1961) to refer to dynamic, complex-systems having multiple centers of authority, formally independent of each other. This vision of governance highlights the potentially positive consequences of governmental fragmentation. E. Ostrom applied it in her research on collective action. For Ostrom, competitive relations and contractual and cooperative arrangements are co-occurring, enabling the coordination of power and interests, while also enhancing (institutional innovation, learning, and adaptation. Ostrom argued that community self-governance was likely to be sustainable only if it was nested within a broader system of polycentric governance. To date there have been numerous studies developing polycentric governance as an analytical concept, but less attention given to addressing co-ordination. This paper discusses (i) the problem of co-ordination; (ii) mechanism of governance co-ordination in polycentric regimes for ESG; (iii) how polycentric governance can take account of interests and power to ensure political legitimacy; and (iv) how and under what circumstances polycentric governance can support the promotion of social innovations for sustainable patterns .

A Networked Climate Action Agenda - Linking Transnational Capabilities for a <1,5C World

Reference 0047

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In 2014 UNSG Ban Ki-moon convened leaders from the private and public sector at the UN Climate Summit to announce commitments and to pressure governments to adopt an ambitious climate agreement; the Peruvian and French governments subsequently collaborated in the Lima-Paris Action Agenda to mobilize efforts ahead of the Paris Climate Conference; at COP21 governments decided to install high-level climate action champions to mobilize efforts and to enhance pre-2020 ambitions; and, at the recent Marrakech UN Climate Conference, the Marrakech Partnership for Global Climate Action was launched to continue this work. These climate action agendas constitute a novel approach to align climate actions to international goals; to create positive momentum; and to pressure for higher ambition in global climate governance, while simultaneously widening stakeholder engagement. Climate action agendas could also help climate actions to reach their full potential in terms of additional contributions (above and beyond nationally determined contributions [NDCs]), bringing the world closer to a 1.5C development path.

The current global climate action agenda, however, insufficiently engages crucial actors at the national and regional levels, revealing grave geographic and representational imbalances. Moreover, initially designed to help produce an international agreement, the global action agenda lost some of its function and is now challenged to deliver tangible contributions towards and beyond NDC implementation. Finally, with national contributions only starting to deliver after 2020, the global climate action agenda needs pressure for greater national ambition, and explicitly link to the more ambitious internationally agreed target to limit average global temperature increase to 1.5C above pre-industrial levels.

To remedy shortcomings of the global action agenda, this paper suggests linking between a growing number of mobilization efforts towards a networked climate action agenda. Rather than constituting a wholly new institutional framework, a networked action agenda links regional, national, and sectoral action agendas with the ongoing global climate action agenda. Such an approach would allow flexibility at

all levels, while being organized around a set of principles of complementarity, goal consistency, credibility. To illustrate a networked climate agenda, we present cases of emerging regional, national action agendas in Latin America, Europe, India, and Sweden, as well as sectoral action agendas in the transport sector. In our analysis, we specifically focus on how these initiatives (could) link to national level implementation and international target setting. Our case selection also allows a better understanding of the operation of action agendas across developing and developed country contexts.

Improving flood resilience - ten governance lessons

Reference 0049

Dries Hegger, Peter Driessen

Environmental Governance

European countries, especially urban areas, face increasing flood risks due to urbanization and the effects of climate change. Dealing with these increasing flood risks is a persistent governance challenge. There is, however, a knowledge gap regarding comparative studies that provide encompassing institutional analyses of flood risk governance, focus on multiple countries and assess the actors, discourses, rules and resources related to multiple flood risk management strategies. This paper addresses this gap. It presents ten key findings of the EU FP7 project STAR-FLOOD, in which flood risk governance arrangements in Belgium, England, France, The Netherlands, Poland and Sweden were analysed and evaluated from a comparative perspective, leading to design principles for appropriate and resilient flood risk governance. The key findings pertain to: (i) the actual and necessary diversification of flood risk management strategies; (ii) developing connectivity between actors, levels and sectors; (iii) the necessary interrelationship between flood risk management and spatial planning and between flood risk management and emergency management; (iv) the involvement of private actors, including businesses, NGOs, and citizens in flood risk governance; (v) the functioning and implementation of the Floods Directive in six European countries; (vi) The functioning of formal rules and regulations and the tension between legal certainty and flexibility; (vii) the development of appropriate financial and other (e.g. knowledge) types of resources; (viii) evaluations of flood risk governance in terms of resilience, efficiency and legitimacy; (ix) normative aspects and dealing with distributional effects; (x) the implications for designing appropriate and resilient flood risk governance arrangements. The paper ends with reflections on its practical implications and provides suggestions for follow up research.

Shaping flood risk governance through science-policy interfaces: insights from England, France and the Netherlands

Reference 0050

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In the context of uncertain flood futures, knowledge exchange at the science-policy interface is essential for shaping useful and usable science, as well as facilitating the uptake of new ideas, tools and practices to inform evidence-based decision-making and effective Flood Risk Management (FRM). Responding to this need, Science Policy Interfaces (SPI) have emerged in various forms, from established organisations (such as boundary or intermediary organisations), to mechanisms, tools and resources that support the interfacing process. Despite their apparent importance in shaping FRM, there has been limited research to examine how SPIs steer policy agendas and strategies employed in FRM. Instead, research to date has tended to be somewhat reductionist and fragmented in the study of SPIs. A framework for providing a more comprehensive analysis of SPIs, both in the domain of FRM and in the broader field of environmental governance, is still lacking.

Addressing this knowledge gap, this research presents a conceptual framework for characterising SPIs derived from a thematic review of literature that addresses different types of SPIs in the domain of environmental governance. This framework embodies those organisations that act as interfaces, through to the mechanisms, processes, tools and resources that facilitate the interfacing process. Drawing from policy analyses and stakeholder interviews conducted within the EU-FP7 project STAR-FLOOD, this framework is used to characterise SPIs in relation to FRM in England, France and the Netherlands. In turn, we assess the extent to which certain types of SPIs appear to have influenced flood risk governance more than others, reflecting on the importance of contextual conditions in enabling and constraining the influence of SPIs on governance dynamics.

Scale and Transboundary Coordination in Multi-level Environmental Governance: Implementation of California's 2014 Sustainable Groundwater Management Act

Reference 0053

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Effectively combining locally tailored and user-based rule making with the priorities and capabilities of larger policymaking jurisdictions is an on-going challenge. Polycentric and nested institutional structures can address this challenge, yet how such governance systems are developed and put into practice is little understood.

The challenges of multi-level environmental governance are particularly salient as they relate to groundwater. In many areas of the world, groundwater resources are commonly overused and managed poorly, if at all. The continuing and accelerating trend of groundwater overuse is a problem of global scope and consequence.

This research contributes to understandings of multi-level environmental governance by examining the formation of new systems for groundwater governance under California's 2014 Sustainable Groundwater Management Act (SGMA) and by simultaneously comparing the governance systems that emerge across a diversity of settings. SGMA devolves both authority and responsibility for achieving sustainable groundwater management to the local-level. Consequently, SGMA is prompting the simultaneous creation of hundreds of local-level Groundwater Sustainability Agencies (GSAs) that are free to differ from one another in form and structure but are required to undertake state-directed planning and management processes and meet state-established deadlines and reporting requirements.

Through interviews, surveys and data analysis, we examine the potential for a top-down mandate to drive the formation of new institutional structures for environmental governance, and how the design of the mandate and the local-level actors charged with interpreting and enacting it influence outcomes. Specifically we ask why in some instances multiple GSAs form in a groundwater basin, while in others a single GSA is formed, even while under the mandate to achieve basin-wide sustainability. We examine perceptions and tradeoffs between transaction costs and managing externalities, concerns about representation, fairness and accountability, and innovation versus institutional bricolage. Examination of

the choices made by local-level actors under SGMA sheds light local-level concerns about the design of groundwater governance, the factors that lead to the selection of one form of governance over another, and why local-level actors might select jurisdictional boundaries that would have to be bridged in order to achieve basin-wide sustainability.

Adaptation as a common but differentiated necessity: the influence of low perceived vulnerability on knowledge application

Reference 0059

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Governing adaptation to global environmental change has been framed in terms of common but differentiated responsibilities between more and less developed countries. Consequently, countries with high current adaptive capacities assist developing countries by analysing and sharing climate information needed by decision-makers to adapt. In this context, donor countries are seen as less exposed and more able to manage climate impacts compared to developing countries. However, severe weather events such as heat waves and tropical cyclones have already demonstrated that the need to manage climate impacts is not restricted to developing countries. The issue therefore arises to identify in what way do those in donor countries, with ready access to climate information, discuss how projected climate change will affect their own families and communities. For this study, Australians and Canadians who work in climate related research, policy, and practice were interviewed regarding how they discussed plans to adapt to climate change on a personal level. The study showed that while all participants actively sought to mitigate climate change, few considered adaptation for themselves or their families. Most participants found it challenging to imagine their future societies situated in future climates, especially those who did not consider themselves at risk, or who found it difficult to discuss projected climate change impacts in social settings. Many participants considered only less developed countries were currently at risk and expected their social and economic systems will protect them from climate change impacts over the next two decades. In contrast, the few participants who saw themselves as vulnerable to near-term climate impacts reported sharing adaptation plans with family and friends. This research provides insight into how perceptions of adaptive capacity and personal vulnerability influence planning for adaptation among those with ready access to climate information. Given that climate professionals in donor countries influence climate change adaptation research, policy, and practice, this study points to the value of communicating climate knowledge where adaptation is framed as a common, but differentiated, necessity.

MRV of climate action by non-Party stakeholders: key step to exceed NDCs of the Paris Agreement

Reference 0076

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The Paris Agreement ushered in the era of Nationally Determined Contributions (NDCs). Its goal of holding the increase in the global average temperature to well below 2 °C above pre-industrial levels will not be within reach, however, with only the commitments from national governments alone.

The non-party stakeholders, comprised of local and subnational governments, business, and civil society, represent an enormous potential to raise the level of ambition and make the Paris Agreement goal attainable. The key to tapping into this potential lies in finding a way to quantify the mitigation reductions and adaption efforts undertaken by non-Party stakeholders based on a robust reporting process.

Taking into account the need to establish a strong foundation for non-Party climate action to be counted towards NDCs starting from the 2018 Facilitative Dialogue and 2023 Global Stocktake henceforward, this paper analyses the following aspects to make this process feasible: 1) the need for introducing the measurement, reporting and verification (MRV) system for non-Party stakeholder action; 2) integration with non-Party stakeholder climate action and cooperation with national governments on future development of NDCs; and 3) continued efforts toward MRV of climate action by non-state actors through financial, technological, and capacity building support.

The Facilitative Dialogue in 2018 represents a first crucial opportunity to take stock of the current progress based on the NDCs and how to raise ambition in the lead up to the Global Stocktake in 2023. In developing the necessary modalities, procedures, and guidelines, it is recommended that the UNFCCC process utilize the potential benefits of non-Party stakeholders in reducing GHG emissions and carrying out adaptation measures, as this would enable the international community to realistically pursue efforts to limit the temperature increase to 1.5 °C above pre-industrial levels.

By proposing a concrete roadmap with a view to precisely quantifying the level of the contributions made by non-state actors in implementing NDCs, this paper attempts to argue that the climate action by non-state actors, once quantified with robust methodologies, would demonstrate that raising the level of

ambition under the Paris Agreement is plausible, if the great potential of non-Party stakeholders' action is harnessed to bridge the gap between the current status and limiting the global average temperature rise to well below 2 °C above pre-industrial levels.

Why and how do institutions interact? Causal mechanisms and ideal conditions for national SDGs implementation

Reference 0080

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The implementation of sustainable development, characterised by addressing inter-linkages across dimensions and scales, is bedevilled by the problem of fit. The connectivity and level of interdependence differ between how biophysical systems function with how institutions are arranged, creating a mismatch where formal institutions tend to operate in silos. While the 2030 Development Agenda calls for an integrated package with the goals and targets indivisible from each other, the level of integration within the Sustainable Development Goals (SDGs) is found to be low. Cognisant of the fact that national governments act as the critical nodes for implementation, this paper seeks to understand why and how do institutions influence each other's development and effectiveness at the national level. Previous efforts to understand the interactions between institutions have tended to focus on both the vertical interplay, interactions across levels of social organisation, and in particular at the global level. Focusing on the horizontal interplay (between functional and political linkages) at the national level, the conceptual framework for systematic analysis of international interactions was adapted to study the efforts of mainstreaming biodiversity conservation in Malaysia. Four general causal mechanisms, which can elucidate the routes through which influence travels from one institution to another were studied, namely, cognitive, institutional, behavioural effects and the functional linkage of the ultimate governance targets of the institutions involved. The findings are two fold. Firstly, the causal mechanisms adapted from the global framework were not sufficient to explain the reasons behind the interactions or lack of at the national level. Additional mechanisms relating to understanding the political economy of the issue-area studied is proposed. Secondly, the conditions for ideal levels of interactions differ between the source and target institutions based on a range of factors including whether interactions occur in both directions or not, the ownership structure of the resources involved, budget allocation and hierarchy in national development priorities. Understanding the ideal conditions will help identify the potential areas of synergistic interactions as well as the underlying drivers of disruptive relationships. Moving forward, a framework to

study the interactions of institutions at the national level in the context of SDGs implementation is proposed.

Towards design principles for enhancing urban flood resilience, A comparative study on required governance conditions in 18 European areas

Reference 0086

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Urban areas face increasing flood risks due to climate change and ongoing urbanization. In order to enhance the resilience of these areas different types of Flood Risk Management Strategies (FRMSs) can be implemented. Not only the urban, but also other levels of governance are involved in this. By comparing their flood risks governance practices and results urban areas may learn from each other. The C40 mayors for instance try to do so as does the European Union. Key question in the debates is what governance conditions are needed to enhance urban flood resilience. These conditions must enable urban systems to resist flood risks, to absorb and recover from flood risks and to learn and innovate in order to be better prepared for dealing with future floods

This paper advances this debate by specifying design principles governing actors must follow to successfully enhance urban flood resilience. These principles are based on an extensive review of literature on resilience and on a comparative analysis of 18 in-depth case studies conducted in Belgium, England, France, Poland, The Netherlands and Sweden. The latter have conducted in the context of the EU-funded STARFLOOD-project. In order to allow us to make theoretical generalizations we have chosen for case study areas that differ in flood proneness as well as economic and institutional background. We compare what conditions are present in the cases and discuss whether “the” good practice case exist or not. The latter doesn’t seem to be the case. Our case comparison however does allow us to refine the conditions we found in literature. The principles found will be contrasted with existing water governance principles like the Dublin principles and the more recently developed OECD Water Governance principles. The design principles we have found could be used as a starting point in societal debates about a for further enhancement of urban flood risk governance. The latter however also asks for additional principles as inputs since resilience should not be addressed without taking equity and efficiency issues into account.

Firepower: Combustible Geopolitics in the Anthropocene

Reference 0094

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As mega fires become more frequent, and fire seasons lengthen, the human response to climate change is now focused on both combustion as well as the extreme precipitation events that often get more attention. Fire is a relatively neglected part of the human transformation of the planet, one that is worth revisiting as a possible way to link climate adaptation, the revived interest in material geopolitics and the possibilities of extending traditional analyses of political ecology to the global scale. As Stephen Pyne has suggested we might indeed understand ourselves as living in the Pyrocene, the fire age, where dramatic landscape transformation as well as climate change results directly and indirectly from human use of combustion: Directly from landscape clearing and wild fire; indirectly because the engineering of combustion spaces in industrial applications and 'internal' combustion engines has extended human capabilities so dramatically in terms of military capabilities and economic production. Focusing on combustion directs attention at the geophysical process at the heart of climate change and adds some potentially very useful insights into the Anthropocene discussion that may help with how the increasingly significant 'humanity factor' can be integrated into Earth System Science.

Certified Cotton from Ethiopia: Empowerment and Distributional Justice for Smallholder Farmers?

Reference 099

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Despite the fact that cotton prices are running at a high, Ethiopian smallholder farmers live on the brink of poverty. Low cotton price, lack of production subsidy and the recent cotton export ban imposed by the Ethiopian government have made cotton production risky. However, the apparel sector is expanding and there is expectation that more cotton producing smallholders will be vertically integrated into the value chain. Fair trade and organic cotton certification initiatives seek for a new distribution of power in global cotton trade in smallholders' favour. While scholars have shown that these initiatives are failing to change the apparel sector as a whole, our paper focuses on the initiatives themselves and how power is exercised in 'fair trade' arrangements. Our theoretical contribution is to further develop concepts of 'power with' (cooperation and learning) and 'power to' (resistance and empowerment). Analyzing the two cases of Cotton made in Africa (CmiA) and the Global Organic Textile Standard (GOTS), the paper aims to push and advance conceptual understandings of empowerment and to better understand how distributional injustices can be addressed. While admitting that structure and agency are mutually constitutive in an ongoing process, we are interested in the types of relations through which agents can bring about change or face structural and discursive constraints in fair trade and organic production. 'Power with' is based on coaction and mutual learning. In this vein, CmiA makes conventional textile companies pay certification fees which are used to train smallholder farmers in Africa about environmentally friendly cultivation methods. By demanding higher prices for CmiA certified textiles, companies pass these fees on to consumers. Transformative action or inaction depends on consumers' demand for either certified or non-certified products. In consequence, everybody is accountable for (non-) addressing distributional injustices. By contrast, from a perspective of 'power to', agents of transformation are, at least in the beginning, only considered a limited number of actors. 'Power to' insists on the ability of individuals and groups to get things done on their own. To that effect, by creating GOTS, alternative agents have enabled processors and manufacturers to establish alternative textiles markets of organic cotton. Although the certification requirements are far more demanding than for CmiA, both schemes have to acknowledge

structural constraints of free markets. Cotton certification does not empower smallholder farmers in the South; they depend on the willingness for change of industry, NGOs and consumers in the North.

Analyzing the Governance of Large Ecosystems: Building on Ostrom's SES Framework

Reference 0102

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In an age of increasing environmental awareness, the question of how society and the environment interact is ever more relevant. Several frameworks try to characterize these relations. Elinor Ostrom's framework to analyze socio-ecological systems (SES) (Ostrom 2007; 2009) is probably the best suited "because it (i) is the only framework that treats the social and ecological systems in almost equal depth; and (ii) provides a frame for developing different degrees of specificity in differentiating different tiers" (Binder et al. 2013, 26). Ostrom's general framework has rapidly attracted great attention among researchers addressing socio-ecological systems (Thiel et al 2015, 153). There is now a large number of research projects applying this approach. However, its application often lacks consistency (Thiel et al. 2015, 162). One reason is because variables are often poorly defined, which further complicates developing a consistent set of indicators (Thiel et al. 2015, 160-162). The list of variables itself is also subject to improvement. Together with Ostrom, Michael McGinnis proposed in a special feature of *Ecology and Society* some changes to the list, pointing out weaknesses regarding the characterization of governance systems (McGinnis-Ostrom 2013), while Harini Nagendra identified some missing variables in a recent case study (Nagendra-Ostrom 2014). The aim of this article is to contribute to improve Ostrom's SES framework by better characterizing the governance of large ecosystems such as seas, river basins, and mountain ranges. This is done by comparing Ostrom's SES framework with other frameworks used to characterize governance systems and particularly international environmental regimes in the light of a number of large-scale case studies in the literature, as well as the practical experience of the author. An adapted and improved SES Framework will help scholars and practitioners identify key variables to analyze specific cases. It will also help better structure comparisons, increase external validity and ultimately improve the capacity to synthesize and cumulate knowledge about Earth System Governance at the level of large ecosystems. This is middle ground between local and global levels.

Researching Decarbonization in Future Time: Connecting Political Processes and System Trajectories

Reference 0108

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A fundamental problem with researching the politics and possibilities of decarbonization is that classic social science research designs are rendered problematic (if not useless) because of three key characteristics. First, there are no significant cases of decarbonization to compare to negative cases where decarbonization is pursued but is not successful. Second, even defining ‘cases’ of decarbonization is profoundly difficult because the carbon lock in that decarbonization efforts are designed to disrupt exists simultaneously at many levels and realms of action (political jurisdictions, markets and practices)—it is both a diffuse global phenomenon and a discrete local phenomenon. Finally, decarbonization can potentially flow from both intentional actions and unintended effects of actions taken for other reasons. Methodological innovation is thus necessary and in this paper we explore a way to empirically study decarbonization politics by defining and describing intervention trajectories and potentials. Unlike approaches that focus on hypothetical scenarios or backcast from desired outcomes, we begin by empirically examining the political effects of conscious decarbonization interventions. This empirical research, which can be done with classic social science methods, then becomes the foundation for forward theorizing and conceptualization of intervention trajectories—a way to assess the potential for decarbonization in specific places and for more widespread impact. We illustrate this method with examples of diverse decarbonization interventions.

Sustainable Welfare in a Global Steady-state Economy: The Role of the State

Reference 0114

Max Koch

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Global comparative studies of the links between economic growth, carbon emissions and ecological footprints as well as social inequality (O'Neill 2015; Fritz and Koch 2016) demonstrate that current Western production and consumption patterns and welfare standards are incompatible with environmental limits and IPCC (2014) climate targets. To allow for 'catch-up' development in poorer countries, rich countries would need to 'degrow' (D'Alisa et al. 2014). Against this backdrop the paper argues that conceptual understandings of Earth System Governance could benefit from a dialogue with steady-state economics and the emerging sustainable welfare approach. It discusses the provision of welfare at various spatial levels and with emphasis on the role of the state. The paper starts with core principles of steady-state economics (Daly and Farley 2009) - particularly a sustainable scale of material throughput and social equality - and applies this to the global level. It is argued that achieving this would presuppose a move beyond the existing global governance networks of finance-driven capitalism in the sense that the profit motive as the pre-dominant steering system of the economy would be deprioritized, while bio-physical parameters would be prioritized. Second, it introduces the concept of 'sustainable welfare' (Koch and Mont 2016), which is oriented towards the satisfaction of human needs within ecological limits, from the intergenerational and global perspective. Third, the paper considers spatial scales in the provision of steady-state economics and sustainable welfare - the requirement to share and coordinate responsibility across global, national, regional and local levels. It is at global level that thresholds for matter and energy throughput as well as for greenhouse gas emissions would need to be determined in order to effectively mitigate environmental challenges such as climate change. Such thresholds would delineate the room for manoeuvre within which national and local economies can evolve and within which welfare can be provided. This also suggests a new mix of private, state, 'commons' and individual property forms. Fourth, the paper addresses the role of the state in this transition. State economic, social and environmental policies would be (re-)oriented towards the provision of sufficient need satisfiers for all people now and in future (Gough 2015). Robust (welfare) states would be required to steer a mixed economy that functions within environmental limits and serve as *primus inter pares* in a

governance network of various state, private, collective and non-profit actors and comprising above all global and local levels.

Mapping political inequality in natural resource governance: a research framework

Reference 0148

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Concerns relating to justice and equality have been recognised as key challenges in earth system governance and they are also central themes in the 2030 Agenda for Sustainable Development. However, there are many different dimensions to equality going beyond the distribution of income and wealth, but these different dimensions are not always well understood or conceptualised. The aim of this paper is to develop a better conceptual understanding of political inequality in relation to natural resource governance drawing on examples from the case of agricultural land use in South America. Decisions on how agricultural land is used are shaped by a variety of processes and different actors using diverse strategies. However, these different actors do not have equal capacities to influence political decision-making processes and outcomes or in other words, decisions are shaped by underlying dimensions of political inequality. How resource-rich countries manage their natural resources has significant implications in terms of whether global climate change targets can be achieved. Resource governance is also closely related to questions of development, and the question of whether and how resource exploitation can make a positive contribution to social and economic development has been much debated. How decisions on land use are taken is therefore closely linked, directly or indirectly, to a number of SDGs and it affects the effectiveness of earth system governance as well as linking to important normative concerns, notably justice and legitimacy. Based on a pilot study of the case of agricultural land use in the Southern Cone of South America this paper seeks to map out how three different dimensions influence decision-making on resource governance; first the formal political decision-making processes within the structure of the state; second, private governance initiatives such as the Roundtable on Responsible Soy; and third civil society activity within and outside these channels. While there are some overlaps and synergies between these three dimensions, there is also significant potential for tensions and contestations. Analysing these interlinkages is crucial to get a better conceptual understanding of the political inequalities in natural resource governance.

Knowledge/power in global environmental politics: business authority revisited

Reference 0150

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In this article, we contribute to the evolving literature on global governance and private authority, focusing on the increasing authority of business actors in global environmental politics through their role in the creation and maintenance of private governance initiatives. We use a Foucauldian lens to explore how the establishment of private governance initiatives is a potent component of changing global authority structures and also to reveal the sources of business power that have helped elevate industry actors to authoritative positions. The argument runs as follows: increasing industrial complexity has led to 1) fragmented authority, which exacerbates the need for information when governing and strengthens the link between knowledge(/power) and control; and, 2) informational asymmetries, which favour industry actors relative to governmental or civil society actors. The increasing governing authority of industry can be traced to its privileged position in disseminating 'expertise'. State and civil society actors have thus been relegated to a secondary position in institutionalising private regulatory initiatives and have, in fact, internalised the vocabulary of the market. Industrial complexity, along with the concomitant discrepancy in access to industry information amongst actors from different social spheres, reduces both the competency of state-led regulation and the leverage activists are able to muster while giving business actors a head start in the design and development of regulation. Furthermore, industry's lead role in the creation and maintenance of these private regulatory initiatives ironically has the potential to further consolidate industry's authority in global environmental politics through its continued collection and control of information in line with neoliberal notions of corporate social responsibility. This reinscribes hierarchy rather than addressing asymmetry in earth system governance.

Keywords: Knowledge, power, private authority, business

Dynamic Multilevel Governance as Cosmopolitan Governance Navigating Sustainable Transformation

Reference 0175

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Global transformation towards sustainability needs to enable a path towards the decarbonization, dematerialization and renaturalization of the anthroposphere which is the most challenging present and future task for humankind and thus domestic and world politics. It causes ontological, epistemological and teleological uncertainties and complexity and challenges ethical fundamentals and convictions. National structures are not adequate to the task of handling the corresponding challenges that can guide and structure such transformations. Domestic analogies and intergovernmentalism in international relations failed to provide a global governance architecture that is capable to navigate a transformation at the global scale and produce an institutional fundament facilitating the transfiguration of global socio-political orders; it requires a cosmopolitan thinking about innovative transformative global governance.

Cosmopolitan governance needs a democratic legitimation in order to be socially and politically acceptable to handle ontological, epistemological and teleological uncertainties and challenges in the name of humankind. In this light, I argue for a form of dynamic multilevel governance as global governance of change that has the capability and power to reform and transfigure institutions, structure and agency, hierarchies, cultural fabrics, socio-technical systems, and infrastructures towards new social and political orders. I conceptualize and justify three major governance framework conditions of dynamic multilevel governance as global governance, namely the emergence of transnational public spheres and communities, polyarchic network structures, and self-governing through distributed and differentiated responsibilities.

The forming of public opinion and political will in transitional public spheres is the most important vehicle of representation. Transnational public spheres become the mediation authority of the public opinion of a global multitude and a cosmopolitan structure of global governance. The polyarchic network structure engages all actors as singular subjects in an open network in various horizontal and vertical channels of communication and cooperation who share concerns and common interests with regard to problem-solving. The network has a steering logic without a center; its self-governing succeeds by means of functional differentiation in the form of distributed and differentiated responsibilities. While scientific

experts of epistemic institutions deal with epistemological uncertainties and challenges, associational policy making groups address the ontology of change, and the multitude itself discusses the teleological challenges in public deliberation.

These capabilities produce reflexive authority with transformative and structuring power. Dynamic multilevel governance as cosmopolitan governance itself would become the product of the transfiguration of social and political orders. To this end, I combine theory, normative justification, and institutional feasibility.

The Transformative Power of the Sustainable Development Goals: Creating an Integrative and Coherent Framework for Multilateral Agreements

Reference 0176

Dona Barirani, Frank Biermann, Rak Kim

Utrecht University

In September 2015, world leaders adopted the 2030 Agenda for Sustainable Development along with 17 broad “Sustainable Development Goals” and 169 more specific targets. A key condition for this 2030 Agenda to be effective is that trade-offs between environmental protection, social inclusion and shared economic growth must be avoided. This again requires systematic integration and higher degrees of rule coherence to fundamentally reshape the relationships between environment, society, and economy. There are, however, severe limitations on creating such an integrated and coherent governance system for sustainable development. This is the focus of this paper. We analyze in particular the possibly transformative power of the 2030 Agenda regarding multilateral agreements that are key in implementing some of the goals and targets. Drawing on political and legal conditions, we examine three critical determinants of the relationships between these dimensions of sustainable development as targets for fundamental transformations: resource allocation, social justice, and economic structures. Traditionally, global governance efforts on integration are focused on policy integration between global institutions. In this paper, however, we argue for a cross-scale integration approach that highlights governance efforts in bringing together institutions with clear scopes and jurisdictions. We develop a three-step analytical approach, consisting of (i) legally and politically defined objectives and purposes, (ii) the screening matrix on jurisdictions and scopes of multilateral agreements, and (iii) an in-depth analysis of key impacts and interactions. Central for our analysis are decisions by the conferences of the parties, amendments and annexes to multilateral agreements, and negotiation reports, such as from the Earth Negotiations Bulletin. We have analyzed over 60 multilateral environmental agreements, carefully selected from the databases ECOLEX, International Environmental Agreement and InforMEA. We follow in our work the Earth system governance approach of defining trade-offs as broader types of institutional integration which go beyond policy integration as global governance efforts. Further we conclude that normative incoherence can be reduced by a variety of general techniques, namely the establishment of primary rules across regimes and a reconsideration of treaty interpretation as means to increase rule-coherence. This paper

seeks to make a substantial contribution to the second conference stream on “conceptual understandings and progress”, as we argue for an interdisciplinary conceptualization of the Sustainable Development Goals based on political science and law. Our paper further provides novel insights to the normative dimension in the relationship between environmental sustainability and social justice in Earth system governance.

Orchestrating the Sustainable Development Goals: An empirical assessment of the United Nations Environment Programme

Reference 0177

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On 25 September, 2015, adopted the 2030 Agenda for Sustainable Development along with 17 broad “Sustainable Development Goals” and 169 more specific targets. The United Nations Environment Programme (UNEP) has committed itself to deliver on the environmental dimension of the Sustainable Development Goals with leadership and expertise. With a broad range of commitments - including the establishment of the sustainable development agenda, collaboration, coherence and integration - UNEP has an outstanding role in global governance. This paper is an empirical examination of UNEP as an orchestrator that pursues an effective implementation of the 2030 Agenda. Orchestration breaks with traditional hierarchical governance concepts that consider targets to be directly applicable through hard instruments. Instead, this model stresses voluntary collaboration and emphasizes two distinct features. An orchestrator is acting indirectly through intermediary organizations and uses soft instruments of influence to support and steer actions. This article identifies patterns and techniques of orchestration and intermediary organizations. It ultimately explores the effectiveness of UNEP as an orchestrator. With its empirical examination of the United Nations Environment Programme, this paper is a major contribution to the second stream of this conference on conceptual understandings and progress, and also to earth system governance in general. Understanding UNEP’s significance for sustainable development is precedent for questions of allocation and access, which are relevant for advancing earth system governance.

Governing foresight: the politics of imagining Anthropocene futures

Reference 0185

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In this paper, we investigate foresight initiatives as sites of politics and governance, wherein potentially contested, alternative versions of environmental futures are imagined, negotiated, used and/ or ignored. In the face of climate change and global pressures on the environment in the Anthropocene, governments and other actors are increasingly looking to foresight to help imagine, anticipate and experiment with potential futures. However, there are important disconnects between, on the one hand, foresight research that is rooted mainly in environmental sciences, macro-economics, land use change and business planning, and, on the other hand, research on climate policy and governance, rooted in the social sciences. There is a) a lack of understanding of foresight as a political intervention and hence the need to govern foresight processes and b) a lack of understanding of whether and to what extent foresight is integrated with environmental governance and policy processes.

The aim of this paper is to present a novel analytical framework for the governance of foresight, and evaluate its results in the context of multiple international case studies. Our analytical framework is grounded in the following questions: 1) Why is a foresight exercise undertaken in the first place? 2) Who funds, leads and is involved in foresight? 3) What types of futures are imagined? and 4) How is the foresight process integrated into governance processes and structures? We apply this framework to two case studies - a scenarios which covers foresight processes relating to climate change in seven regions in the Global South; and the Transmango project on the future of food in Europe.

Our results demonstrate that investigating the 'why' and 'who' aspects of foresight processes are essential preconditions to making the design (the 'how') of foresight more reflexive. At the same time, the 'what' question points to a need for research on the scope of imagined futures (what is included and what is ignored) and the 'how' question highlights the need for research on design issues and the practical challenges of integrating foresight with governance processes. Our analysis highlights the need to focus on investigating these dynamics in the world's most vulnerable regions of the Global South, where they are most pressing but least analyzed. Our research relates to the overall ESG conference theme, as well as to

stream 2, conceptual understanding - anticipatory governance as a concept- as well as stream 4, theories and methods - focusing on foresight methods.

Leaving No-One Behind? The Influence of Civil Society Participation on the Sustainable Development Goals

Reference 0195

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Spaces for civil society participation within intergovernmental negotiations on sustainable development issues have multiplied in recent decades. Such participatory spaces are often uncritically accepted as a remedy for an assumed democratic deficit of intergovernmental policymaking in Earth System Governance. I argue, however, that civil society's capacity to democratize global politics in the Anthropocene is constrained by the limited influence of civil society participation on policymaking. Specifically, the spaces provided for civil society participation often fail to substantially modify the agenda for the negotiations, alter the behavior or position of governments, or directly influence the outcome document of the negotiations. Taking the negotiations on the Sustainable Development Goals as a case study, the paper explores the relationship between the format of civil society participatory spaces and their influence on intergovernmental policymaking. While acknowledging that civil society influence results from a combination of interventions within many participatory spaces, I argue that civil society is more likely to influence within informal and exclusive participatory spaces, and when these spaces are provided early in the negotiations, with several iterations throughout the process. The paper contributes to increase our understanding of the inequalities of procedural access that pervade intergovernmental policymaking in the Anthropocene, as the actors with the capacities to engage repeatedly and informally with negotiators are seldom those that are most representative of global civil society. Finally, the paper considers various procedural and methodological solutions through which civil society participatory spaces could strengthen the democratic principles of legitimacy, transparency and accountability in Earth System Governance and increase the responsiveness of global norms and institutions to collective concerns and preferences.

Democratising planetary boundaries

Reference 0196

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The concept of planetary boundaries has gained political currency in recent debates over the global governance of sustainable development, including at the Rio+20 summit and in negotiations on the Sustainable Development Goals. While seen by some as promising to strengthen global cooperation to avoid crossing thresholds that would endanger the functioning of the Earth system and threaten human wellbeing, others have voiced concern that the concept unduly constrains democratic choices about the relative priority that societies should place on environmental protection and development. In this way, debates about planetary boundaries recall longstanding concerns about whether ecological limits are compatible with ecological democracy.

In this paper we argue that the concept of planetary boundaries can be interpreted and institutionalised in a democratically legitimate fashion. Drawing on deliberative accounts of democracy and research on the role of science in democratic societies, we focus on articulating the division of labour between citizens and experts as a crucial ingredient for legitimacy in boundary setting.

First, we build on and critically engage with the definition of planetary boundaries set out in Rockström et al. (2009) as "the Earth-system processes and associated thresholds which, if crossed, could generate unacceptable environmental change". While the original proposal used environmental conditions prevalent in the Holocene epoch as a baseline for unacceptable change, we argue that a democratic conception of planetary boundaries need not incorporate this element: there remains a crucial role for society to decide what levels of risk are unacceptable. This understanding of planetary boundaries can help to prise the concept away from its common (although often misunderstood) association with technocratic evaluation. Further, we propose a definition of a planetary boundary that allows us to engage with the concept without relying on the boundary specifications by Rockström et al. and to identify "de facto" planetary boundaries in current global environmental governance. Second, we outline how the process of planetary boundary-setting may be democratised through a staged approach where the division of labour between citizens and experts varies according to both the stage in question and the type of boundary. We identify the following stages, which may occur in a sequential, non-sequential or iterative fashion: (1)

understanding Earth system processes, (2) identifying the societal need for a boundary, (3) setting a global boundary value, and (4) institutionalising the boundary. Democratic legitimacy will require constructing arrangements to link experts and citizens at each stage.

Fracking in Silence: The Politics of Unaccountable Expectations

Reference 0201

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From a social and environmental perspective, Latin America's fracking potential has the makings of a perfect storm. The region has vast energy needs that can be offset by its immense reserves of non-conventional oil and gas, which it has been increasingly exploiting. Yet, states lack adequate regulatory policies to guide existing fracking ventures; there is an absence of public reporting and transparency on new explorations, and there are few public debates on fracking risks to the environment and human health. This article offers a unique contribution to the literature on demands for environmental accountability by focusing on a negative case. Using media analysis and interview data from Argentina, it examines what explains the absence of public demands for accountability in fracking emergent regions. It finds that the state suppresses demands for accountability when it engages in issue framing, by presenting fracking as a dichotomous choice between certain economic development gains versus unlikely environmental and social risks. The population responds to this narrative using a narrow assessment of its own risks. Motivated by geographical distance from potential costs and timely proximity to economic gains, the national public consents to the government's frame and defers demands for regulatory oversight and industry accountability.

Multi-level decisions, local realities: can the deliberative systems approach inform more democratic climate change adaptation governance?

Reference 0202

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In many cases, the poorest and most marginalized - those least responsible for causing climate change - will be hit earliest and hardest by its impacts. Involving the people who are affected may both improve the epistemic quality of decision-making about climate change adaptation, and also promote values of political equality. Yet how to achieve a more democratic and locally-tailored approach to the system of governance and financing that is evolving to support developing countries adapt to this global phenomenon is a complex challenge; it has been called the 'adaptation paradox' (Ayers 2012).

This challenge is acknowledged for example in the commitment by Parties to the UNFCCC to promote public participation, and in the Paris Agreement's recognition that adaptation has local and sub-national dimensions; as well as in calls for small-scale development activities that support community-based adaptation to be 'scaled up' and inform national and international policy. I argue however that both these perspectives - top-down and bottom-up - maintain the paradigm of a vertical hierarchy of governance. This not only fails to reflect the complex web of interactions in a world of multiple levels and actors; it also limits the scope for conceptualising alternative and more democratic approaches to governing climate change adaptation.

The evolving deliberative systems approach (Parkinson and Mansbridge 2012; Stevenson and Dryzek 2014) offers a way of extending the normative concept of deliberative democracy beyond the ideal of face-to-face deliberative forums, and applying it to a wider network of interconnected actors. I apply the deliberative systems approach to the case of Vietnam, using this interpretive framework to evaluate how various actors interact to influence and make decisions about how climate change adaptation is planned, financed and implemented.

I find that the system of actors implicated in adaptation decisions that affect Vietnam spans local, sub-national, national, regional and international levels - including civil society, local authorities, line ministries, international NGOs, bilateral donors and multilateral agencies. I explore the channels by which those active in public space may transmit influence to empowered space, the extent to which those in

empowered space uphold qualities of transparency and accountability, and indeed whether the distinction between public and empowered space is clear. I then discuss how these findings can inform analysis of democratic deficits in decision-making about Vietnam's adaptation; the potential to enhance the deliberative quality of global adaptation governance; and implications for the post-Paris climate finance and governance agenda.

Analysing and explaining the low-carbon technology transfer policies of France, Germany and the UK

Reference 0209

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This paper analyses existing policies on low-carbon technology transfer (LCTT) from France, Germany, and the United Kingdom (UK), three key European players in the field of LCTT, and tries to explain why these policies came about. The transfer of technologies from developed to developing countries that aim to minimise greenhouse gas emissions is widely seen as pivotal for addressing climate change. Germany, France and the UK are all contributing to a considerable extent to such transfer, but in different ways, on which research is lacking. This paper investigates which actors play a role in shaping the policies in the three countries, and which governance mechanisms (e.g. public, private, and/or public-private partnerships) and policy instruments (e.g. eco-labels, voluntary agreements, emission credits, and taxes) are employed. After mapping this information, it highlights the differences among the policies in the three countries and tries to answer the question how these differences can be explained. Which interests (economic/environmental/social) were influential? It also assesses to what extent the policies overlap and how these overlaps can be explained, including an investigation of to what extent European Union membership created path dependence (historical institutionalism). To answer these questions, data is collected from official documents, academic sources and interviews with policy-makers.

Framing climate change adaptation in Australian NRM planning

Reference 0211

Ingid Baker

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Institutions relevant to governing climate change adaptation responses exist at various scales, from the international level to the local level. Development of environmental policy involves interaction and coordination across and between government sectors. Environmental planning, therefore, is the manifestation of environmental politics and policy that results in on the ground action via that statement of specific goals and measures to achieve outcomes. The relationship between climate change adaptation problematisation and the implementation of successful outcomes is particularly interesting as differing adaptation policy frames have been presented at the international level, and also at lower levels of governance. These competing, and multi-scalar, frames ultimately manifest at operational levels. The lack of holistic governance structures are regularly highlighted as key constraint acting on the ability of local and regional governments to achieve successful adaptation outcomes. Despite this, an ideology of devolving the responsibility of responding to climate impacts to operational scales, in the absence of a supporting governance structure, has persisted worldwide. Realising the required institutional framework to support successful adaptation outcomes at operational scales cannot be achieved without an explicit shared framing of adaptation between scales of governance. There are multiple social forces that shape adaptation policy frames from the international to the local level. Frame analysis, which explores the different ways of understanding or representing an issue, widens the scope of what policy analysts can contribute to understanding such contested and complex issues such as climate change. This research investigates the critical role adaptation policy and planning frames by exploring the case of Australian Natural Resource Management (NRM) bodies. Australian NRM bodies provide an ideal case study for two reasons: 1) Australia faces significant threats from climate change; and 2) Australian NRM bodies have recently undertaken a major program to explicitly address climate change. The role adaptation frames play in NRM governance is explored through document analysis and semi-structured interviews with key practitioners. Findings of this study are expected to illuminate the role frame reflection plays in overcoming adaptation impasses' in three ways: 1) by highlighting whether certain framings of adaptation are more, or less, tractable at operational scales; 2) identifying whether competing framings at higher levels

of governance constrain the range of adaptation actions available to regional bodies; and 3) analysing how climate adaptation narratives at higher levels of governance influence rationalities of government at operational scales.

Green democracy and the Anthropocene: Seeds of change or scorched earth?

Reference 0212

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The aim of this paper is to examine the relationship between democracy, environmentalism and the citizen in the era of the Anthropocene. Global environmental change increases the urgency of recasting of the historically understood relationship between humans and nature toward more integrated models. This recasting requires a closer look at the physical relationships between humans as Anthropogenic agents and nature. It also requires a closer look at humans as both political agents and subjects within institutional structures, as well as the impact of these on the politics of nature and framing of the Anthropogenic challenge. The paper begins at large scale, considering the structural implications of global scale environmental issues such as climate change. The conceptual implications are also explored, such as whether the boundary between humanity and nature has blurred or collapsed, does the advent of the Anthropocene strengthen or alter the obligations of democratic institutions to represent or listen to the non-human world? Having considered the large-scale implications of global environmental change, we assess the prospect of an adequate response given the prevailing set of institutions at the global and national level. We also introduce a the very local dimension of the individual in light of more recent findings in the area of deliberative democracy and the interaction between the political context set by these institutions and the public response to these challenges. The analysis interrogate the larger question of whether global environmental change demands marginal or more dramatic structural change, as well as whether existing theories of eco-governance are sufficient to provide a framework for a way forward.

Power after Power: World Politics and the Anthropocene

Reference 0227

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This paper, drafted for the Lövbrand and Biermann volume, *Anthropocene Encounters*, reiterates the authors' call for a new political practice and paradigm of "Planet Politics" by focusing on the challenge that the Anthropocene poses to the notions of power and power politics that are central to international relations and political theory. It argues that anthropocentric theories of power - which understand power as a relation of domination or influence between humans and human institutions, and in which power does not act at a distance or incorporate relations between society and ecology - fail to capture an important reality of the interpenetration of nature and human societies in the Anthropocene. In place of this, it develops a theory of "thing-systems power" distributed across assemblages of human and nonhuman actors, things, and complex social-ecological systems. In this theory, nonhuman things, animals and processes exert profound and devastating effects that should be understood as forms of distributed and non-intentional power. This then generates an account of responsibility that is shared and distributed across all the actors and processes that have damaging effects on the biosphere and the Earth system and have the capacity to collectively stem or reverse such effects.

Why is a high-carbon world so robust? From decarbonisation to undoing carbon

Reference 0245

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In this paper we explore what it might mean to conceptualise the challenge of responding to climate change not as one of de-carbonisation but of undoing carbon from its place in contemporary society. The rhetoric of the need for decarbonisation has grown and spread across multiple arenas, with actors as diverse as the national governments, the Transition Towns movement, corporate interests and the scientific community calling for long-term, deep reductions in carbon's presence in the economy. Yet such discourses are often accompanied by upbeat accounts of the potential for decarbonisation, assuming that carbon can be extracted from the economy with potentially limited effect. These are assumptions which have predominantly been developed in relation to carbon's primary presence – as energy. As the scope of action for responding to climate change and the range of potential sites of carbon intensity expands beyond the energy sector to the materials through which the economy is made – such as steel, paper, plastic, meat and milk – the question of how carbon can be 'undone' may also need to shift. Here, carbon is less easily tractable and hence extractable. In this paper, we approach carbon's 'stickiness' in sectors beyond the energy economy and the extent to which we might expect existing forms of low carbon innovation to take hold in these domains. Through a large literature survey, the paper (1) gather evidence concerning the conditions that shape inertia in terms of; structural conditions of the economy, interdependencies across production networks, geographical factors, social norms and networks, technical codes, materiality. Against all the inertias that make a a high-carbon world so robust, we (2) survey the literature which focuses on actually existing efforts towards decarbonisation in the realms of steel, paper, plastic, meat and milk – this does not mean that we are looking at 'full decarbonisation', but rather we are interested in understanding what interventions and actions are being taken in the name of decarbonisation, i.e. with a rationale for reducing GHG emissions, as well as those which have had the impact of reducing emissions/carbon/energy use. Together, this enable us to better understand why high-carbon orders are maintained and where and how disruption is emerging.

Governance under planetary limits: Lessons from emerging efforts at different scales

Reference 0267

Jose Antonio Puppim de Oliveira

Fundação Getulio Vargas (FGV/EAESP)

Planetary health will be achieved only if policymaking frameworks are able to recognize the ecological limits at the different scales, from local to planetary. Nevertheless, we are far from having comprehensive governance systems and policy mechanisms to transform development processes at the global scale to be within the ecological limits. However, several emerging initiatives have led to a better integration of the ecological limits into the economy and society in the last decade that could provide important lessons to future initiatives. Thus, the objective of this paper is to provide a conceptual analysis with empirical evidence on how to catalyze initiatives that recognize ecological boundaries in policymaking. The paper analyzes particularly the results of initiatives in Tokyo Metropolitan Government (TMG), Malaysia and Bhutan. Tokyo's regulation on carbon emissions has reduced significantly its emissions since its implementation. The Sustainable Living in Malaysia led an effort for bringing the discussions on sustainable consumption to the core of the Rio+20 preparations in Malaysia. However, the efforts waned after the conference due to the lack of high-level support. Bhutan has set in the constitution that sixty percent of the country's area be forested and forty percent of its territory as protected areas. It has framed its development policies around people's happiness, instead of economic growth, which has served as model for other countries.

Those initiatives have emerged in various governance contexts and led by different actors. Firstly, they were not "top-down" or "bottom-up" endeavors but a combination of efforts in different scales. The final outcome was the result of the synergies of these efforts. Secondly, the long term success of the initiatives were based on the policymaking capabilities built overtime. A general problem with existing studies of sustainability transitions is that they assume that both capabilities for innovation and governance systems already exist in society. However, those capabilities have to be built up in the first place, which involves considerable efforts, presenting a great barrier to long term change. Thirdly, the efforts created an accountability mechanisms in public decision-making and implementation. Transformation implies a more accountable and responsible role for all actors, including the state. Thus, there is a lot of room for

individual initiatives by local, national and regional organizations, as well as joint efforts to maximize resources and impact through coordination among different levels of networks to avoid zero-sum games and injustices.

Governing and accelerating transformative entrepreneurship (GATE): an empirical analysis of the potential for small business to influence urban sustainability

Reference 0271

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Incremental approaches to pursuing sustainability in the private sector, such as corporate social responsibility and life-cycle assessment, appear to be insufficient to deliver change at the pace and scale necessary to solve the pressing sustainability problems defined by the United Nations Sustainable Development Goals (SDGs) (Griggs et al., 2013). What appears to be promising for advancing sustainability are transformational small- and medium-sized enterprise (SME) models (Kurucz et al., 2017; Stubbs and Cocklin, 2008). Few studies, however, address the potential of SMEs (as the dominant employer of individuals in the private sector and producers of the majority of commercial pollution) to play a significant role in sustainability transitions, and the policy and governance challenges that this presents (Loorbach et al., 2010; Loorbach and Wijsman, 2013).

Despite promising stories of social innovation and sustainability leadership from small and medium-sized enterprises (SME), recent research suggests that the majority have little interest in placing environmental and social benefits on par with profit. Even so, the caricature of the reactive, conservative SME misses a key opportunity for engagement: is it possible that, when some SMEs tackle sustainability, they can do it with greater agility, ambition, and creativity than is possible in a larger firm shackled by complex organizational hierarchy and shareholder demands?

This suggests the need for a more targeted, evidence-based approach to engaging small businesses that helps to overcome substantial gaps in capacity. This paper analyzes data collected through a major new survey of small and medium-sized businesses in Canada, the Netherlands and the United Kingdom (total $n > 1500$). In order to elucidate the potentially transformative effect of small business innovation on urban development pathways, and the role that governance actors may play in enhancing this effect, we test hypotheses related to: 1) internal conditions influencing SME transformative potential; 2) external conditions determining transformative capacity; and 3) the spread of sustainable practices through networks and partnerships. We find that decision-making structure, owner/manager values, and

perception of sustainability co-benefits are particularly important internal conditions shaping transformative potential. Furthermore, targeted municipal, regional, and national programs that aim to strengthen business networks and build specific types of capacity (rather than simply relying on a regulatory approach) may result in a more systemic change in the performance of the SME sector than a regulatory approach can induce alone (Lehmann, 2006; Willis et al, 2007).

Bringing the planet down to the individual: implications for liberty and equality

Reference 0285

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Since the "limits of growth", or the more recent "planetary boundaries", the question of access at the same time has become a question of the limits of access. However, global planetary boundaries do not readily translate to the level of an individual. This paper compares different, albeit common, socio-political mechanisms by means of which planetary boundaries are translated into individual access. In doing so, the paper focuses on the question in how far individual liberty and equality can be maintained. The current rise of a utilitarian discourse of environmental authoritarianism requires to take such a focus. According to this discourse, "planetary boundaries" point at limits that require quick action that only an authoritarian regime can achieve effectively. China is often taken as an example for an authoritarian state that will be able to make a transition towards sustainability, as soon as the government has set its mind to it. China's renewable energy is then taken as an example for the successfulness of an authoritarian regime. While this reasoning remains consistent on a system level, its translation to the individual level can show the limitations of environmental authoritarianism. This conceptual paper compares the following mechanisms: environmental authoritarianism as the non-consensual permanent submission to the decision-making of a government that decides about limits; parliamentary democracy as an individual's consent to a temporary transfer of power to political parties that decide about limits; a human rights approach as an individual's agreement with being delimited and enabled by access rights to a per-capita endowment of resources, where the allocation is based on planetary boundaries; pricing mechanisms that include planetary boundaries in the calculation of environmental externalities. These socio-political mechanisms are first compared in the kind of liberty that they endow citizens with, i.e. economic liberty, personal liberty, political liberty and civil liberty. The mechanisms are then compared in the potential to which they may foster inequality among citizens with regard to these liberties. As a result, we present a framework which enables a discussion about the kinds of liberties we are willing to submit to which degree, in order to live in an equal and sustainable society.

New Pathways in Global Sustainability Science: Towards an Integration of the Material and the Discursive

Reference 0302

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The increasing scale and intensity of human activities has a fundamental impact on global biogeochemical cycles. To understand the extent and the consequences of this global environmental change, mitigate human impacts, and provide knowledge to accelerate transformations to a more sustainable human life on earth, Global Sustainability Science has emerged.

Current analysis of this new research field highlight that it is characterized by a critical imbalance between radical problem descriptions - based on natural science perspectives - and much less radical proposals for socio-political transformations - based on social science perspectives (Brand, 2016). To address this imbalance, scholars have long called for more interdisciplinary research. Yet, disciplines and schools of thought remain largely separate. In particular, the disciplinary spectrum is marked by two ends: one focusing on material or technological dimensions, the other on ideational or discursive dimensions (cf. Abson et al., 2016; Schneidewind & Augenstein, 2016). Given the tremendous complexity of each of these dimensions, this is not surprising. Yet, the transformative aim of Global Sustainability Science conditions a transformation of scientific inquiry.

Based on a comprehensive literature review, this essay delineates the major disciplines and schools of Global Sustainability Science concerned with transformation. It illuminates the missing link between the two ends of the spectrum while also highlighting current proposals to overcome it. Bringing together critiques and propositions regarding transformative research, this paper proposes a research agenda that offers a conceptual and analytical basis to link material and discursive elements of transformational processes.

In particular, the paper proposes a research agenda inspired by systems thinking and agency-based approaches to transformation. Conceptualizing different material and discursive preconditions of agency and strategy as well as material and discursive systems dynamics, it develops the contours of a lens that helps to explore the fundamental links between material global environmental change and discursive social transformation. The essay concludes with discussing the value and limitations of this lens.

Polycentric Urban Climate Governance in Emerging Economies

Reference 0305

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City governments have become increasingly recognized as important actors within the multilevel governance structure of their domestic political-administrative systems. Cities gain growing importance in international climate negotiations to reach a global consensus on emission reduction targets, act autonomously above the frontiers of nation states, and have multiple relations with external and internal actors to implement climate action at the local level.

However, within nation states and especially within emerging economies, problems of scale and political struggles over them arise. While central governments often delegate authority and functions to the local level, there is a lack of transfers of funds and fund raising capacity to finance climate action; and a supposed resistance from central governments to decentralize authority in those sectors that have strong vested economic interests, mainly energy and transport. Nonetheless, some cities have, surmounting the reluctance from their central governments, started to explore their own solutions and means to finance climate action, while others have not.

Leaving the old frame of analysing urban governance through the lens of top-down decisions and bottom-up reactions, we can observe that cities in turn find new ways to influence the regional and national governments of their countries. By using actors as transnational city networks and the admission to the international sphere these organizations grant them, cities and their actions have an effect on the measures undertaken at the international level, by national and regional governments, and in peer cities (which does not necessarily imply their effectiveness).

In a similar vein as recent work of a number of scholars on the topic, this paper is therefore seeking to establish a conceptual framework that grasps these new developments and variations. It analyzes urban climate governance by acknowledging that the multi-level governance framework alone is too static for the numerous and diverse ways in which cities interact with various scales, sectors, and types of actors. Instead, the author attempts to design a more flexible framework by including elements of the concept of polycentricity and actor-centred approaches. Finally, an outlook on how to apply the framework is

illustrated with empirical findings from different institutional contexts for urban climate governance in cities of South Africa and Brazil.

The growth machine in urban climate 'resilience' planning

Reference 0310

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Cities, as bringers and bearers of climate change, are at the forefront of the climate challenge. Many cities around the world are uniquely vulnerable to the impacts of climate change, and are also the sites of extreme inequity. In American cities, these inequities are often rooted in histories of city-building and infrastructural investments made based upon economic growth interests, decision-making by the wealthy and elite, and the general management of urban land and resources as commodities in the capitalist process of urbanization. To address climate change, environmental injustice, and the uncertainties that such global environmental change brings, municipal leadership has gravitated to the concept of 'resilience'. However, the use of 'resilience' as a transformative urban policy goal is in question. Scholars warn against applying this term without a definition, in which its utility is subverted to that of a vague buzzword; others caution against operationalizing equilibrium-based concepts of resilience that risk maintaining status quo conditions. In general, little is understood about how the concept of resilience is put into practice.

This exploratory study examines how New York City, as a collection of institutions, policymakers, planners, and designers across sectors, has conceived of resilience and applied it in local climate action planning. New York has embraced the 'resiliency imperative,' incorporating it into plans and policies, and associating it with sizable local expenditures. The researcher conducted a qualitative analysis of data from key-informant interviews, city plans and policies, and scientific reports. Data were analyzed through a process of coding and abstraction in a grounded theory approach.

Three linked and reinforcing themes emerged. New York City actors hold an equilibrium-based view of resilience, in which economic growth is the equilibrium state, and decision-making is done in a rational model of planning that views climate change as a technical problem and restricts decision-making to those with subject matter expertise. These findings reveal a climate resilience planning structure that is strikingly similar to 'planning-as-usual,' and suggests that the acclaimed urban innovations underway in New York may not lead to the radical social-ecological transformations at the scale and urgency demanded of the climate challenge.

The researcher proposes to report on the rationale, design, and findings of this exploratory research, with special examination of how New York City's endeavors and governance structures affect patterns of allocation and access in the pursuit of climate resiliency, and identification of pathways to reallocation for equitable and resilient urban futures.

Decoupling: conceptual struggles and practical engagement

Reference 0314

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This paper focuses on the concept of decoupling and examines the role it has played in recent environmental argument. It considers the distinctions between (a) 'relative' and 'absolute' decoupling, (b) 'resource' and 'impact' decoupling, and (c) 'micro' and 'macro' scale decoupling. It notes that despite the efforts of several international organizations to promote the concept (for example, the OECD in its 'Environmental Strategy for the First Decade of the 21st Century', or UNEP in its 2011 Green Economy initiative), the idea has largely failed to 'catch-on' in wider political debates. Today the idea is mainly used in rather technical assessments of resource flows, and of the material and energy intensity of production and consumption processes. And it has attracted critical attention from those who would expose the 'myth of decoupling', and argue that both the reality of actually existing decoupling, and its longer term potential to resolve the environmental crisis, have been greatly exaggerated.

The paper points to two key problems with the common macro-level formulation of the decoupling challenge as breaking the link 'between environmental damage and economic growth'. First, taken literally, the environmental objective is impossibly broad: humans are constantly transforming their surroundings, and the extent to which such changes constitute 'damage' is continuously socially contested. And second, the 'economic good' side of the decoupling relationship can be seen as problematic, for appearing to suggest that economic growth is a good in-and-of-itself, or even the key economic good.

Notwithstanding these problems -- indeed in a certain sense because of them -- the idea of decoupling captures key features of the challenges that actually confront contemporary policy makers. On the one hand, economic growth appears essential to continued prosperity and stability, yet on the other hand, global economic expansion is leading to a rising material footprint that increasingly breaches environmental limits at diverse scales. Thus the concept of decoupling can open up debate about the underlying relationships among social welfare, economic growth, and environmental harm.

The paper suggests a less tendentious formulation of the decoupling challenge that refers to breaking the link between 'economic activity and serious environmental damage' . Yet the idea still seems predicated on an overly static and one sided understanding of evolving eco-social relationships.

Analyzing bottom-up climate governance using Integrated Assessment models

Reference 0318

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The Paris Agreement marked a change from top-down to bottom-up global climate governance: instead of first determining an overall target after which the required emission reductions to reach this target were allocated to specific countries, the process now starts with Nationally Determined Contributions (NDCs). Integrated Assessment Models (IAMs) are an important tool to assess whether all the NDCs combined are sufficient to bring the world to a pathway which limits climate change to the goals stated in the Paris Agreement (holding global temperature change to well below 2°C and pursue efforts for 1.5°C above pre-industrial levels). At the same time, the focus towards bottom-up governance calls for more detailed analyses by IAMs. Previous literature has already shown that together, all NDCs are not sufficient to bring the world to a pathway which limits climate change to less than 2°C above pre-industrial levels, let alone 1.5°C. According to our model calculations, the NDCs bridge about half the "emission gap" between baseline emission levels without specific climate and energy policies and the emission level needed for a 2°C pathway in 2030. Based on a detailed country-level assessment of NDCs, we have projected that globally, the abatement costs of achieving 2030 emission levels consistent with 2°C pathways is at least three times higher than the costs of achieving the NDCs, although there are large differences between countries. In other words, the "abatement cost gap" is much higher than the "emission gap", under the assumption that countries will first implement the cheapest options to reduce emissions. A literature review of scenario studies showed a clear focus of IAMs on the power and transport sectors, and on supply-oriented solutions in general. In many cases, the level of detail in the industry modules of IAMs is not high enough to make accurate technology comparisons and to determine the costs of abating climate change, with some of the models assessing the industry in an aggregated manner without sub-sector division, while others account for a few subsectors and cluster others in a rest category. The role of sector-specific mitigation measures, such as the recycling of industrial materials or applying different production processes, need to be better understood. Therefore, we recommend that IAMs put more focus on explicit

modelling of both the supply and demand of important generally overlooked sectors such as plastics, paper, and the food industry, allowing more detailed and accurate modelling of decarbonization strategies.

Multi-level governance of transboundary water: direct and transnational climate impacts in the Tagus and Guadiana river basins

Reference 00320

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Management of transboundary water basins is a complicated process of complex socio-ecological systems with spatial and temporal implications. More than often, various levels are included in the decision-making, including local, national, transboundary, and supra-national, and there are governance challenges on all levels. In addition, current and future impacts of climate change provide another layer of uncertainty, particularly with the increasing knowledge of climate impacts beyond geographical borders, so called transnational climate impacts (TCI). This complexity implies that water issues cannot be governed at one scale and multi-scale models are necessary for effective governance.

This paper analyses the roles and responsibilities of different actors in adaptation-related decision-making in transboundary water governance. It applies a transnational climate impacts approach to the water sector in order to broaden the analysis of multi-level governance of transboundary waters. The framing of the paper focuses on the Tagus and Guadiana water basins shared between Spain and Portugal in the context of EU policy. It attempts to answer the question at which level should direct and transnational climate impacts be governed and what are the roles and responsibilities of different decision-makers at national and EU level in this context? Transboundary water basins are particularly interesting to analyse from a transnational climate impacts perspective as this research area is typically viewed as a local or a national issue and more recently as a basin-level issue.

The analysis builds on semi-structured interviews with key decision-makers from various sectors from Spain, Portugal and the EU. The interviews focused on objectives, support systems and decision-outcomes related to the two water basins as well as the EU policies and directives. The paper finds that there is a governance gap in several issue areas. Uncertainty persists in the role of the nation-state vis-a-vis the EU particularly in terms of governance of transnational climate impacts. Water-related issues are multifaceted and addressing them requires the inclusion of more than one scale in governing transboundary waters. Different aspects of water management issues need to be addressed at different scales and strategies to include adaptation to climate change impacts in transboundary water governance must consider the

international dimension of climate risk and identify specific ways in which decision-makers – and the socio-ecological systems that they govern – will be able to make informed decisions.

Stream 3: Science and activism

An exciting new focus of the 2017 conference is to draw attention to the bifurcation between science and activism. In the era of 'alternative facts' and post-truth politics, arguably science has a more active role to play in engaging with political, social and environmental reforms. Social movements are emerging as a global force for social change and democratization, and the role of research and researchers deserves our attention. This stream invites deliberations on the role of science in politics. What is the role of science as such and the individual scientist in civic engagement and collective action? What are the strategies for science to engage more meaningfully with activism? Can engagement in activism undermine scientific credibility? What is the professional responsibility we have to use our scientific knowledge in the face of increasing global inequality and rapid environmental change?

Blind spots of environmental policy-making: How beliefs about science and development may jeopardize environmental solutions

Reference 0037

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Engaging with knowledges outside of western science and questions of power are increasingly being acknowledged as an imperative for helping solve many intractable environmental problems. What is unacknowledged is the difference in how this reasoning is applied in relation to policy making in the global North and South. While questions of power such as gender and people's participation are integral to international policy-making in the Northern development policies for the South, there is often little on these perspectives in domestic environmental policy-making. Underlying this paradox are assumptions about science and development in policy-making that preclude a discussion of environmental alternatives. These assumptions generate blind spots in environmental policy-making that need to be addressed so that environmental policy in the global North too is able to respond to environmental problems on the basis of evidence and rather than assumptions about science and the rest of the world.

Bioeconomic Modelling of Fishery Conservation Policies in the Philippines

Reference 0058

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The Philippines is surrounded with many fishing grounds. In spite of this, most fishermen in the area live in poverty, and their plight is getting worse, not better. Current fisheries policies for the area have failed to improve the situation but no research has been done to find out why. This report uses a bioeconomic model to simulate the effects of changes in the enforcement levels of current policies. Investments of the government on different levels of enforcement were assessed using benefit cost analysis. The report assesses the effects of enforcing current fisheries policies more stringently. The situation would be transformed into one in which large and perhaps increasing numbers of people would continue to fish, expending larger amounts of effort to comply with various gear restrictions but, in all likelihood, harvesting no fewer fish. Because the bay is already overfished, catch per unit effort and marginal productivity would decrease. Any additional fishing effort in the bay will result in a decrease in the average catch of all fishermen. Enforcement of current policies will not address the underlying problems of open access and the overfishing it leads to. One policy to deal with the problems of open access and overfishing is to set a limit on the total number of fish that can be caught and divide this quota among Lamon Bay's fishermen.

Science-policy interaction in the context of the UNFCCC. A case study of the Structured Expert Dialogue

Reference 069

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Between 2013 and 2015 a review on the adequacy of the Long Term Global Goal of the UN Framework Convention on Climate Change was undertaken within UNFCCC structures. Over the course of this Review a Structured Expert Dialogue (SED) was undertaken which raised questions about the role of experts and expertise in the context of the UNFCCC, and how they contribute to broader role of science in this context. Experts are given an official role in the SED process that is often not questioned, however the line between policy and science is constantly blurred. We are interested in how these processes of co-production result in different narratives of science within the UNFCCC context. Making use of transcripts of SED sessions, document analysis and expert interviews we trace the initiation and course of the 2013-2015 Review and ask questions such as: what is the role of experts in this context? Who are they and what do they represent? What are the narratives of science that result and dominate, particularly with regard to their relationship to policy? We argue that, there is indeed a dominant view of what science and expertise is in this context, and that this view is generally one which is co-produced in this politically charged atmosphere.

Regional Water Environmental Challenges in the Nile River Basin of Africa: erudition between science and activism

Reference 0116

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Water is an exceptional component in all major environmental processes and is indispensable for human health, food production, and other economic undertakings, such as in the Nile River basin of Africa. The anthropogenic demand for water is growing rapidly due to increasing population and shifting consumption patterns. Escalating demand and high pollution levels put growing pressure on freshwater resources and the political, economic, and societal institutions governing their utilization. Many transboundary countries in these regions depend on irrigated or rain-fed agriculture for food security, export revenues, and rural employment, and at the same time struggle with challenging hydrological conditions due to an arid climate or high rainfall variability. Degradation of natural ecosystems and a dearth of infrastructure for water regulation and irrigation, combined with inadequate levels of drinking water supply and sanitation coverage, render the populations vulnerable to drought, flood, and water-borne diseases. In low-income countries, strict solutions to water management challenges are often exorbitant, and reforms in the agricultural sector need to be wisely tailored to the needs of the many small-scale farmers. It finds that water policy challenges in marginalized economies mostly relate to issues of agricultural production, poverty mitigation, and the avoidance of inter-group conflicts (Luci, 2007). The need for a better understanding of the interactions between water uses in different sectors, economic growth, and poverty alleviation is recognized by researchers and policy-makers alike. The debate on which interventions render maximum overall benefits, and how these benefits should be distributed, also shapes the search for domestic and basin-wide river management regimes in the Nile Basin. In this paper discusses the erudition of science and activism on the water environmental challenges of the Nile River basin. Activists are driven by interests and values, creating use only of the proof that supports their arguments. They are not unemotional as scientists are supposed to be. There is therefore something adversative between science and activism. Nevertheless, water environmental organizations and their linkages have collected large frameworks of activist understanding of great value to the field of water environment, which sometimes becomes available to academics and influences public policies. Some case

studies of activist-led science and of science-led activism in the emerging field of water sustainability sciences and research in African economy, which will confidently lead to new techniques for decision making and to new policies, will be presented.

Who cares about coastal carbon? Mapping scholarly engagement in Twitter discussions

Reference 0118

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With respect to terrestrial ecosystems, the sustainable management of carbon sinks is unequivocally an established issue in international climate governance. Despite their significant carbon sequestration potential, coastal ecosystems on the other hand long remained absent from the debate. After decades in the shadow, "coastal carbon" is now establishing itself as an issue of scholarly interest. Along with the growth in the body of knowledge came the uptake of the topic beyond the academic realm. Indeed, more and more actors such as international organizations, NGOs, or the media are addressing the role of coastal ecosystems in mitigating climate change. This growing interest in turn materializes in discussions on the social media platform Twitter, where users brought to life hashtags such as #coastalcarbon or #bluecarbon. Against this background, this paper uses Twitter data to shed light on the landscape of individuals and organizations discussing the issue of coastal carbon. Special emphasis is devoted to analyzing the way scholars engage in these online discussions; i.a. examining how they relate to other types of actors in the network and what role they play in the dissemination of knowledge. Overall, the paper identifies pivotal figures in the coastal carbon field and reflects on the use of Twitter for bringing attention to research findings.

Don't scare the kids: Barriers to sharing professional climate knowledge in personal circles

Reference 0165

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Access to credible information about climate change is an acknowledged factor in readiness to plan for climate change adaptation. Unfortunately, many people who are not climate professionals do not feel confident of their understanding of complex climate knowledge which is framed in an uncertain future context. Therefore, it would seem that those who work with climate information could offer an advantage to their family and social circles by sharing their knowledge about projected climate change. To investigate this, Australian and Canadian professionals who work in climate related research, policy, and practice, were interviewed regarding how they discussed personal expectations of climate change over the next twenty years, and what adaptation strategies they considered. While all participants were involved in conversations about mitigating personal greenhouse gas emissions, few engaged in conversations regarding personal adaptation to climate change impacts. Many participants said they had rarely or never been asked about how climate change would affect them personally. Thematic analysis identified personal, social, environmental, and temporal factors that influenced both motivation and opportunity to discuss climate knowledge at family and social gatherings. Typological analysis indicated that the few participants who commonly engaged in discussions of climate change adaptation expressed a sense of personal vulnerability to climate change impacts, actively thought about possible futures, and believed that their actions could benefit themselves and others. In contrast, most participants expected the infrastructure, wealth, and stability in their current society would be sufficient to manage future climate change for their community consequently, they saw little need to discuss adaptation on a personal level. This study provides insight into the influence of perceived vulnerability, future thinking, and agency on information sharing regarding climate change adaptation. The study points to the need for a better understanding of the factors supporting climate change knowledge exchange in social settings.

When waves of heat and inequality meet: An interdisciplinary approach to resource mobilization under heatwave conditions in cities of the global South

Reference 0234

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The rapidly urbanizing world, inequality and climate change are converging in precarious ways. With heatwaves in cities, comes the rise in the number of mortality and morbidity in society as well as the harm to ecosystem. While the impacts of heatwaves are diffused and diverse, they hit the low-income, marginalized and vulnerable groups harder, considering their limited access to urban services. Under these circumstances, the waves of heat and inequality meet, where finding solutions goes beyond physical boundaries and enters the social sphere.

The objective of this paper is to develop interdisciplinary knowledge about underlying mechanisms that impede or facilitate neighborhood mobilization in cities of India and Iran in facing heatwave conditions. In doing so, it draws on empirical evidence of contributing factors to (un) successful cases of neighborhood initiatives around access to urban services over the last couple of decades in a number of cities in these countries. The selected cases represent the regional climate change trend where both observed and predicted daytime temperature extremes, with high confidence, are likely to increase. Each case is also manifestation of unequal societies where economic conditions over the past two decades has led to a sharp widening of the gap between the rich and the poor.

By using multiple-case study design, the paper illustrates recurring patterns in different settings leading to barriers or opportunities for resource mobilization in dealing with increased frequency of extreme hot days. Pinning down these mechanisms and conditions not only allows us to create a more comprehensive knowledge about civic engagement and collective action, but also provides us with scientific strategies to engage more meaningfully with activism in the face of increasing global inequality and rapid environmental changes.

Solutions-oriented research for global sustainability. Towards a new understanding of the political role of science?

Reference 0242

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In the current epoch of unprecedented environmental change, science is expected more than ever to contribute to solutions for the challenges that societies face. In this context, solutions-oriented approaches to scientific knowledge production find increasing support among scientists, policy-makers and funding agencies. Such approaches move beyond an image of science as disinterested force that guides political action by providing appropriate facts. Instead, science is expected to take an active societal role, informing and shaping societal transformations to sustainability.

By actively engaging in processes of societal change, scientists encounter the deeply normative and political dimensions of sustainability problems and potential solutions. These aspects can no longer be seen separate from the scientific process, which raises questions about the value-dimensions of science itself, as well as the appropriate relationship between science and politics. In this paper, these normative and political dimensions of sustainability research are explored based on a survey completed by 315 researchers participating in the international research platform 'Future Earth: Research for Global Sustainability'. The principle of solutions-orientation is at the core of Future Earth, which aims to inform and support transformations towards global sustainability.

Results from the survey indicate that the focus on solutions for sustainability is prominent across disciplines, geographical regions, issue areas and career-levels. Moreover, solution-oriented researchers tend to acknowledge the value-laden character of their work and their political role in society. At the same time, findings from the survey point to tensions between the active societal role assumed in solutions-oriented sustainability research, and classic academic virtues of independence and autonomy which are deeply engrained in academic institutions. These tensions are further explored through twenty in-depth interviews with survey respondents. Respondents point out that normative and political dimensions of research are often not explicitly discussed, leaving researchers ill-equipped to deal with the tensions and potentials that come with a more active societal role in transitions to sustainability. Here lies a task for

solutions-oriented research networks such as Future Earth to support and enable open and reflexive deliberation on the politics of sustainability research.

Public Participation in Global Environmental Governance: A case study of NGO influence in the pre-negotiation of the Paris Agreement

Reference 0243

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Public participation has become an essential feature of global environmental governance, as it legitimates the system through the engagement of all actors in the international community, and helps overcome the poor cooperation between the different sectors of society. However, the evaluation of the strengths and weaknesses of public participation has shown that it has not been employed at its fullest capacity, and more efforts are required to intensify its effectiveness. The objective of this research was the analysis of public participation within the ongoing intricate, multifaceted and translational normative scenario, to examine its effectiveness, identify failures and recommend practical alternatives to improve its success at the international level. This was done through a descriptive case study of the participation of civil society during the global environmental governance process that gave rise to the Paris Agreement in 2015. Public participation was analysed through the submissions of four non-governmental organisations (NGOs) to the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP) during the period of elaboration of the Paris Agreement and the establishment of the pre-2020 strategies. The results show why the increased number of participating organisations has, in fact, not made public participation more effective. Likewise, the findings provide evidence that illustrate why the way how public participation is managed within the UN system impedes the proper representation of civil society; and how the lack of regulation of civil society participation in international law hinders its effectiveness, along with the representativity and legitimacy of NGOs.

Scrutinizing epistemic sources of de facto climate engineering governance: An exploratory analysis and future research agenda

Reference 0253

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Climate engineering, understood broadly as the 'deliberate, large-scale manipulation of the planetary environment in order to counter anthropogenic climate change' (Royal Society 2009), is the subject of growing scientific, political and academic scrutiny in recent years, including in the social sciences. In particular, governance analyses of climate engineering (henceforth CE) have accelerated in the last decade. A central tenet of this growing body of literature is that CE remains a largely ungoverned space, i.e. that shared norms, institutional arrangements, and formal rules to regulate CE-related research and potential deployment are largely non-existent. Our point of departure in this paper is different. We explore the proposition that CE is already a governed space. Despite the relative absence of formal governance arrangements, we argue that de facto governance of the CE landscape is underway. Drawing on science and technology studies insights, we understand de facto governance to mean the steering effects that result from spontaneously emerging, dispersed, uncoordinated and unacknowledged sources of governance authority, including epistemic (expert-based) authority. We undertake here an exploratory analysis of the existence and implications of de facto governance of CE. While we outline a variety of such sources of governance authority at the outset, we empirically examine the governance effects generated by a number of expert-led high-level "authoritative assessments" of climate engineering and its governance, produced in recent years. We identify a diverse range of governance effects generated by these authoritative assessments, including how they frame the contours of the CE debate in specific ways and thus shape the development of the field. Our point of departure is that de facto governance is inevitable in this realm, with a corresponding need to be cognizant of its political and distributive consequences. Our analysis covers the CE landscape writ large, including (and interrogating) distinctions such as carbon dioxide removal, negative emissions technologies, and solar geoengineering. In our discussion, we consider whether the notion of de facto governance yields novel analytical and empirical insights, and whether and how it differs from seemingly related phenomena, much analysed within international relations, such as fragmented, polycentric and/or experimental governance. We conclude by outlining a future research

agenda on interrogating the existence, nature and implications of de facto (CE) governance. Given our paper's central concern with scrutinizing the role of, and governance effects exerted by, contested science in contested politics, this research speaks most directly to the conference sub-theme "Science and Activism".

Debating Solar Climate Engineering Pre-and Post Paris 1.5°C: Who Evokes Equity, How and Why?

Reference 0258

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This paper traces how the aspirational Paris 1.5°C temperature goal impacts on debates relating to equity vis-a-vis climate engineering (CE), as compared to the pre-Paris phase. Our focus is on how an equity rationale for CE is being (re-)framed within scientific and expert communities pre- and post-Paris (particularly within climate modelling communities), with a focus on solar geoengineering. These communities are now intensely engaged in constructing scenarios and pathways to attain 1.5°C, intended to feed into the upcoming IPCC special report on this topic. Our paper considers how equity considerations relating to CE are being (re)-framed by and within climate modelling communities. We consider, for example, how the "moral hazard" concern surrounding CE (with its attendant equity implications) is evolving pre-and post-Paris. Pre-Paris, moral hazard (i.e. a concern that contemplating CE would distract from ambitious mitigation action) was still an important element of debating whether or not to proceed with CE, yet this is arguably changing in the post-Paris context with its aspirational 1.5°C goal. Given the ambition implied in this goal, we analyse how it is providing a rationale for some within the climate modelling community to declare (and incorporate within modelling) that there is no longer a moral hazard problem, because 1.5°C requires both aggressive mitigation and CE. If so, with one stroke, a potentially compelling argument standing in the way of proceeding with solar CE research and deployment is sidelined, with attendant equity implications. As another example, in the Pre-Paris era, a rationale advanced by geoengineering researchers to pursue research on CE was that equity demanded it, given that the multilateral UNFCCC process was failing to deliver and hence failing the most vulnerable in the developing world, who would be worst impacted by climate change. In the Post-Paris era, with the relative success of multilateralism and its much lauded aspirational 1.5°C goal, the framing is still to argue that equity demands a consideration of CE, but this time because of success rather than failure of multilateralism. This framing now suggests that CE is needed because the world owes it to the small island developing states to deliver on Paris and its 1.5°C aspiration, demanded by those most vulnerable. We draw out

implications of such (re-) framings of equity and CE for the pursuit of CE research and governance post-Paris. Given its concern with the input of science into contested policy processes, our paper is related most closely to the ESG sub-theme "Science and Activism".

Challenges of Science-based Activism in a New-born Civil Society (Experiences of an Activist Academic in Improving Urban Environment of Zanjan, Iran)

Reference 0304

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The interrelation between science and activism fluctuates in different societies. It depends on how deep local norms and traditions are embedded in public beliefs and way of life. In mostly traditional communities science-based activism are practically complicated because modern science is based on critical thinking and this method of thinking is usually opposed by traditional thoughts. Even with increasing effects of climate change on a yearly basis, some societies seem to persevere their destructive lifestyles, which sometimes is a divergent combination of traditions and modernity. In newly-democratized/semi-democratic societies with usually conflicting interests and confusing ideas flying in the atmosphere, it is a major challenge to activate groups of people to focus on scientific facts and establish a civic movement to tackle an environmental issue. The media still has a long way to be considered a meaningful and serious social communications route and even NGOs are not well established and known publicly. In addition, some forged NGOs with fictitious principles are formed by mainstream parties to confront/incline civil society. In this situation, the academia with a clear environmental vision based on scientific facts plays a major role in encouraging the public to think critically and engage in practical activities that may change the course of climatic transformations. However, some academic professionals hesitate direct engagements as they consider social activism (specially in its severe politicized form) an unprofessional activity that damages their academic credibility. Sometimes such an activism can even spoil their through relationships with governmental organizations and private sector and so undermine their fiscal interests. Therefore, it needs a pure compassionate scientific morale to take action and risk a regular academic life in such societies. It looks like an everyday revolution. This paper is documenting the actual experiences of an academic in a semi-traditional society of middle-scale town in Iran, trying to engage in social/professional processes to improve the urban environment in Zanjan.

Coffee certification and ecosystem services in Brazilian savannas: perspective from farmer's knowledge on pollination

Reference 00333

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Agricultural intensification and expansion is a major threat to biodiversity and human wellbeing in the tropics. Several ecosystem services (ES) such as water provision and regulation service (e.g. pollination) are crucial to enhance agricultural production, but are scarce in the commodities chains. On the other hand Brazilian coffee production contributes with around 30% of the international trade which represents 9% of its gross domestic product. Moreover, coffee production chain is pioneer in several international initiatives attempting to promote sustainable practices in agriculture. In that, Socio-environmental certification schemes, such as Sustainable Agricultural Network (SAN) from Rainforest Alliance have been viewed as important international instrument for markets to work towards sustainability by promoting significant changes in production systems at local level. Using the concept of adaptive management in socio-ecological systems, we investigate if farmer's willingness to participate in voluntary certification schemes is associated to a greater perception of the benefits (ES) that conservation initiatives bring to coffee production and thus to competitive market, when compared to non-certified coffee farmers. By using structured and open ended questionnaires and participatory observation from an elicitation workshop of local farmers of one of the main coffee cooperative of the region. We show how the engagement between scales of interaction from local coffee producers, certification schemes, scientist and global coffee international market can open up opportunities to adapt management practices towards envisioned socio-environmental goals. The lessons learned can be of importance when discussing governance schemes towards sustainability mainly strengthening the spatially explicit approach of ecosystem services to safeguard pollination in agricultural landscapes by stressing the importance and benefit of investing in legal protected areas at farm level.

Stream 4: Theory and Methodology

Theoretical and methodological pluralism is a part of earth system governance research, drawing from the social sciences as well as interdisciplinary approaches at the interface of social and natural sciences. In the context of an increasingly warming and unequal world, there is a challenge for theory and methodology development to address both sustainability and environmental justice while maintaining scientific quality and rigor. In this stream we seek to create a platform for the earth system governance community to engage in such theoretical and methodological inquiry. What theories are relevant for earth system governance in the current context? What are the most promising and innovative approaches to researching allocation and access across multiple scales of governance?

Cultivating justice? A critical analysis of the correlation between Political Gardening and Spatial Injustice in Rome.

Reference 0010

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Is the globally emerging movement of political gardening (Certomà & Tornaghi 2016) working as a correction mechanism for spatial injustice conditions in the city?

There is now a growing body of literature exploring the different forms and aims of political gardening (e.g. Eizenberg, 2013; McKay, 2011; Purcell&Tyman, 2014); however little attention has been devoted to the analysis of the relationship between justice theory and socially-committed urban gardening initiatives (henceforth PG), particularly in its quali-quantitative aspects. This work aims at investigating whether PG can be actually explained as a tentative answer to socio-environmental disparities.

In order to address our research question the case study grounds on the analysis on relevant data about urban gardening initiatives in Rome, and it features a GIS-based application aiming at exploring the relationship between the geographical distributions of critical gardening activities and the presence and magnitude of spatial justice indicators which jeopardise urban space in social and environmental terms.

We apply simple statistical regression method (OLS) to spatially explicit data in order to compare the performance of several permutations of different explanatory variables linked to spatial injustice in explaining the distribution of PG initiatives.

The results will offers new insights to understand whether the wide spreading practice of cultivating the city can be actually understood as a grassroots-based form of collective agency addressing the environmental, economic and cultural conditions determining injustices. In particular, the resulting spatial injustice maps of Rome are discussed in the perspective of understanding whether the location of PG initiatives, aiming at advancing socio-political claims toward a more just social and spatial setting of the urban space, matches the distribution of spatial injustice occurrence. Moreover this will shed new lights on the deep correlations between specific socio-spatial configuration – which can nevertheless be generalised to other northern cities – and the possibility for collective agency aimed at fostering a sustainable yet equitable transition to take location-based relevant action.

From a theoretical perspective our results challenge the current interpretation of urban gardening as a mean to address environmental issues and re-thinking public space planning practices (Hou, 2010) in the cities, by weighting the relevance of spatial justice, social cohesion, inclusiveness, social innovations and equity.

Governing emerging technologies through fragmented international institutions: the cases of synthetic biology and geoengineering

Reference 0017

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The phenomenon of fragmented international institutions governing common issue areas

has received broad scholarly attention over the last years. What has received less attention is the question of how “issue areas” emerge in the first place. How are the boundaries of different objects of regulation negotiated, and what are the consequences of this boundary work for the institutional dynamics in fragmented global governance architectures? The paper focuses on the governance of synthetic biology and climate geoengineering within their respective multi-institutional settings. Attempting to bring together the study of institutional fragmentation with Science & Technology Studies, the paper analyzes, first, how the two technologies are co-produced through intergovernmental bargaining, the work of scientific advisory committees as well as stakeholders from civil society, focusing in particular on the role of the Convention on Biological Diversity. Second, the paper looks into the institutional consequences of co-production: how do scientific and technical definitions shape interactions between international institutions as well as the wider, meta-institutional structures within the emerging regime complexes for geoengineering and synthetic biology? The paper concludes with some general considerations on how Science & Technology Studies could enhance the study of institutional fragmentation and regime complexity in the global governance of the environment and technology.

From economic choice to social choice in coastal management: cost-benefit analysis, reductionism, and the search for alternatives in Flagler County, Florida, U.S.A.

Reference 0019

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Deteriorating global environmental conditions and increasing social pressures have led to the need for immediate and effective conservation of the world's coastal environments if they are to persist for current and future generations. Within the United States, among the most dominant mechanism for evaluating competing environmental policy choices is cost-benefit analysis, as demonstrated by the institutionalization of CBA in U.S. Army Corps of Engineers resource management policy. While CBA is touted by proponents as the most efficient and transparent way to make tough decisions about the future of our collective coastal environment, critics point to serious problems arising from the reductionist tendencies stemming from the underlying logic of economic choice upon which CBA is based. Critics predominantly point to complications regarding the (in)accuracy of monetary valuation techniques, the exclusion of salient social and environmental concerns in evaluative processes and the neglect of the question of distribution as particularly problematic when attempting to address issues of social concern. In this article, I draw on a concrete case of coastal management from Flagler County, Florida which utilizes CBA to demonstrate the relevance of these criticisms and what their consequences look like in a concrete context. Moving forward, I suggest that alternative strategies, in particular the social choice approach developed by Amartya Sen, offer a different means for collective decision making which expand rather than reduce the informational basis on which decisions are made and embraces, rather than filters out, pluralism in values and interests. As such, the social choice alternative can arguably more adequately address those tensions stemming from the reductive tendencies in economic choice and thus lead to more effective and sustainable social-environmental outcomes. Achieving social choice, however, faces serious obstacles related to the production of the requisite evaluative framework, supporting institutions and behavioral norms which make it practicable. I discuss in particular those obstacles stemming from neoliberal reforms which have increasingly become hegemonic in the United States and elsewhere, as these obstacles thwart any effort to provide those preconditions necessary for achieving social choice in practice.

How do labor and business power influence energy transitions? Comparing Germany and South Africa

Reference 0038

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The questions of 'who gets what, when, where and how' are of utmost importance in addressing the political and social challenges of energy transitions to achieve climate mitigation goals. The energy sector accounted for 72% of global emissions in 2012 (WRI 2014). At the same time, many countries consider fossil fuel extraction and use as part of national pride, (energy) security, and a (historical) promise of wealth through affordable energy and job creation. These feelings are therefore rooted deeply in current fossil fuel infrastructures, institutions, and power structures.

While the technical aspects of energy transitions have seen much progress, the socio-technical and political-economic aspects require a more thorough understanding. In our article, we seek to address this gap by specifying and operationalizing power relations in energy transitions and, in a second step, testing our approach in a comparative case study of German and South African energy transitions.

To this end, we draw from two key strands of literature:

- 1) actor- and politics-centered perspectives in socio-technical transitions (STT) scholarship (cf. Avelino / Wittmayer 2015, Geels 2014, Kuzemko et al. 2016) , and
- 2) classical theories of labor power and business power from political economy as a sub-discipline of political science (e.g. Korpi 1985, Lindblom 1982) .

Engaging the political economy perspective with STT might allow moving forward from heuristic actor conceptualizations towards more explicit, clear cut power relations. Our approach thereby responds to a recent call for specificity in literature on actors in STT and builds on general STT discussions of labor and business power (cf. Avelino / Wittmayer 2015, Geels 2014). Labor and business power theories open up the "black box" of incumbents' power, theorizing both trade unions and corporations as relevant actors. By incorporating them explicitly, the paper advances STT's concept of political effects of energy infrastructures.

The conceptual insights are then tested in a comparative case study of German and South African energy politics. In particular, we seek to investigate the political power and influence of trade unions and corporations on national energy infrastructure planning and policy decisions against the background of an energy transition towards aims of national importance, such as energy security, growth, and climate change mitigation.

Mining and Modelling Environmental Governance

Reference 0075

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The analysis of environmental governance takes great advantage of relying on empirical data, information, and knowledge representation. We focus on: 1) the mapping of the governance system consisting in organizations, legal and policy instruments, and some environmental issues and 2) the analysis of the changes of the interactions taking place within this system over time. Data and information are derived from the mining of a textual corpus composed of several conventions on biological diversity and climate change, plus hundreds of decisions of the related conferences of parties taken from the 70's, and information collected from websites describing the involved organizations. Three network-based models are presented: a) a model based on mutual information functions links organizations through their missions and roles, composition of governing boards and partnerships; b) a model showing the partial cover between the organizations' competences and the fields involved in complex environmental issues or, on the contrary, the gaps existing in the system implemented to deal with them; c) a model providing higher dimensional views both on the inter connections between organizations, instruments and environmental issues, and on the routes / obstructions to the collective action. Beside the graph-based representations, the expressivity of models is enhanced by the use of various measures (e. g. centralities) and indicators (e. g. diversity indexes) that are further used to design and evaluate governance scenarios. The overall approach being incremental, some perspectives are finally drawn for the forthcoming analysis steps of environmental governance.

From Integration to Inter-linkages: Tools for national SDGs Implementation

Reference 0082

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The concept of sustainable development is characterised by integrating the social, economic and environmental dimensions. In addressing its implementation, literature on governing for sustainable development have demonstrated little success in policy integration. The advent of the Sustainable Development Goals (SDGs) was hailed as the turning point towards better integration with the outcome document emphasising that it must be seen as an integrated package with the goals and targets indivisible from each other. Nonetheless, as an outcome of a political process, it has been criticised from a scientific perspective of achieving a low level of integration. This paper attempts to assess the promise of SDGs of moving towards integration by assessing two levels of linkages. Firstly, tools for identifying functional linkages across SDG targets are assessed. Secondly, the political linkages, and more specifically, the institutional arrangements of the identified inter-linkages are then identified to determine whether there is a correlation or mismatch between the two types of linkages. A case study to identify and implement the inter-linkages of the drivers and benefit of forest cover (SDG 15.1) in Malaysia was undertaken for this purpose. The results demonstrate that by using a combination of existing approaches such as scoring of interaction of the SDGs, issue mapping through network analysis, and subsequently verified by basic scientific methods, clusters of strongly inter-linked issues such as the Forest-Climate-Resilience nexus can be identified. The causalities between the inter-linkages are, however, difficult to infer due to unreliable data, resulting in higher uncertainties in more complex systems and tools such as integrated modeling. In comparing the interlinked clusters with state of the art institutional arrangements, little correlation is found from a structural point of view, with a fragmented institutional landscape and overlapping coordinating functions in place. In conclusion, the findings suggest that the SDGs, supplemented with existing tools, can be a starting point to identify inter-linkages of strongly linked clusters. This lends itself to a piece-meal approach of addressing inter-linkages rather than integration as a whole, which may prove to be more pragmatic in the shorter term. Nonetheless, moving towards policy integration will require addressing the mismatch between the functional and political linkages, with a better understanding of the institutional dimensions of interaction.

The "Anthropocene" in Green Political Theory: Rethinking Environmentalism?

Reference 0090

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The implications of ecomodernist support for a "good Anthropocene," which involve accepting the "end of nature" and promoting a clear techno-optimism, are significant for green political theory. Ecomodernists claim that green political theory must evolve from its "romantic" and regressive view of nature as "independent," that it must embrace technology to solve social and socio-natural problems such as climate change and energy poverty, and accept that humanity must now manage nature as a "garden". The technical approach to ecological problems, which we find in "geoengineering," "earth systems engineering," "securitization policies" or "terraforming" contributes to depoliticize and commodify the environmental crisis. It offers myths of scientific panaceas based on further commodification and colonization centered on the security of the global North. It legitimizes an unchanged neoliberal political economy, further militarization and might bring many unforeseen and unpredictable catastrophic ecological consequences.

This paper argues against this, that to acknowledge the increasing intertwinement of nature and society around us-and inside us-does not require us to abandon the analytic distinction between aspects deriving from human societies and those deriving from nature's "non-identity" (otherness). It represents a source of dominating hubris, a philosophical anthropocentric fallacy and a justification for destructive practices. In other words, natural objects have still agency and human societies themselves are materially anchored in biophysical conditions that transcend them. Moreover, against the unapologetically anthropocentric world picture offered by the concept of the "good Anthropocene" and the further capitalist exploitation of the earth it promotes, we argue that the repeated failures of ecological modernization, ecomodernism and environmental managerialism should be an opportunity to re-think our place on the planet and to accept the fragility and vulnerability of the human species in the face of complex and unpredictable natural phenomena.

What needs to be developed is not a new form of human hubris but our capacities for gratitude, humility, respect and restraint, all of which are central normative features of green political and moral theorizing. The great challenge that lies ahead us is not the further humanization of the planet but rather the further humanization of humanity. What needs to be managed and controlled is not, as prominent supporters of

the Anthropocene have it, the earth itself and its various biophysical entities and processes. Rather, and here exhibiting long-established green political ideas, what is in need of management is humanity's relationship with the earth, a major element of which is human self-management and improving intra-human relations.

Walking the line: contemplating environmental justice through a trans-scalar ethnography of relations

Reference 098

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In my paper I propose a relational and trans-scalar conceptualisation of "environmental justice" with a focus on consequences for methodology. My paper thus consists of two parts: 1.) revisiting the ontological and epistemological foundations of environmental justice, and 2.) a translation of these principles into a workable methodology. The basic assumptions of my paper are that environmental justice is fundamentally about the distribution of environmental risks, and that it should be conceptualised relationally, rather than in terms of territory. This conceptualisation departs from (but quickly leaves behind) Ulrich Beck's understanding of the global risk society, in which, he claims, "[t]here is a systematic 'attraction' between extreme poverty and extreme risk. In the shunting yard where risks are distributed, stations in 'underdeveloped provincial holes' enjoy special popularity" (Beck, 1992, p. 41). This suggests a 2-dimensional map-like topography of risk, in which some areas manage to repel environmental risks, while others attract them. I suggest to contrast this perspective with the image of a 3-dimensional web or rhizome that enables the flow of risk-relations. I argue that the fluid architecture of this web determines not only which risks materialise where, but also what is perceived as "risky" in the first place. Furthermore, I argue that the scalar level of risks are not inherent to the respective risk itself, but is similarly an effect of maintenance of material relations. From this theoretical basis I develop a methodological approach that invites the researcher to foreground the material and performative aspects that constitute the relations at the centre of the conceptual framework. Drawing inspiration from Marcus' Multi-Sited Ethnography and Tim Ingolds ethnography of walking, I suggest to follow these relations through space by walking, driving, cycling, or riding alongside of them. Based on fieldwork in Nairobi, where this approach was used to study urban rivers and associated flood risks, as well as on a planned research on an oil pipeline in North Kenya, I attempt to show how this methodological approach enriches the debate about environmental justice by providing an epistemological opening for relations (rather than entities). Furthermore, I argue that this approach draws attention to the way that scalarity is created in the first place, rather than merely registering processes across already "existing" scalar levels. I argue that this trans-scalar ethnography of

relations unveils invisible dynamics that create environmental injustices, and is therefore indispensable for the understanding and subsequent creation of environmental justice.

Analysis of the governance system of the Ardennes and its adequacy vis-à-vis climate change

Reference 0103

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The Ardennes are a low mountain range in the heart of Europe. They are located between France, Belgium, Luxembourg, and Germany, in a generally temperate climatic zone with a large number of microclimates between forests and grasslands. In these areas, climate change is mainly reflected in an increase in the frequency of intense weather events, elevation of vegetation belts, changes in habitats and biodiversity, alteration of hydrological regimes and intensification of hydrogeological processes (Golobic, 2006). Climate projections over the next 100 years in the Ardennes forecast an increase of 2 to 3°C in the average annual temperature in the region and the precipitation regime will also be strongly modified (Terlinden, 2011). Given the likely impact on a particularly sensitive vegetation cover by 2050 and investments in a particularly important agroforestry sector, which often exceed 30-40 years, it is fundamental for this area to be able to anticipate these changes and adapt. This paper aims at analyzing the adequacy of the governance system of the Ardennes to adapt to climate change. To do so, this paper first sheds light on the governance of this mountain range. Interviews with a large number key informants, participant observation conducted since 2013, as well as the scientific and gray literature available, represent the knowledge base for the paper. Then, it uses a version of the framework for the analysis of the sustainability of socio-ecological systems (SES) developed by Elinor Ostrom (Ostrom, 2009; McGinnis-Ostrom 2013), that was specifically adapted by the author. The SES framework integrates not only the interactions of bio-geophysical elements, such as units and systems of resources and related ecosystems, but also social factors such as actors and systems of governance and the social, economic and political context, but does not fully apply to large ecosystems (Fleischman et al. 2014). This paper will then question whether the current governance system is capable of enabling the kind of interactions between the different elements of the socio-ecological system of the Ardennes that would be critical to adapt to climate change. This paper is meant as an example of how an analytical approach can be used to diagnose the governance of large-scale socio-ecological systems with regard to a sustainability challenge, which is

not limited to climate change. This approach can be replicated elsewhere in both a scholarly context and as decision-making support.

Telecoupled Vulnerabilities in Food and Land Systems: Modeling the cascading effects of breadbasket failure

Reference 0124

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Global food security and climate change are both high on the global policy agenda, and extensive research has sought to understand the interactions of changes in climate and global food demand. Over the past 25 years, numerous studies have documented the sensitivity of agricultural production to changes in temperature and precipitation, producing a general consensus that already marginal areas for production will likely face further yield losses in the future. Despite this research, there has been little work conducted to understand how regional shocks to production may induce differentiated responses in food security, food prices, and land use change around the world. There continues to be a need to assess how these cascading effects will manifest and how both climate and food policies will interplay to shape these outcomes. These interactions are particularly important to understand in the context of an increasingly globalized food system, in which a handful of highly productive agricultural zones provide the vast majority of the world's calories. Policy and environmental shifts that alter production directly or indirectly in these breadbaskets will have cascading and regionally differentiated effects that extend far beyond the borders of these productive regions.

This paper examines the utility of global integrated assessment models to link social and environmental processes in order to investigate the interplay between climate and food policy amidst different socioeconomic pathways. In addition, we leverage IAMs to spatially identify impacts of regional shocks to agricultural production on distant areas. We argue that IAMs can contribute to a greater understanding of 1) the interplay among various policy interventions, 2) the amplifying or attenuating effects of simultaneous shocks to the global food system, and 3) reveal the shared vulnerabilities among distant regions. We present the results of analysis of various scenarios of agricultural change in different policy contexts. The results demonstrate clearly that there are likely to be multidimensional consequences from the kinds of shocks that are possible from a rapidly changing climate system, especially when combined with other demographic and economic trends in the coming decades. The results provide insights that can

inform the study and development of governance strategies that explicitly account for the interplay of climate and food policies.

Polycentric climate governance and innovation

Reference 0136

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The notion of Polycentric governance has gained traction as a solution for environmental issues in the past 10 years or so. In this paper we explore the added value of polycentric governance for the resolution of climate change issues by asking whether a polycentric governance system (as seems to be emerging post-Paris) is also necessarily more innovative. To accomplish this goal we first engage with the literature on polycentric governance - we will seek to define what are the key defining characteristics of Polycentric Governance and how it is supposed to be different from other forms of governance. Secondly, we argue that polycentric governance cannot be considered a successful answer to the challenges posed by climate change if it does not lead to the invention of new approaches, if it does not entail mechanisms to diffuse such approaches, and if it does not involve a capacity for developing long term visions and the ability to evaluate whether such visions are being achieved. In other words, governance regimes must bring innovation. We engage with this question, thirdly by developing a number of questions and hypotheses on how polycentric governance might produce innovations or not. Here we discuss how polycentric governance is often described as a quasi-experimental birth room of new inventions because polycentric governance revolves around the development of local solutions that cater to local preferences. In addition, localities are supposed to be connected and hence exchange ideas – which makes diffusion possible, and finally polycentric governance is also supposed to involve the active involvement of central authority – to secure due process and to guide local development. But how internally consistent and realistic are these expectations? Our paper probes into these matters and comes up with some critical questions that should be heeded in the enthusiasm surrounding polycentric governance.

Return of Food Riots? Risks of social unrest from climate change and structural change

Reference 0152

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Food riot was the most common form of collective violence (the term used by Charles Tilly) in pre-industrial times, subsequently replaced by various forms of labour market actions. In the 1980s and early 1990s, however, there was a reappearance of food riots across the developing world, mainly as a result of the structural adjustment programmes. A similar pattern appeared in conjunction with the food price increase in 2007-2008, sometimes seen as a harbinger of what to potentially expect as a result of climate change impacts on agriculture. In this paper we discuss the risks of future urban social unrest due to the combination of rapid urbanisation and climate change impacts on agricultural production. For that, we draw on two empirical important observations, later turned into social theory, Engel's law from the 1850s and the recent theory of premature deindustrialisation.

First, as one of the best established economic theories, Engel's law stipulates that with increasing income the proportion spent on food is decreasing even if the total food expenditure is increasing. This condition has facilitated urbanisation (i.e. rural to urban migration) because the risks associated with being a net buyer of food has decreased. But these cond may change, or is perhaps already changing, partly due to climate impacts on agriculture. Second, a recent process called premature deindustrialisation implies that developing countries are running out of industrialisation opportunities sooner and at much lower levels of income compared to earlier industrialisation processes. In the context of rapid urbanisation, these two processes may lead to a concentration of people who are net buyers of food but who have insufficient means for accessing increasingly expensive food.

Even if current evidence of climate-induced riots, conflicts, and migration is weak and ambiguous we must acknowledge that the bleak outlook of climate change, together with other environmental and social processes, will raise concerns about the future habitability of some parts of the world. In this paper we combine the abovementioned theories for some of the most rapidly urbanising regions in the world with the aim of identifying areas of potential food riots.

Political Storytelling: Global environmental governance as a site for epistemological innovation

Reference 0159

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Facts do not speak for themselves; how and who tells them has significant implications. Recent developments in climate diplomacy showed that diverging narratives and the vivid imagery offered by their linguistic composition have implications for policy creation and legitimation. Capturing this discursive dimension, a new set of tools and methods are employed wherein fiction and narrative are regarded as constitutive elements in IR under the title of political storytelling. This approach reveals the importance of shared forms of narration in making sense of common problems. Although this agreement is not a complete consensus, a policy area with a relatively concordant, intersubjectively constructed number of facts is needed to begin negotiating.

Such work has also attracted scholarly attention in GEP, e.g. in analysis of climate narratives in literature, video-games, and film. However, understanding politics as a practice of collective storytelling in GEP remains under-researched. The paper aims to address this lacuna by systematically studying and critically engaging with the existing empirical work on political storytelling in GEP, particularly climate governance, biodiversity, and oceans. It then argues that GEP is a site for methodological innovation as its main concepts hybridize significant dichotomies of modern narratives such as nature/society (naturecultures), public/private (PPPs, networks, governance), national/international (transnational, global levels).

Managing climate change risks in rural coastal Bangladesh: the role of community-based adaptation approach

Reference 0163

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Community-based participatory approach has long been applied in diverse areas of development. Though the effectiveness of such bottom-up approach is contested, this approach has been adopted in managing the risks associated with climate change that labelled as community-based adaptation (CBA). The proponents of this approach hold that it has potential to build adaptive capacity of the most vulnerable of a community to deal with climate change. In so doing, advocates of CBA approach claim that it incorporates local knowledge and preferences in planning and implementation of CBA projects. In addition, such adaptation initiatives mobilise local community to build capacity for collective action and self-reliance. In Bangladesh and other developing societies, numerous community-based adaptation projects are being implemented mostly by non-governmental organizations. This research explores why and how households and communities respond to externally induced collective action efforts induced by community-based adaptation projects in rural coastal areas of Bangladesh that intend to build adaptive capacity. This paper uses qualitative research approach, and concludes that there is a deep disconnection between objectives of CBA projects and agendas of local community members who directly and indirectly participate in those projects.

The Diffusion of IPCC Adaptation Policy Frames and Narratives to National Adaptation Agendas

Reference 0166

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This research presents a comparative analysis of the policy narratives that underwrite and define the IPCC climate change adaptation frames, and the narratives that underpin national adaptation responses in the countries that are globally least and most vulnerable to the impacts of climate change. It uses a systematic approach to characterise the fundamental components that together form conceptual storylines of adaptation policy advocated at international and national levels. The study applied a novel methodology to characterise and define the adaptation policy frames and narratives advocated by the IPCC and the national adaptation strategies of 20 countries. The results indicated that the planned adaptation policy narratives put forward by the IPCC do not have significant influence on agenda setting and political action at national scales. The results demonstrate that globalised adaptation policy frames and narratives do not diffuse evenly across the globe. Countries that are most vulnerable to climate change are more likely to align their national agendas with international guidance than countries that are less vulnerable. Despite evidence that the world's least vulnerable countries likely play a significant role in shaping international adaptation narratives, their national agendas do not reflect them. This may have subtle consequences for the world's most vulnerable countries who, in order to compete for international funding, must meet criteria set at international levels.

Conceptual presuppositions of intergenerational justice

Reference 0171

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John Rawls famously proclaimed that ‘justice is the first virtue of social institutions’. In a warming world, it is evident that it is not only necessary to include current generations in what we understand to be the addressees of justice; it is urgent to include future generations as well. This raises, however, various intricate questions concerning the “social institutions” that should be responsible for the realization of such intergenerational justice. One of the main conceptual problems here is that we cannot understand intergenerational justice as the mere extension of the current requirements of social justice into the future: our responsibilities and duties towards future generations are structurally different from those towards current generations, however geographically distant they may be. The issue is not that we cannot know the identity of future persons; if we can reasonably expect that there will be future generations, it is not necessary to know precisely who they are to explain why we have a responsibility towards them. The conceptual problem is rather that there is such a fundamental indeterminacy in the idea of future generations and of the world that they will inhabit, that our capacities to conceive of what our responsibilities can and should involve are severely impeded. We cannot know but only approximate the concrete needs and vulnerabilities of future people, where the similar holds for the condition of planet earth, and this creates huge difficulties in giving the specificity to our understanding of duties towards future generations that is necessary to consider these as normative. The urgency of developing global answers to this difficulty is only emphasized by the increasing tendency to misuse the indeterminacy of the future as justifying unsustainable action, as exemplified by President Trump.

The aim of this paper is to develop a more comprehensive understanding of the conceptual presuppositions of intergenerational justice. We will address the following questions:

1. What do duties towards future generations presuppose on behalf of the individual subject? How much indeterminacy or openness can be allowed for duties to maintain normative potential?

2. How should the future play a role in the public sphere? Does the irreducible indeterminacy demand that societies remain neutral vis-à-vis specific ideas on how the future will develop, or is imagining the future a public task?

3. What are the necessary institutional requirements that enable societies to live up to their responsibility towards the future?

Social-ecological resilience and vulnerability to climate change: an analytical framework for the Chilean case

Reference 0174

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Although it only contributes to 0,2% of the global Greenhouse Gas emissions, Chile is highly vulnerable to the effects of climate change.

To prepare for future challenges in terms of adaptation, and identify opportunities for a more sustainable development, the Ministry for the Environment has undertaken the quest for a scientific framework concerning future climatic scenarios and projections for the country, and the vulnerability of different productive sectors and social domains to climate-related threats, particularly connected to changes in temperature and rain regimes, and in the frequency and intensity of extreme weather events.

Building from this experience, the study focuses on the development of an analytical framework to understand and assess social-ecological resilience and vulnerability to climate change in the country, derived from a systematization of the national and international literature and the contributions of an expert and incumbents board.

While the notions of vulnerability and resilience are broadly used, a variety of different approaches exists with respect to their definition, dimensions, scope of application, measurement strategies (qualitative and quantitative), and interactions with other concepts such as risk, sensitivity or adaptation/coping capability.

The presentation will cover some of the main proposals, highlighting their key aspects and limitations, and will introduce a conceptual and analytical framework acknowledging, on the one hand, the multidimensional, plural and dynamical nature of vulnerability and resilience; while providing, on the other, a rigorous, integrative and replicable method acting as a basis and a boundary object to facilitate transdisciplinary efforts in order to integrate scientific, decision-makers' and stakeholders' perspectives: a necessary task in order to build a socially robust and holistic understanding of climate vulnerability and social-ecological resilience.

Finally, some theoretical conclusions will be discussed regarding the relations among the concepts of resilience, vulnerability and adaptive capacity, dedicating special attention to phenomena associated to climate change.

Evaluating methods for allocating entitlement to the safe operating space for use in assessments of absolute sustainability

Reference 0179

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A recent development in sustainability assessments is to relate perturbations and impacts of anthropogenic systems to absolute environmental boundaries. For instance, Science Based Targets which allow companies to relate their greenhouse gas emissions to an absolute boundary for climate change. Along the same line of thinking is the Planetary Boundaries (PB) framework which introduced the concept of a 'safe operating space' for humanity, and defined PBs which should be respected to keep Earth in a Holocene-like state. The PB-framework includes nine boundaries for key Earth System processes, including climate change, and has gained attention and interest from many different societal actors, including companies, industries, national and international institutions. Hence, there has also been an interest in integrating absolute boundaries, such as PBs, in the product and technology oriented environmental assessment tool, Life-Cycle Assessment (LCA), to facilitate absolute sustainability assessments of products and technologies.

However, a key question with regard to absolute sustainability assessments is how to allocate the safe operating space, as delimited by the PBs, between different anthropogenic systems. The task of allocating the safe operating space has a normative nature, and indeed many different allocation principles can be identified e.g. grandfathering approach, equal per capita allocation or per added value allocation just to name a few. Indeed, the main issue is how to find a 'fair' and 'equitable' allocation method and how to achieve a common agreement on the selected allocation principle between the involved stakeholders. Finding a 'fair' allocation that all stakeholders can agree on is a huge challenge, and perhaps even unattainable, because preferences and ethical viewpoints differ greatly among individual stakeholders.

We identified allocation principles that have previously been applied in absolute sustainability assessments and included other potentially relevant principles. From the list of allocation principles, we conducted an LCA case study on maize supply to the USA and Denmark to evaluate how results about absolute sustainability assessments differs depending on the choice of allocation principle and how this may propagate to conclusions about production and supply of maize being environmentally sustainable. Lastly

we discuss the fairness of the different allocation principles and how suitable these may be for assessments about the absolute sustainability of products and technologies.

Changing the rules: game co-design as a method of inquiry and experimentation with systems of environmental governance

Reference 0187

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In this paper, we investigate game co-design as a novel, iterative and dynamic approach for the participatory re-imagining of processes of environmental governance - a contribution to the conference stream on theory and methodology.

Games have a history in policy and planning that goes back almost as far as simulation modelling and future scenarios, and games share many of the analytical and experiential benefits of modelling and scenarios. What is unique about games in the context of environmental governance is their focus on subjective actor perspectives. This means that game players can step into different roles and interact with others and the game, exploring the consequences of regulations and policies.

However, when players can only play set roles within games pre-designed by experts, games have important limitations as a tool for investigating systems of governance. A finished game has a specific 'procedural rhetoric' - the game rules explain how the game designers have conceptualized the systems that the game seeks to represent and the players can only accept and act within this procedural rhetoric. By contrast, when game co-design, rather than game play alone, is used as a method for inquiry and experimentation between diverse actors, this can lead to a process of actively questioning how current systems of governance are conceptualized, and what future forms of governance may be possible. What are the rules, roles, responsibilities and relationships in the system that the game is representing? And what happens when game co-designers change these elements to represent a more desired future system of governance?

In this paper, we demonstrate the benefits of game co-design as a high-potential approach to the research and imagining of environmental governance - an approach that offers key opportunities of actor inclusion, reflexivity, and flexibility to engage with specific governance issues. We use a number of case studies across a European multi-stakeholder project to test and report on this use of game co-design as a method of investigation and re-design of systems of governance. We investigate the practical and conceptual challenges that such an approach entails. We argue that the problems of simplicity associated with the

game metaphor are overcome by widening our definition of 'games' and by valuing broken, incomplete, open, evolving games as useful for reflecting on systems and processes of governance. We offer specific guidelines for using game co-design for the purpose of investigating and re-designing systems of governance in multi-stakeholder processes.

Navigating trust in collaborative transdisciplinary research: examining New Zealand's Sustainable Seas National Science Challenge

Reference 0205

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In responding to complex real world socio-environmental problems, collaborative research projects provide opportunities for research to be undertaken to co-create knowledge that is scientifically robust and socially relevant. While the challenges of engaging in interdisciplinary and transdisciplinary research due to differences in methodologies, concepts, language and worldviews are increasingly acknowledged, corresponding research that focuses on incentives and disincentives to collaboration and which considers how trust is built in collaboration is less well established. In this paper, we report on research that focuses on understanding how trust is built and maintained amongst researchers involved in a large-scale collaborative transdisciplinary research investigating pathways to implementing ecosystem based management in New Zealand. This project is part of the Sustainable Seas National Science Challenge, a 5-year programme of research that has as its overall aim to enhance the use of New Zealand's marine resources, while ensuring the marine environment is understood, cared for, and used wisely for the benefit of all, now and in the future. In achieving this aim, Sustainable Seas has assembled researchers from across the biophysical and social sciences to work across five programme areas, and to engage with various levels of government, industry, and Māori. A key consideration for this research is the special position of Māori, the Indigenous people of New Zealand, and how this mediates their role as inclusive of research collaborator, knowledge broker, and governance partner. Given the diverse range of researchers and partners involved, understanding the factors that enable well-functioning collaboration and that contribute to trust are key to the success of the programme.

In this paper, we report on the methodology we developed to examine researchers' understanding of the key elements that build trust in collaborative research. Researchers were guided through an outcomes-based analysis of their project and asked to self-evaluate their progress in practicing collaborative research. The results showed that creating opportunities to more deeply engage with Māori collaborators and to incorporate Māori knowledge were seen to rest on trusting relationships; however, the extent to which this was occurring was fairly limited. By contrast, shared goals and agenda, joint activities, communication and

sharing knowledge were shown to help build trust amongst researchers, particularly in teams that are newly assembled and have limited experience working together. Providing time to reflect on how the research team is working to achieve the research objectives was identified as an important feature to enhance trust.

Innovative norm setting for economic actors- The One Planet Thinking approach

Reference 0236

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Several efforts have been made that try to minimize human impacts on the environment by individuals, civil society organizations, governments and companies. These include sustainability standards and certifications as well as frameworks or initiatives that aim to help making better choices for actors. However, barely any takes into account the finite capacity of the planet's natural resources. Recently a new innovative approach, which builds on a normative framework, was developed by two NGOs: the World Wide Fund for Nature (WWF) and the International Union for Conservation of Nature (IUCN). It outlines a set of sustainability efforts and approaches for using, sharing and managing natural resources within the Earth ecological boundaries. The idea is based on the planetary boundaries, developed by Rockström et al., (2009), that provides a framework for integrating a number of scientific research documenting how human actions have driven environmental change. This paper is the first study of a PhD project, which is built around this innovative, norm-setting approach called One Planet Thinking (OPT) and its main aim is to analyze to what extent can economic actors downscale their environmental impacts in order to stay within the safe operating space for humanity- as it was defined by Rockström et al., (2009)¹. OPT measures sustainability performance against to the relative planetary boundary in which organizations operate and not against sectorial peers or historic data. It aims to scale up efforts in order to develop and formulate quantifiable targets for long-term and define realizable short-term goals and actions for individual actors. This explorative study addresses OPT and compares it to other holistic approaches that aim to create a shared language amongst actors such as the Natural Capital Protocol, Natural Step or Science Based Targets. A framing matrix is going to provide the base for the comparison including criteria such as main approaches, frameworks, or theory of change.

1: Rockström, J., Steffen, W., Noone, K., Persson, Å., Chapin, F. S., Lambin, E. F., ... & Nykvist, B. (2009). A safe operating space for humanity. *Nature*,461(7263), 472-475.

Navigating the Climate-Energy Nexus

Reference 0241

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The 2030 Agenda and the Paris Agreement, both agreed upon in 2015, more than ever stress the importance of an integrated approach to multiple problems to effectively pursue a sustainable future. Particularly climate mitigation and energy play a crucial role in reaching the sustainable development goals. Energy is key to the functioning of modern society, and climate change forms a threat to poverty alleviation and food security. Consequently, it is of great importance to study the interactions between the climate and energy challenges. This research does so by structuring the "nexus" between global climate and energy governance. This is an increasingly prominent concept among environmental governance scholars to describe complex interactions between governance domains. However, there is not yet an unequivocal definition of what the nexus concept entails. Therefore, the first part of this paper provides a conceptualisation of the nexus. Following the Online Oxford Dictionary, this paper defines the concept from the global governance perspective, as "a series of interactions linking two or more governance domains, and the governance institutions involved." The possible interactions are derived from a thorough literature review on interactions, also referred to as interconnections or interlinkages. The second part of the paper involves a structuring of the climate-energy nexus. For this purpose the literature review is complemented by an extensive analysis of the institutional structures of both governance domains and an analysis of official documents of the governance institutions involved in climate and energy governance. As an additional step an innovative method of frame analysis was conducted. The result is a detailed mapping of the climate-energy nexus, the multiple interactions occurring at different levels, and insights on conflicting or aligning priorities, interests and normative assumptions. Structuring the climate-energy nexus in this manner enables the search for potential conflicts and seizing opportunities. More importantly, it enables the exploration for management options to navigate the fragmented landscape of climate and energy governance, and to ensure a transition to a sustainable future worldwide.

Organizing the interactive process to resolve marine resource problems in a multi-level context: Implications from a structural analysis of case studies in Brazil and Indonesia

Reference 0248

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Concerns about the world's oceans are rapidly growing. The potential of a multi-level approach to governing marine resources is increasingly acknowledged. Yet, little is known about how to best link a growing number of actors across multiple jurisdictions to facilitate sustainable local governance outcomes. This research uses network analysis to identify relational characteristics associated with more sustainable outcomes of marine governance at the local level in a multi-level context based two regions in Brazil and Indonesia. In each of the two regions, four communities within close vicinity to each other were selected as local study sites. Two communities in each region display rather sustainable resource use behavior in that functional local rules exist and resource users comply with them. The local resource users in the other two communities in each of the regions are involved in highly unsustainable resource use practices. Based on 194 face-to-face SNA interviews carried out over a one-year field research period, weighted networks were obtained for the frequency and quality of interaction between marine governance actors within each of the eight communities, and between local actors and actors from higher levels in the respective administrative hierarchy. The study finds two common relational characteristics in all communities with more sustainable local outcomes in a multi-level context. First, the results clearly show that in the communities with more sustainable resource use, the integration and activity of local civil society actors in the multi-level governance network is much higher than in the other communities. The second relational characteristic relates to the higher centralization of the governance network at the local level in the communities with less sustainable outcomes. In these communities, certain local actors seem to have become structural bottlenecks in the multi-level governance system as a high number of interaction is channeled through only few actors.

Power of mutual-gains approach to reallocate for sustainability of global environmental commons

Reference 0251

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This research examines the potential of mutual-gains approach to address the need for and implications of reallocation of global environmental commons. Recently it has been increasingly proposed to revitalize the well-known mutual gains approach developed within the Harvard Negotiation Project pioneered by Fisher and Ury (1981) as a promising and innovative approach in the context of transboundary water management whereby the idea is to shift the focus from quantities of a resource to gains derivable from its use and allocation. Proponents of the approach have argued that when the focus is on gains, a potential conflict over a resource can be transformed into an opportunity to cooperate because the main question changes from who gets what to how to improve the situation for all. That is turning the zero-sum game into a positive sum.

At the same time, there is a growing recognition that due to development needs of societies and effects from changing climate, the stress mounted on global environmental commons has been reaching unprecedented high levels. And the forecasts are such that the competition for global environmental commons such as atmosphere (clean air), forests, shared land and water resources, biodiversity, sustainable management of which often requires collaboration beyond boundaries of any single nation as well as on multiple levels within individual states, will only increase in any foreseeable future.

Therefore, we will present in our paper the value of reframing the traditional rights-based approach to mutual-gains approach in mitigating the competition for global environmental commons. We report on methodological lessons on the ways such reframing made possible. To do so, we document empirical evidence of mutually gainful solutions with specific forms and mechanisms applied to the three different problem structures:

(i) geographic - when competing interests occur between neighboring regions, for example upstream vs. downstream problematic in transboundary water management; (ii) sectoral - when competing interests occur between different sectors of economy, for example agriculture vs bioenergy leading to competition

for land; and (iii) policy or target oriented, when for example, poverty eradication goal contradicts with biodiversity conservation targets.

In each case, we concentrate our attention on (a) whether and how mutual gains approach has helped achieve creative solutions transforming conflict into cooperation, and (b) whether and how these solutions could cope with challenges of implementation such as dealing with sources of path dependencies and resulting transaction costs.

Understanding institutional change in environmental governance: the concept of "institutional work"

Reference 0255

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Understanding institutional change is a key challenge in adapting and transforming environmental governance systems across a vast range of problem domains (e.g. water, climate change, biodiversity, urban governance). Over recent decades, environmental governance scholars have extensively studied institutions at both local (e.g. Ostrom) and international (e.g. Young) levels, and more recently, have also given significant attention to agency-related processes including entrepreneurship, leadership, and innovation (e.g. Huitema and Meijerink 2010, Westley et al. 2013). Yet despite extensive study into the meanings and effects of institutions in a range of disciplines, our ability to analyse and explain institutional change remains limited. This raises critical questions about how we can conceptualize and analyze processes of institutional change in environmental governance.

In search of new explanatory models, institutional scholars increasingly focus on the interplay between actors and institutional structures (e.g. Mahoney and Thelen 2010). A promising idea in this regard is the concept of "institutional work". Institutional work refers to actions taken by actors to create, maintain or disrupt institutional structures (Lawrence et al. 2009), and was first developed in the field of organizational sociology. However, it also has strong potential for better understanding agency-structure interplay in environmental governance; in particular, how these dynamics underpin institutional change in complex, contested, and evolving problem contexts (Beunen and Patterson 2016).

In this paper, we rethink the concept of institutional work within the context of multi-actor, multi-level environmental governance. We survey key approaches to institutional change in the literature, arguing that institutional work should have a central place within this theorizing, and chart ways in which institutional work opens up new avenues for studying institutional dynamics and institutional change. This paper draws on in-depth theoretical and empirical insights emerging through a special issue in advanced progress on the topic of institutional work in environmental governance, which brings together contributions from Europe, North and South America, and Australia. Overall, this paper opens up novel opportunities for theoretical and methodological inquiry, by bringing emerging theory from other fields

into the domain of environmental governance. Findings also have relevance to the current ESG harvesting activities on Architecture and Agency, being situated at the intersection of these topics.

The Phasing out of Fossil Fuel Subsidies and EU State Aid Rules

Reference 0280

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The EU has internationally been at the forefront of climate change policies. It committed to a substantially reduce its GHG emission (40% reduction by 2030 from 1990 levels). In this context, the major source of CO₂ emissions is fossil fuels. Thus, the EU together with other international actors has committed to phasing out fossil fuel subsidies. This commitment to phasing out such subsidies is one area where agreement was reached very early and without too much discussions. Yet, progress towards this phasing out has been and is still seen as rather slow. One of the main problems is the lack of comparable and accurate data to examine the public expenditure in support of fossil fuel production and use. There are numerous (conceptual) approaches as to how fossil fuel subsidies should be measured, with the International Energy Agency (IEA) and the Organisation for Economic Co-operation and Development (OECD) being the most prominent ones. Under the EU's possibly most important and effective tool, the EU's State aid control mechanism, a third, different definition of subsidy arises. The EU's State aid control mechanism means that each Member State of the EU has to report/notify any aid measure to the European Commission. Only after the Commission has approved such an aid measure the aid can be granted. Against this background, the paper explores the potential to control fossil fuel subsidies via the EU's State aid regime. In a first step, the paper compares the different definitions of subsidies under the IEA and OECD framework. It, then, identifies the most common forms of subsidies for fossils fuels around the world and examines the extent to which these would be considered State aid under EU law. In a second step, the paper explores to what extent such subsidy measures can be identified in EU Member States. Then, the paper explores to what extent such measures are actually notified to the Commission and whether they are likely to be allowed or not under EU State aid rules. The paper argues that such State aid measure need to be reported transparently and separately in the EU's State aid scoreboard. EU should employ one of its most effective economic and political tools to scrutinise such subsidies. This offers a realistic prospect for a strategic and targeted engagement with the aim of eradicating such harmful subsidies.

Designing highly renewable and socially accepted energy systems by integrating the modelling with the "real" world

Reference 0293

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The mitigation of climate change can be addressed by a large scale integration of renewable energy sources. The UK's power system produces roughly a quarter of the country's CO₂ emissions and so its decarbonisation is essential in achieving the long term emission reduction goal enshrined in the Climate Change Act 2008. Furthermore, the sector has some of the most cost effective mitigation options currently available across the energy system. Of these, onshore wind is one of the most developed in the UK, with levelised costs of electricity (LCOE) rapidly approach parity with natural gas fired power stations. However, in the UK rising local opposition towards wind and solar PV projects in combination with unfavourable policy development has led to a drop in renewable projects being permitted.

We use the high spatial and temporal high resolution electricity model (highRES) to design highly renewable power systems which are robust to the diversity of the weather. In the past we made certain assumptions of relevance to social acceptance of wind energy, such as distance from settlements and exclusions of national parks based on literature. However, as criticised by several authors energy models such as highRES which are used for planning and policy making do not integrate the "real world".

We close this gap by conducting participative modelling workshops with stakeholders (e.g. planning office, nature conservation groups, wind farm developers) and lay people. The aim is to elicit and refine socio-political barriers to wind energy, with a particular focus on quantifying and synthesizing data that are mainly qualitative to begin with. We run the assumptions on social acceptance past a range of stakeholders to test their adequacy and to collect other social barriers previously not included. In this way we aim to empirically calibrate the representation of social acceptance in the model and strengthen the connection between the "model world" and the "real world".

Tomorrowland: critical social theory of earth system governance

Reference 0299

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If we are living in a warming and increasingly unequal world, why is it that questions of allocation and access will never be adequately addressed in Earth System Governance? The answer is simple - we live in 'Tomorrowland'; a land at the nexus of social science and natural science where the solution to our problems will be found tomorrow.

The paper addresses the impossibility of Earth System Governance through current paradigms of theory and methodology by proposing an alternative approach located in critical social theory. Critical social theory operates at the intersection of social theory's understanding of human action and social institutions, with critical theory's critique of the social production of knowledge; taken together CST represents an interpenetrating body of work which demands and produces critique that depends on some manner of historical understanding and analysis.

The philosophical and theoretical origins for the paper are found in the political philosophy of Isabelle Stengers's (2009) work *In Catastrophic Times*, William Connolly's (2013) *The Fragility of Things*, and Bruno Latour's (2015) *Facing Gaia*. The paper works from the political theory perspective of Mary Mellor's (1997) *Feminism and Ecology*, Karen Litfin's (2003) 'Planetary Politics', and Robyn Eckersley's (2004) *The Green State*. As a starting point these works question the possibility of ever achieving holistic, intergenerational, and interdependent Earth System Governance within dominant paradigms of social theory.

Instead, the paper utilises critical social theory to critique contemporary liberal assumptions and rationalisations of cultures of consumption and Earth System Science as suffering from similar challenges of living in Tomorrowland. In Tomorrowland the future is today, meaning that questions of allocation and access can be addressed in a liberal sense by accelerating the transition to future technology today, no matter what the costs of consumption. Critical social theory will be used to analyse the way in which the contemporary Disneyfication of Tomorrowland does not render sustainability more likely through accelerated technological transition. To the contrary, the Disneyfication of Tomorrowland into easily

consumed and culturally-acceptable technological fantasies ensure that allocation and access will never be adequately addressed in Earth System Governance.

The paper addresses the steam's search for relevant theories of Earth System Governance, while offering a theoretical approach that makes possible the reimagining of research on allocation and access across multiple scales of governance, from international corporate giants to glocal consumer activism.

Understanding the World Ocean Regime and Allocation and Access to Coastal and Marine Resources through Quantitative Content Analysis

Reference 0309

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This paper addresses the allocation & access to COASTAL AND MARINE resources in a warming and increasingly unequal world as understood through quantitative content analysis (QCA). The paper will demonstrate not only how to rigorously conduct QCA, but show how scientifically examining relevant semantic behavior can provide key insights into earth system governance research. Critical to Earth Systems Governance, the method of QCA is a way to access the "generative grammar" described by Ruggie (1983) of governing systems. The paper demonstrates QCA by analyzing a database of all UN FAO State of the World Fisheries and Aquaculture reports published by the FAO since 1996. The paper explains the creation of the dictionary validated by inter-coder agreement, hierarchical cluster analysis, multidimensional scaling, and hand validation published in (Authors removed for review 2017, Marine Policy). Substantively, the paper will demonstrate the discourses around allocation and access to coastal fisheries and other marine resources are of minor concern for the regime governing the World Ocean, not to mention the just allocation of risk such as small island populations to sea level rise. This is not only a critical issue for the sustainability of human-marine systems, but it is contrary to the expected norms of the UN Convention of the Law of the Sea. UNCLOS, often considered the "constitution of the ocean" but it has been disappointing on a number of fronts when it comes to issues of just allocation and access of coastal poor people. Based on Arvid Pardo's vision to make the World Ocean a global common heritage, UNCLOS instituted the Area outside of national areas of control to be used for the uplift of the poor and to contribute to global human development. This allocation of the common heritage from the Area have not benefited the poor in any practical way, meanwhile key coastal and marine resources have been mined by more powerful and capable nations enough to have injured and continue to injure poor coastal peoples. This paper provides a methodological guide for understanding how to access the "generative grammar" of institutions and organizations governing Earth systems, as well as provides substantive evidence that the regime actually ruling the World Ocean, the World Ocean Regime, prioritizes actions and norms that harm coastal poor people and the overall sustainability of the World Ocean itself.

Beyond paradigm shifts: the dynamics of belief systems and their role in the society-nature relationship

Reference 0313

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In the environmental field, belief systems and their relation to the society-nature relationship have been explored in a variety of approaches since the 1960s. Yet, the dynamics of belief systems remain inadequately theorized and poorly understood, leading to a disconnect between empirical understanding of beliefs in the present and their persistence over the longue duree. Instead, a naive “paradigm shift” logic persists. This paper seeks to understand the role and dynamics of ideas in systemic social change. In his 1859 Critique of Political Economy Marx claimed, “It is not the consciousness of men that determines their existence, but their social existence that determines their consciousness” (Marx 1970, p21). In contrast, social constructivists take ideas as fundamental to understanding the society-nature relationship; they are inherent in the nature of human action and to causation in social systems. This paper navigates the chasm between materialism and idealism, combining a complex systems perspective with the sociology of knowledge to develop a theoretical framework that conceptualizes belief systems and helps to understand their dynamics. First, this paper reviews major approaches to understanding belief systems in the environment field and identifies their strengths and limitations. Second, it builds on the complex systems approach to belief systems proposed by Homer-Dixon et al. (2013), extending the complex embeddedness of belief systems to include the society-nature relationship. Third, this paper combines this framework with insights from the sociology of knowledge. I integrate insights from complex systems theory and the sociology of knowledge to explore the dynamics of how belief systems persist, change, and evolve as part of changing social systems. Fourth, this paper explores how the complex adaptive belief system framework can be operationalized to understand the historical processes and dynamics of belief systems. Understanding these dynamics can enable us to connect the longue duree of history to the present and implies a very different approach for how we attempt to change belief systems in relation to the society-nature relationship.

Explaining the emergence of non-state actors in Transnational Adaptation Governance

Reference 00319

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Climate governance has over the years become increasingly complex. Since the Kyoto Protocol, regulatory arrangements have been incrementally supplemented with market based solutions. Mitigation initiatives particularly have seen a proliferation of non-state actors. Conversely, for adaptation this process has been much slower. Recently, however, there has been a shift where transnational initiatives are focusing on adaptation. For example, a recent study found in their study on adaptation finance that transnational adaptation governance (TAG) is emerging and that adaptation is increasingly governed globally and transnationally. This paper furthers this analysis through a broader scope going beyond adaptation finance and beyond formalised governance under the UNFCCC. Based on a thorough literature review on transnational climate governance and adaptation governance this paper develops criteria for defining and distinguishing TAG in a broad setting. Specific features that distinguish adaptation from mitigation governance—related to agenda setting; target setting; rule setting; information sharing and capacity building; monitoring and evaluation; and finance—are here explained. Following the literature review a systematic quantitative analysis categorises TAG in terms of organizational structure, functions, level of institutionalization, and focal area. It distinguishes between formalised governance, adaptation under the UNFCCC, semi-formalised governance, adaptation initiatives with a ‘loose’ connection to the UNFCCC, and non-formal or adaptation, initiatives such as transboundary water governance and supply-chain management. The paper adopts a broad approach to societal adaptation to climate change – focusing on how actors are reducing vulnerability to the unavoidable impacts of climate change and what the role and purpose of new actors is in this context and how they seek to position themselves in the adaptation regime. The paper concludes that TAG initiatives are emerging on a broad scale where non-state actors are increasingly seeing the benefit to prepare and adapt for adverse climate impacts whilst decreasing the societal vulnerability to climate change.

Stream 5: Earth system governance in turbulent times

With the rapid political, social and environmental changes currently occurring, we have seen new words entering the earth system governance lexicon, including political terms like Brexit, 'alternative facts', 'Trumpism' or 'post-factual', but also new terms stemming from the science community, such as Anthropocene. The shifting landscape of governance opens areas for new research as earth system governance must adapt to turbulent times, recognizing the extraordinary degree of harm that is possible, and that current governance systems might not be fully prepared for. We therefore invite papers that especially address this challenge. For example, what theoretical concepts, frameworks, and methodologies can be used to analyze and understand the current social, political and environmental landscape? In what ways do innovations or changes in governance arrangements produce more or less accountable, adaptive, accessible and equitable processes/outcomes? How is the agency of different actors shaping allocation and access in the Anthropocene?

Who will form the Anthropocene?

Reference 0025

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In the Anthropocene, the first virtue of political institutions is reflexivity, the opposite of path dependencies entrenched in institutions established in the Holocene. Reflexivity must be ecological, not just in incorporating signals from the non-human world (no longer quite so non-human), but also in an ability to anticipate and prevent catastrophic state shifts in social-ecological systems. The need for this capacity is especially pressing at the global level. If the Anthropocene requires re-making international political structures and practices – including arrangements for allocating power and material resources under conditions of global instability - the obvious question is what kinds of agents will re-make them. Ecological reflexivity highlights agents capable of giving new form and meaning to values such as justice, democracy, sustainability, conservation, development, security, and participation. This formative agency is a necessary accompaniment to reflexivity. Agents can be individuals (citizens, activists, political leaders) or organizations (states, international organizations, advocacy groups, corporations). Formative agency may also need to apply to international scientific assessments: what do conservation, preservation, and restoration mean in the context of a nature no longer conceptualized in terms of fixed reference points, but instead ever-changing? This paper will examine the capacity of different sorts of agents to contribute to necessary re-thinking, with special reference to climate and biodiversity governance.

Governing Technology Transfer in Pursuit of Sustainable Energy: Implications of the 2030 Agenda

Reference 0031

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Technology and knowledge transfer from developed states to developing states has long been considered an indispensable tool for the achievement of sustainable development, by allowing developing states to leapfrog by the frontier of technological innovation in such areas as telecommunications, transport and energy generation. The "means of implementation" of the 2030 Agenda for Sustainable Development and the Addis Ababa Action Agenda include new mechanisms that are supposed to promote and facilitate the transfer of affordable and sustainable technological solutions to development and environmental problems. This is envisaged to occur in particular via a new Technology Facilitation Mechanism (TFM) and a Technology Bank for Least Developed Countries. Discussions on the creation of a Technology Facilitation Mechanism to assist developing countries started during the Rio+20 conference in 2012 and eventually led to its incorporation into the 2030 Agenda. The TFM will have three components: a United Nations Interagency Task Team, an online platform as an information and facilitation gateway, and a multi-stakeholder forum whose annual meetings will also inform the deliberations of the High-Level Political Forum (HLPF), the main UN body overseeing the implementation of the 2030 Agenda. However, past efforts to construct workable mechanisms for the governance of technology transfer at the UN level do not provide much cause for optimism. For the most part, these efforts resulted in an incoherent scattering of initiatives among various UN entities and the lack of an institutional structure able to perform the needed coordination and facilitation tasks. Methodologically grounded in a review of official documents and expert interviews with UN officials and policy makers, this paper uses the example of renewable energy technologies to evaluate how the new mechanisms for technology transfer envisioned in the 2030 Agenda could act as a catalyst for furthering certain of the SDGs. It examines in particular how the new mechanisms could assist in improving UN inter-agency coordination and the promotion of technology needs assessments and capacity building policies to enable a widespread diffusion of sustainable energy technologies.

Explaining Institutional Complexity and Private Authority in Global Climate Governance: the cases of climate engineering, REDD+, and short-lived climate pollutants

Reference 0032

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Global governance is changing. The current situation in world politics is often described as a crisis of multilateralism. This is not only visible in very recent developments like the 'Brexit' referendum or the Trump Administration's unilateral agenda. For much longer already, leading multilateral institutions have been challenged by one of the core phenomena in global governance today: a growing degree of institutional complexity.

We define institutional complexity as an inherent structural characteristic of global governance. It implies a plurality of political institutions across multiple scales and sectors, neither of which can claim exclusive authority over a given issue. What is new about today's world order is that this complexity has been significantly increasing, and it keeps doing so.

While the 1990s brought a heyday of new multilateral organizations and treaties, other types of institutions multiplied more recently, e.g. new club-like or minilateral arrangements that comprise 30 or less leading economies, regional or municipal partnerships, and, most of all, transnational institutions agreed upon by civil society or corporate actors.

Notwithstanding significant conceptual progress and first theoretical approaches we still know too little about the drivers of institutional complexity. How and why do institutional architectures, and the roles of private institutions therein, differ across separate areas of global governance?

This paper develops a novel theoretical framework that explains institutional complexity based on the problem-structural characteristics of an issue area and the associated demand for, and supply of, private authority. It argues that these characteristics can help explain the degree of centrality of intergovernmental institutions, as well as the distribution of governance functions between these and private governance institutions.

We apply this framework to three emerging sub-areas of climate governance: reducing emissions from deforestation and forest degradation (REDD+); short-lived climate pollutants (SLCPs); and climate engineering. All of them are dynamic areas of international climate policy that have recently experienced significant institutional development. Yet, they vary significantly in their degree of complexity, in particular in the number of the major public institutions involved in their regulation and in the distribution of functions across public, private and hybrid institutions.

The paper shows how a conflict over values – like for climate engineering – entails considerably lower degrees of centrality, paired with major governance gaps. By contrast, conflicts over means and absolutely assessed goods – which mark REDD+ and SLCPs – correlate with higher centrality and a better division of labour of institutions.

New Alliances in Global Sustainability Governance: International Environmental Bureaucracies and Non-State Actors

Reference 0033

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After a long period of academic neglect, scholars and policy-makers have recently devoted increasing attention to the role and function of international environmental bureaucracies. While a number of skeptics continue to doubt that the bureaucracies of international environmental bodies and multilateral environmental agreements have any significant impact beyond that of technical assistance and services to nation-states, a growing number of authors argue that they indeed have an autonomous influence. These scholars have shown that international environmental bureaucracies put issues on the political agenda, produce and spread knowledge, stimulate scientific as well as public debates, facilitate intergovernmental negotiations, and help implement international norms and rules. However, despite the progress in the study of international environmental bureaucracies, the precise nature of their interaction with non-state actors has so far not been analyzed in much detail. For that reason, the present paper aims to bridge this gap in the state of research on international environmental bureaucracies and focuses on the vertical institutional interplay of intergovernmental treaty secretariats with different sub-groups of non-governmental organizations in global sustainability governance. In particular, the paper explores the interplay of three different intergovernmental treaty secretariats (biodiversity, climate, and desertification) with non-state actors. By this means, the paper seeks to broaden our knowledge on the questions of how, why, and with what consequences these actors work together.

Emerging Markets and Private Governance: The Political Economy of Sustainable Palm Oil in China and India

Reference 0035

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Private governance programs are now an important source of regulation in global value chains - particularly in context of North-South trade. But can these programs play a similar role in the value chains feeding into fast-growing emerging markets like China and India? Most scholars doing research on the topic draw a pessimistic picture. They argue that the scope conditions for private environmental governance are not yet present in these markets. Our analysis of the Roundtable on Sustainable Palm Oil (RSPO) - a leading non-state certification program - in China and India partially confirms this view. At the same time, however, we find that emerging markets are not a unified category. We observe that sustainable palm oil is beginning to gain momentum in China, whereas uptake in India remains much weaker. We trace this back to a number of key market conditions, which we show are more favorable in China. In addition, our analysis highlights the role of the Chinese state in creating awareness and shaping firms' interests on the issue of sustainable palm oil.

Mediating the World: An Assessment of the French Presidency of the 2015 UN Climate Negotiations

Reference 0045

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The transboundary and interdependent environmental challenges of earth system governance can only be solved through multilateral cooperation. However, multilateralism has frequently failed to deliver results. Any lessons that can be learned from effective multilateralism will therefore have far-reaching implication. The Paris Agreement on climate change, in which 196 countries in December 2015 finally reached a legally binding global agreement committing to climate adaptation and mitigation measures after more than twenty years of climate negotiations, marked a high-point in international cooperation. Pinpointing the reasons behind its success could prove to be crucial for future environmental negotiations, particularly in these turbulent times where international cooperation appears to be facing increasing strain and uncertainty.

Many factors have been cited as having contributed to the successful outcome of the Paris round of negotiations, including the diplomatic rapprochement of the US and China, the falling cost of renewable energy sources and sustained societal pressure. This paper aims to contribute to the broader literature on the success or failure of multilateral negotiations by generating a fuller understanding of why the Paris round of negotiations ended in success and in particular, by zooming in on one particular factor: the role of the French Presidency. The Presidency of multilateral environmental negotiations is an actor that has largely been neglected in the literature, but one with the potential to deliver more accountable, accessible and equitable processes and outcomes in earth system governance.

Whereas the failure of the 2009 round of climate change negotiations in Copenhagen, in which Parties had originally agreed to reach a deal to replace the Kyoto Protocol, has in part been blamed on mistakes made by the Danish Presidency, the diplomatic and organisational skills of the French Presidency in preparing the ground and leading the Parties towards agreement have been universally praised. When the more usual outcome would have been deadlock and disappointment, what actions were taken by the French Presidency to facilitate the successful outcome of the Paris Agreement, and why were they effective? These are the questions posed by this paper.

South-South relations and Earth System Governance: Brazilian participation in multilateral environmental agreements and its international development cooperation

Reference 0056

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There has been a redistribution of power in the international system, requiring that we consider how the so-called emerging powers impact processes related to the governance of the Earth system. In particular, South-South relations have become increasingly relevant for understanding political economy dynamics in the 21st Century.

Brazil can be considered an emerging power, as well as a relevant actor in environmental governance. On the one hand, as a climate power, a megadiverse country, and the holder of the largest tropical forest and fresh water reserves in the planet, the country has been active and often constructive in climate, biodiversity and other environmental negotiation arenas. On the other hand, with respect to the growing importance of South-South relations, official data shows that the country has expended US\$ 4.1 billion in international development cooperation from 2005-2013. Brazil's national development bank BNDES more than tripled that total, offering \$14.6 billion between 2002 and 2016 to support Brazilian firms abroad, as they engineered and constructed 76 significant infrastructure projects in other Southern countries.

Considering this context of South-South economic relations, this paper explores the socio-environmental contributions and impacts of Brazilian cooperation for international development, and assesses to what extent such actions can be related to how Brazil has positioned itself in the international environmental multilateral arena. The research is based on a literature review, as well as on a critical content analysis of official documents by the Brazilian government and international organizations and new data on Brazilian development assistance. We argue that while the country has played an important role in climate and biodiversity negotiations, Brazil's South-South cooperation tells a more complex story about Brazil's role in international environmental outcomes.

Reformation of Climate Coalitions: A Discursive Cartography of the Post-Paris Policy Landscape

Reference 0070

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The UN Framework Convention on Climate Change (UNFCCC) is a product of the post-Cold War era. Negotiated in the early 1990s in the wake of collapsed superpower rivalry and the globalisation of economies, the UNFCCC rests upon a liberal environmental order that couples environmental protection with socio-economic development and market expansion. As such it mirrors the compromise between the environmental agenda of the industrial North and the development imperative of the global South. The 2015 Paris Agreement was adopted in a geopolitical context that is very different from that of the early 1990s. This new global climate deal responds to a more fragmented and multipolar world signified by the rise of major economies and emitters in the South and East. In this paper, we examine the geopolitical landscape in which the Paris climate regime currently is enacted and implemented. We do so by conducting a discursive analysis of the Nationally Determined Contributions (NDCs) submitted by states to the Paris Agreement. We ask which policy discourses that emerge in these national climate plans, and which states that cluster around them. Our findings suggest that the compromise of liberal environmentalism retains a strong hold over the political imagination in the post-Paris landscape. However, new discursive coalitions are emerging that cut across and challenge North-South and East-West binaries in global climate politics.

Ecosystem Services Involving Coffee Production and Water Management: Insights on a Payment for Ecosystem Services Design

Reference 0071

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Since the summer of 2015 and 2016, Colombian coffee growers have faced high temperatures and increased drought conditions linked to the El Niño event. The quality of coffee was highly affected in low lands below 1 400 m.a.s.l. with no shaded coffee. Concerns about the quality of dried coffee beans have been growing amongst the key institutions in coffee sector such as the National Federation of Coffee Growers, National Coffee Research Center and Coffee Growers Cooperative. As a consequence, these coffee supporting institutions have advanced a variety of policy and technical responses that mainly seek to alleviate current constraints and strengthen the work on coffee climate resilience. Coffee production on a sustainable path is a high priority for the National Federation of Coffee Growers. This research examines widely-used water management and ecosystem conservation: Payment for Ecosystem Services (PES) as it applies to water resources. Following a case study approach it explores key design elements to identify opportunities and barriers on the basis of a diagnosis of local watershed conditions in Aguadas in the Department of Caldas, Colombia. A water-based PES scheme is explored considering the interests from providers (coffee growers) and potential users (from individual coffee growers to national associations, government departments and private corporations). Following field work from January to March 2016, the research has found that due to high temperatures, low precipitation and deforestation, coffee growers have begun to prioritize fresh water supply as the most important ecosystem service from the remaining forest. The willingness of farmers to adopt measures of reforestation and water management "beyond the coffee farm" is also a concern for the coffee sector, which consists of sub national and national private and government agencies.

Norm Contestation in Geoengineering: Effects of Experiments on the Evolution of the Research Debate

Reference 088

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Geoengineering technologies – methods of intentional, large-scale intervention into the Earth's climate system – are the newest addition to a growing portfolio of climate policies on the international agenda. Formerly governed by a widely-cited, implicit taboo, research on geoengineering technologies has moved forward considerably in the past decade, to the extent that some forms of it are nowadays acknowledged and encouraged by international authoritative scientific bodies and governments. The objective of this paper is to understand the discursive process by which the norms around geoengineering research evolved from being unmentionable to a relatively widespread understanding that research is necessary and desirable. Due to the scientific and technological nature of the policy issue, it conceptualizes the epistemic community around geoengineering as an essential part of the political process and treats the scientific literature on the topic as a forum of political debate. This conceptualisation rejects the traditional notion that scientists are apolitical and deliver objective knowledge to policy makers, rather seeing them as political actors (similar to NGOs or businesses) with the potential to influence the policy making process. The paper focuses on the contestation of the geoengineering research taboo within this forum. Distinguishing between direct (discursive) and indirect (implementation, or practical) norm contestation, it explores the effect that executed or intended outdoor experiments related to geoengineering technologies have had on the explicit discussion of the geoengineering research taboo in scientific publications and thereby on the broader evolution of informal norms governing geoengineering research. Based on scientific research and opinion articles listed on Scopus and Web of Science, it contains a quantitative text analysis of opinions expressed about geoengineering research to identify cases of direct norm contestation and to map general normative evolution over time. The effect of indirect norm contestation (in this case breaching the taboo by conducting experiments) on normative evolution is explored by conceptualising geoengineering experiments as an independent variable in the sense that they precede any potential change in the discussion, and by analysing and mapping the prevalent issues mentioned in the context of opinions expressed about research. The anticipated results will contribute to

shedding light on the temporal relationship between indirect and direct norm contestation, as well as provide insights to the complex interaction between indirect and direct norm contestation that – in this case – has lead to an increased harmonization of opinions amongst a research community.

Environmental Provisions in Preferential Trade Agreements and Domestic Environmental Policies: Mutually Reinforcing or Worlds Apart?

Reference 0101

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It is increasingly difficult to draw clear lines between formerly distinct policy areas. This is nowhere more evident than in the case of trade policy. While preferential trade agreements (PTAs) traditionally aimed at eliminating tariffs, we now see a trend towards more comprehensive PTAs that also deal with non-economic policy areas such as the environment. Already roughly 85% of all PTAs cover environmental dimensions next to trade-related issues. The implications of the inclusion of environmental provisions in PTAs have not been investigated in depth. This paper intends to assess whether there is a link between a country signing PTAs with many and more comprehensive environmental provisions and the country introducing more and/or stronger environmental policies domestically. In order to analyze this relationship, we employ quantitative methods and use a new data set on environmental provisions in PTAs, contributing to the discussion on comprehensive PTAs and their impact on national legislation.

Empowerment and critical consciousness: two sides of the coin in urban climate governance

Reference 0105

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Cities are increasingly expected to play a key role in solving global problems such as climate change. For example, the Paris Agreement, the Sustainable Development Goals, and the New Urban Agenda highlight a significant role for cities in bringing about transformative change towards sustainability. Much of the rhetorical focus of the "cities agenda" rests on empowerment theory, through emphasizing the role of municipal capabilities, peer networks, and proactive behaviors for policy and political change (following Perkins and Zimmerman 1995). However, an empowerment lens alone is not sufficient for understanding and advancing urban climate governance, because what cities can and cannot achieve also hinges on the broader socio-economic-political systems in which they are embedded. Some scholars in multilevel urban governance thinking have acknowledged these sorts of challenges (Bulkeley and Betsill 2013, Betsill and Bulkeley 2006). However, the broader body of urban governance scholarship has been arguably slow to pick up on the implications of the multilevel, multiactor – and contested – reality of urban climate governance. This gap becomes particularly worrying in light of weak or absent evidence of impact resulting from climate change action by cities to date (Bansard et al 2016). Thus, in addition to understanding ways in which cities can be empowered to take action on climate change, it is also vital to critically reflect on ways in which they are disempowered.

This paper analyzes the potential for cities to address climate change through an empowerment/disempowerment lens, focusing on two case studies: climate change mitigation in Amsterdam, The Netherlands, and climate change adaptation in Santiago, Chile. These cases demonstrate the potential and limits of urban climate governance, and indicate that urban climate governance depends on actively pursuing city-scale action while also recognizing and seeking to transform broader structural constraints. This implies that focusing on empowerment is a useful but not sufficient disposition to analyze the role of cities in multilevel global climate governance. A "critical consciousness" is also needed as a counterbalance to potentially over-optimistic expectations about what cities can achieve, and to motivate efforts to transform structural constraints on cities (e.g. following O'Brien 2012, Pelling 2011).

Managing the dialectic between empowerment and critical consciousness may be central to cultivating optimistic but politically-grounded urban climate governance approaches. The paper overall contributes to critically reflecting on the promise, limits, and politics of urban climate governance, and to enriching emerging theorizing on polycentric climate governance (Jordan et al. 2015).

The politics of SDG responsibility - the cases of Sweden and Tanzania

Reference 0119

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Many researchers debate strengths and weaknesses of the United Nations' Sustainable Development Goals (SDGs), valid until 2030. These debates have so far mainly concerned omissions, interlinkages and indicators of the goals, often with a focus on the global setting. In contrast, this paper explores the dynamics of translating the global SDG agreement into national level SDG processes where the allocation of responsibility for their fulfilment takes centre stage. How is SDG responsibility allocated in national level political processes and with what resulting governance challenges? What principles underpin the allocation of responsibility in a national setting? Theoretically, we distinguish between four such principles: the contribution principle, the beneficiary principle, the connectedness principle and the capacity principle. The SDGs demand change and raise issues of responsibility within all countries, rich and poor, in contrast to their predecessor, the Millennium Development Goals. We engage in a comparative study of how SDG responsibility evolves in two countries that represent endpoints on a continuum ranging from low-income democratizing countries to high-income democratic states. Tanzania represents the former and Sweden the latter. This allows us to examine the relative influence of principles of responsibility and to what extent national level factors such as socio-economic status, degree of democracy and position in international development cooperation influence how national level SDG responsibility takes shape. Despite the clearly dissimilar substantive challenges of SDG fulfilment in these two countries, the paper finds a surprising degree of similarity in nascent responsibility tensions across these two cases.

Fossil Fascism: Reversing the Imperialist Gaze of Climate Security

Reference 0123

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Over the last decade, climate change has been framed as a security problem, with a focus upon those peoples and regions that are most vulnerable to ecological shifts, largely in the global South. As a potential threat to national security, climate security discourses draw a direct, and rarely problematized, connection between material vulnerabilities and political threat, with the figure of the 'climate refugee' looming as both pitiable and terrifying. Meanwhile, human security approaches often reproduce the logic of neoliberal development, in which the global South remains responsible for its own adaptation, or as in need of rescue by the wealthy North. Both discourses reinforce fears among privileged populations, who are led to anticipate impending floods of migrants.

Critics have pointed out that most climate security discourses fail to indict intensive resource consumption in the global North, as well as global injustices stemming from industrial imperialism. This article contributes to these critical approaches by showing how the Southbound gaze of climate security also results in a significant blindspot. Those in the global North rarely consider how their own regions or citizens could pose threats to global security in connection with the Anthropocene. Any climate risks in the North, whether from severe weather, coastal erosion or shifting agriculture, are depoliticized and assumed to be amenable to technological fixes or local containment.

This article reverses the gaze of climate security, where think tanks, militaries and institutions, largely in the global North, construct the poorest and most vulnerable as threats or, more benignly, as in need of development. By re-appropriating the climate security terminology, I instead analyze a political threat emerging from within the global North itself: fossil fascism. Fossil fascism draws connections between the mounting, existential insecurities of the Anthropocene and proto-fascist desires and movements within Western, liberal democracies. In other words, it analyzes our unsustainable addiction to fossil fuels as a key dimension in understanding 21st century fascisms.

The risk of fascist regimes emerging in the U.S. and Europe poses a much greater threat to planetary security than do vulnerable people in the global South. Ironically, and in contradiction to dominant

climate security worldviews, the threat of fascism will be greatest in the most privileged nation-states and among groups that may not be the most vulnerable to environmental changes, but that have the most to lose as fossil-fueled capitalism is challenged.

Natural resource governance in war effected situation – the case of Swat district of Khyber Pakhtunkhwa province of Pakistan

Reference 0126

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Khyber Pakhtunkhwa (KP) province of Pakistan has witnessed a series of violent event during the last few decades. Beginning with Soviet-Afghan War in 1980s, post 911 events and war between US led allied forces and Afghan Taliban, all of these wars directly affected the regions of KP bordering Afghanistan. During the year 2008-9, the Taliban militants captured the Swat district of Pakistan and started to advance towards neighboring areas. Consequently Pakistan armed forces started a full-fledged war and almost whole population of Swat district was displaced until army took control of the district. When the residents of Swat were returning to their home after the end of war, there was devastating flood in 2010 that destroyed the remaining infrastructure. Swat is a mountainous regions endowed with rich natural resources including forests, mineral, water and fertile land. The occupation of Taliban and then war, had long-term impacts on the governance of forest resources and overall livelihood strategies of the local people. The forest management in KP was already a complicated issue and a bone of contention between local residents and the state officials, and the war had further complicated the issue. There were 'new' losers and 'gainers' and some new players emerged. In this context this paper analyses the forest management practices in post-conflict situation and will try to answer the question that how different players adjusted themselves during and after the war? and what was the cost of war in terms of the depletion of forests and other natural resources? and how international donors responded in revival of livelihoods of resource dependent communities?

Governance amid spatial fragmentation, wildfires, and drought: studying the impacts of the Chilean Forestry Model in Central-South Chile.

Reference 0127

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In this paper, we present an ongoing research in which we are analysing the impacts of the current Chilean Forestry Model (CFM) on the spatial and social dynamics of Central-South Chile (~35°-40°S). The CFM corresponds to an extractive policy aligned with the Chilean strategy of development in which an intensive monoculture is encouraged, leading to the installation and growth of the timber industry by exploiting a number of exotic species (e.g. *Pinus Radiata*) in a wide range of landscapes located in Central-South Chile. In particular, we focus on the study of wildfires, the spatial fragmentation of the land uses, and the current climatic scenario, using qualitative and quantitative techniques. From an interdisciplinary standpoint, our work aims to bridge and couple a diverse and rarely connected complex concepts in a framework where the CFM can be evaluated according to scenarios of social and environmental changes. More specifically, we address the concepts of governance, environmental complexity, heterogeneity of rural economies, and the social construction of risk. In terms of fragmentation, results utilizing the adjacency index indicate that in 2010, all the land uses presented disaggregation, which was more significant in the case of the native forest with 40%, and bare land and crop-grassland between 60% and 80%. This contrasts with the plantations of exotic species that showed the highest and most significant aggregation of 90%. This means that the CFM has been successful in clustering spaces of production, thus transforming the landscape. In the midst of this transformation, wildfires have been increasingly ubiquitous; for instance, during the period 2016/2017 an area of 1180 km² was affected, mostly happening in plantations of exotic species, which represent an almost fourfold increase respect to events that occurred in 2012. Additionally, these changes occur in a scenario of frequent droughts, with a significant decrease in rainfall detected in the available records. These evidences suggest that CFM is the leading factor in the fragmentation of social and natural spaces in the region. Further steps in our research involve the study of the local forms of resistance to these dynamics; especially, the analysis of programmes that foster the local identity against the decisions made at the national level. We also show the characteristic centralism of Chilean State, which exercises its devices of power and knowledge over local processes.

Transparency in Transnational Sustainability Governance: A Multivariate Analysis of Regulatory Standard-Setting Programs

Reference 0137

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Beginning in the early 1990s, non-state actors have taken over a wide range of governance functions that used to be the prerogative of states and international organizations. In the field of International Relations and related disciplines, this has intensified debates about a lack of accountability and legitimacy in global governance. Reviewing this debate and the role transparency can play in mitigating the problem, this article uses a new data set to analyze the issue empirically. Examining a sample of 143 regulatory standard-setting (RSS) programs in the field of transnational sustainability governance, we show that "deep transparency" - i.e. the disclosure of salient information - remains a problem in this domain. However, there are also RSS programs that are highly transparent in their practices. Using a multivariate analysis, we investigate the internal and external determinants of these inter-program variations. We find a systematic relationship between inclusiveness and transparency - although no evidence for the conventional wisdom that single-actor business programs are per se less credible. Turning to the external determinants of transparency two findings stand out: First, instead of a "ratcheting-up effect", we observe a race-to-the-bottom dynamic between competing RSS programs. Second, our results confirm arguments about the positive influence of meta-governance on transparency.

Sustainable food governance: Feeding the world while saving the climate?

Reference 0144

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Global agrifood governance – the rules and institutions that govern the production, trade, and marketing of food and agriculture – faces enormous environmental and social challenges that require effective, just and legitimate responses. First, almost 870 million people are chronically undernourished, while the number of hungry people remains ‘unacceptably high’ according to the Food and Agriculture Organization. Second and related, the agrifood system faces persistent inequalities in access to land and food, afflicting the most vulnerable members of the human population. Third, agriculture, in particular, is a major contributor to climate change being globally responsible for 30-35% of total greenhouse gas (GHG) emissions. Simultaneously, climate change impacts on agriculture are expected to generate additional challenges for food security in sub-Saharan Africa and South Asia, as well as for groups with small adaptation capacity, in particular smallholder and subsistence farmers, pastoralists and artisanal fisherfolk.

To address these challenges the international community decided to end hunger and ensure access by all people to safe, nutritious and sufficient food all year round (Sustainable Development Goal - SDG2), while at the same time maintain ecosystems and combat climate change (SDG13). In practice, however, food security governance rarely encompasses environmental objectives and vice versa. Accordingly, this paper investigates the challenges and opportunities of bridging the two goals. Focusing on novel forms of governance for decarbonization of the agrifood system, in particular carbon labeling schemes, the paper questions whether they can simultaneously foster access and availability to safe and nutritious food for the most vulnerable members of (the global) society. Empirically the paper examines three carbon labelling schemes related to the agrifood system, namely Bio Suisse, Carbon Trust and Verified Carbon Standard. To pursue its analysis, the paper develops a novel interdisciplinary framework bridging political science with the humanities by building on the concepts of stewardship, agency and governance.

"Accepting Decline?" - Four scenarios to overcome innovative scarcity in English & Welsh drought and water scarcity management

Reference 0146

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Current drought and water scarcity governance in England and Wales is reactive rather than proactive and water companies tend to stick to the regulatory framework with regard to drought management options. In addition, the array of instruments and measures focusses primarily on what to do when in a drought but not how to prevent a drought or to plan ahead for a drought. This paper presents the results of an explorative scenario building workshop that was held in late 2016 with stakeholders and researchers from UK drought and water scarcity management - the environment ministry (DEFRA), the Environment Agency, water companies and the economic regulator and water consultancies. The workshop offered the opportunity for unconstrained blue sky thinking about drought management options based on the question What can happen? and it is useful in cases where there is fairly good knowledge regarding how the system works at present, but one is interested in exploring the consequences of alternative developments in drought management. As a result, the workshop developed four scenarios on the topic of resilient drought and water scarcity management in England & Wales in 2065: (1) 'Accepting decline', (2) 'Rising to the challenge', (3) 'Enjoying their luck' and (4) 'Passive Acceptance'. Apart from reflecting on the method, the paper will elaborate on each scenario and its storyline before drawing conclusions with regard to future drought and water scarcity management. The results of the scenario workshop are in line with the results of an international literature analysis, an analysis of policy documents and grey literature on drought and water scarcity management and an analysis of all UK water companies' Water Resources Management Plans (WRMP) carried out by the author. Key results of this research were for example the need for more collaborative and integrated approaches to drought and water scarcity management. Interesting enough, workshop participants identified water use culture, integrating flood and drought policy or the willingness to share water (among water companies) as key drivers for resilient drought and water scarcity management in England & Wales in 2065. Last but not least the paper discusses potential next steps to change current approaches to drought and water scarcity management based on the results.

Climate induced conflicts and the risk of a self-fulfilling prophecy.

Reference 0153

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In 1948 Robert Merton defined the concept of self-fulfilling prophecy as ‘a false definition of the situation evoking a new behaviour which makes the originally false conception come true’. Since climate change projections predict increasing extreme weather events, such as droughts, floods and heatwaves, understanding links between environmental hardship and social responses are important for avoiding the risk of a self-fulfilling prophecy. Research on climate change and its impacts on society and nature provide dire projections already for the near and mid-term future. Making projections about future impacts on natural systems is easier than predicting the social repercussions and responses to such impacts. In contrast to predictions of responses in natural systems, there is a risk that the way in which we discuss social responses to climate change may lead to self-fulfilling prophecies. In the public debate we often hear about strong links between climate change impacts and mass migration and/or armed conflicts. In contrast, the scientific debate is much less certain about the links between climate impacts and armed conflicts.

Recently we have seen many examples of how climate change enters the military realm more concretely. Climate change adaptation is increasingly discussed and understood in the context of national security. Military forces can play important roles in disaster management and relief, but it is also obvious that climate change is discussed in terms of combats. Preparedness for war is of course a key task for military forces, but I also notice how other, assumedly peaceful actors, contribute to linking climate change (or the environment at large) with armed conflicts. Is this a hint that a self-fulfilling prophecy is in the making?

In this paper I discuss if environmental hardship more often leads to conflict or to collaboration. I draw on a literature review and a number of empirical cases and present a preliminary theoretical framework for understanding conditions leading to conflict or collaboration. Finally I discuss how such theoretical understanding may help forestall a self-fulfilling prophecy of climate change leading to violent conflicts.

Linking environmental foresight and governance - a comparative study on scenario-guided policy formulation in Tanzania, Uganda and Burkina Faso

Reference 0180

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Foresight methods such as scenario planning are potentially valuable tools for aiding policy formulation processes under socio-economic and environmental uncertainty. When used to engage many stakeholder groups in the exploration of diverse possible futures, they also offer opportunities for making policies more robust, transparent and inclusive. However, some challenges arise when utilizing foresight to enhance decision-making, especially in lower middle income countries with unstable or hybrid democracies.

This paper investigates how foresight can be integrated with country-specific governance processes focused on climate adaptation in agricultural and food systems. We review existing literature on this topic, and complement it with an analysis of challenges and successes of implementation of policy-focused scenario projects we conducted in Burkina Faso, Tanzania and Uganda. Using these case studies, we provide guidelines on how foresight can be better integrated with governance processes in general, and insights into how country-specific challenges and opportunities can be engaged with.

Our review shows that common challenges include tensions between dealing with urgent short-term development and equality issues and long-term sustainable development, lack of flexibility and links to science in predominant policy formulation approaches, and conflicting interests.

This paper offers general guidelines, including close, continual collaboration between foresight researchers and government actors and a focus on institutional capacity development on foresight approaches. It also disentangles the contributions of the foresight approach and team, as well as country-specific conditions.

Our case studies demonstrated that policy circumstances and challenges in each country are highly dependent on specific political organization, institutions and history. Therefore, the way foresight can successfully support governance processes differs significantly per country. In Burkina Faso, democratic openness was stronger than in the other cases, but political instability disrupted the policy process, requiring continual re-engagement. However, the process in Burkina Faso turned out to be the most

successful, because of an exceptionally collaborative relationship, for which researchers and policy makers shared responsibility. Additionally, the foresight supported a flexible policy formulation process in which policy teams were able to engage with new methods. In Uganda, challenges included the lack of integration between state and non-state interests. In Tanzania, specific challenges included a lack of transparency in the policy process supported by the foresight. These country-specific factors led to less intensive collaborations between policy makers and the foresight team. From these cases we draw guidelines on how to better align foresight with national governance processes in lower middle income countries.

Environmental Auditing as a Tool of Environmental Governance in Ukraine

Reference 0182

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This study investigates the origins of the heterogeneous nature of environmental auditing in Ukraine and provides thoughts on how the EU-Ukraine integration process will affect it. In Ukraine, environmental auditing has combined features of both command-and-control and market-based policy tools, which reflects a complex combination of influences from its Soviet past and international practices which have shaped its development during its transition to a market economy. Consequently, there are two types of this policy instrument there: mandatory and voluntary, which, based on different normative documents and having different objectives, largely rely on the same practitioners - environmental auditors. This heterogeneous nature of environmental auditing in countries undergoing political and economic transition, like Ukraine, has never been studied in depth. The research was designed to fill the existing gap in the knowledge of this subject and includes a theoretical framework and a combination of various qualitative methods. The theoretical framework consists of the shift of policy paradigms theory, the collective action theory, and the community of practice learning theory. However, the research methodology encompasses several methods for data collection (literature review, 56 semi-structure open-ended interviews, and participant/non-participant observations) and analysis (coding). The empirical findings of this research showed that the conditions of societal transition from centrally planned authoritarian regime to market democracy, combined with four unique factors, triggered the introduction of mandatory and voluntary types of environmental auditing in Ukraine. These four exclusive factors were the following: the deterioration of the environmental situation caused by the polluting activities of various industries; the massive privatization of state property in the 1990s and 2000s; an opportunity to enter the European and international markets; and the opening of Ukraine's borders to international investors and other financial entities. Consequently, mandatory environmental auditing was developed to fulfill the purpose of supporting and encouraging the privatization of state property and as a tool for managing state environmental control. In parallel to this, a voluntary environmental audit was introduced for environmental management systems in the context of environmental quality certification, as well as assessing environmental and social liabilities for international financial institutions in regards to issuing

loans. In addition, the findings of this research showed that the EU-Ukraine integration process will affect environmental auditing in the country of research as Ukraine has accepted the supremacy of European Law. However, mandatory and voluntary environmental auditing practices will follow different developmental paths going forwards.

The challenges of reconceptualizing anticipatory governance to climate change and migration futures in the Sahel

Reference 0183

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Researchers and policymakers consider climate change and migration among the most pressing complex policy challenges of the 21st century. Anticipatory governance is emerging as a novel model of decision-making in literature and practice (responding to stream 4). As a system of institutions, norms and rules, anticipatory governance provides a way to integrate the perspectives on future-oriented planning, foresight methodologies, inclusive multi-stakeholder engagement and monitoring mechanisms. It develops flexible decision-making with continuous reflections on the dynamics in society (responding to stream 5). As such, anticipatory governance advances forethoughtful planning and societal capacity building to reduce risks at earlier rather than at later stages of development. However, anticipatory governance is being understood and deployed in different ways, most literature is new and not well defined, the research foundation is fragmented and it is under-researched for vulnerable regions. Additionally, whereas the literature on anticipatory governance of climate change is expanding, a large research gap exists on understanding migration.

This paper demonstrates an in-depth understanding of the operationalizations and risks of anticipatory governance in the complex policy fields of climate change and migration. In a multiple case approach, the empirical focus is on the Sahel, a region under rapid social transformation with climate change and migration as key drivers of change. First, the paper operationalizes anticipatory governance by comparing it to the literature on adaptive governance in situations of climate change and migration. This results in an analytical framework with which to explore the dynamics of an explicitly cross-sectoral and cross-scale conception of anticipatory governance. Thereafter, it tests this framework by exploring the challenges and limitations of existing understandings and operationalizations of anticipatory governance in current ECOWAS decision-making processes on the implementation of the key decision-making processes for climate change and migration: the Paris Agreement and the Emergency Trust Fund for Africa. Building on policy analysis and in-depth interviews at these both important as well as rival Sahelian decision-making bodies, the paper demonstrates what anticipatory governance means at different scales and sectors.

Finally, it argues how, through re-conceptualizing understandings and processes anticipatory governance, migration and climate change governance can be more anticipatory and thereby improving the adaptive capacity of the Sahel. We conclude with discussing how our analytical framework can be applied to other global regions as well.

Understanding the environmental governance of the Gran Chaco Americano

Reference 0190

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With over 1 million square kilometers, the Gran Chaco Americano is one of the most biologically diverse regions in the world. It occupies part of Argentina, Bolivia, Paraguay and Brazil. There is a broad consensus on the need for their conservation and their importance to the ecosystems worldwide. However, the practices of the agribusiness model have advanced strongly over the region with rates of deforestation reaching 1400 hectares per day. National and international organizations recognize the need to generate conservation strategies like biodiversity management and forest conservation programs and protection laws. However, the advance of the agricultural frontier and the pressure on the territories raise doubts about the effectiveness of these actions. Part of the inefficiency arises from the problems associated with environmental governance in this region. Mainly derived from the absence of a supranational body in charge of leading these processes to facilitate the processes of advancement of agriculture. Despite the importance of the necessity of environmental preservation, academic literature does not pay attention to the environmental governance of this region. Particularly about the forms of articulation between countries and the generation of supranational public policies of environmental conservation. In this context, the aim of this work is to reconstruct the processes of governance of the Gran Chaco Americano from the issues associated with environmental institutions and regulation. From the reconstruction of the articulations and alliances between actors and institutions associated with environmental governance in the Gran Chaco, we analyze the scope and limitations of the environmental conservation strategies. Particularly, we tried to understand its relation with the advance of the agribusiness model. The analysis reveals the coexistence and poor harmonization of institutions, legal frameworks, and national actors. Added to the pressure derived from the demand for food together with the great processes of innovation of the companies of agricultural exploitation. These factors have contributed to a scarce possibility of regulation and expose the need to advance in supranational forms of environmental regulation.

Carbon markets interaction: Design and diffusion post-COP21

Reference 0222

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This paper examines findings from a large-scale research project on the extent to which and how the spread and design of carbon trading systems worldwide have been shaped by international policy diffusion and discusses how this process may develop post-COP21. We identify eight central design characteristics in nine key cases, with particular focus on the EU, California and China. We discuss to what extent and how international policy diffusion can shed light on both converging and diverging designs. While the traditional understanding is diffusion leading to convergence as actors adopt a policy initiated by others, we find that policy diffusion is important also for understanding design divergence, and we highlight how diffusion mechanisms interact with and contribute to the evolution in the policy as it diffuses over time. Policy divergences, partly rooted in different domestic conditions and political constraints, indicate that no linked global system is likely in the near future, although the spread of the policy model can be seen as promising for a future emissions trading regime from below. Specific design lessons for this spreading process post-COP21 are put forward and discussed.

Planet Politics: the Manifesto and After

Reference 0225

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This paper sets out the key arguments of the Manifesto of “Planet Politics” published by Anthony Burke, Stefanie Fishel, Audra Mitchell, Simon Dalby and Daniel Levine in the Millennium Journal of International Studies in 2016, and opens a conversation about further directions. The Manifesto’s key argument was that both the scholarly discipline of international relations and the key institutions of international society were failing to see the gravity of the looming global ecological crisis, or understand the increasing interpenetration of human industrial and social activity and global ecological change that is the hallmark of the Anthropocene. Rather, world politics insists on treating the global ecology as an inert backdrop to, and resource for, human activity and state competition. It called for a new interdisciplinary research agenda that places the global ecological crisis at its heart, opens creative thinking about new global governance institutions that give representation to ecosystems and the nonhuman, and supports a multilevel cosmopolitics that would be simultaneously a widespread work of ecologically sensitive governance and social resistance.

The innovation role of Transnational Municipal Networks: prospects for the complex system of global climate governance.

Reference 0226

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In this paper, I analyse the innovation role of Transnational Municipal Networks (TMNs) to understand how it may affect global climate governance and question the prospects for the allocation and access to climate governance benefits and burdens. Global climate governance has traditionally been led by the most powerful actors of the system, i.e. western industrialized states that have set the norms ruling the governing of climate. However, as COP21 underlined, other actors are now participating in these issues, such as cities, often represented by TMNs. The rise of TMNs, alliances cities join voluntarily in order to develop and promote their climate action globally, has triggered scholars' interest. Some have shown that TMNs enable cities to act as technical and normative leaders on the global climate scene. Others have emphasized their role in promoting and encouraging local climate action and providing cities with informational, financial and political resources. Finally, others have underscored their ability to produce innovation in climate governance, fostering a reflection on who governs and how. As they combine institutional and market-based elements to elaborate actions, TMNs are also said to generate a new system of governance from the middle. However, innovation and its effects still need to be clearly defined and assessed. Acknowledging this innovation role, we must precise what it is that TMNs do differently from states. Is it their climate action, their practice of governance or the set of norms they diffuse that brings innovation to climate governance? In order to start answering this question, I will use a theoretical framework based on complexity thinking and network analysis as it brings interesting inputs in order to explain the emergence of innovation. Through a case study of 100 Resilient Cities, the instruments it uses and the interactions it has with its member cities and its partners, I will observe how innovation may rise from the TMN and diffuse in the complex system of global climate governance. This type of empirical study, focused on the interactions of TMNs, has, to my knowledge, rarely been done, which makes this paper an interesting contribution to studies on TMNs. On a more general level, this work may help us understand if TMNs, as new actors of global climate governance with the potential to affect its current functioning, may be able to reallocate its benefits and burdens.

Understanding the contemporary history of Earth Systems Governance: Exploring the weird ecology of the anthropocene

Reference 0228

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The rapidly shifting political, social and environmental landscapes require that now, more than ever, getting 'real' about Earth Systems Governance, requires a rigorous critical engagement with the concept of the Anthropocene. While this is commonly taken as a post hoc naming of a profound transformation in human-nature relations, the Anthropocene is not simply a stratigraphic rupture. Instead, it represents an ontological rupture. By highlighting the fundamental interrelation of human and non-human histories, the Anthropocene and any programme of earth systems governance undermines the very basis for a separable and settled human – the anthropos - divorced from nature.

This 'decentering of humankind' requires that attempts to interrogate the politics driving the development of the new epoch, as well as developed in and through it, recognise the fundamental relationality of society and nature, global political economy and environment. In this paper I will develop a 'weird ecology' as a means to grasp this relationality. This conceptual development is prefaced upon a reading of Latour's principle of irreducibility through the lens of H.P. Lovecraft's 'weird fiction'. The weird here may be monstrous, but it is rigorously material and enables a clear grasp of the paradoxical nature of Earth Systems Governance: under the relational ontology of the earth system, politics, society and environment are simultaneously inseparable and yet radically distinct.

This approach focuses on the historical development of the postwar Great Acceleration, and the material acts of translation that enabled the construction of the economy, the environment and the energy system as seemingly discrete objects of politics through the development of a series of economic technologies and techniques. At this point the rapid acceleration of socio-economic and earth systems trends was enabled through the development of governance mechanisms prefaced upon an economic account of material scarcity, infinite growth, efficiency and cost-benefit analysis. These helped conceptually, discursively and materially (in terms of governance) separate and define the economy as a sphere of infinite growth, energy as a system of interchangeable fuel sources to power this economy, and the environment as a series of external sources and sinks.

Through a weird ecological reading of the history of these processes, I aim to better understand both the current social, political and environmental landscape, as well as possible future mechanisms, agencies and powers shaping allocation and access in the Anthropocene.

Mapping the decarbonising of plastic: From plastic bag bans to the EU circular economy

Reference 0233

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Plastic is a ubiquitous everyday feature of modern societies, from the toys we play with to the clothes we wear. Since approximately 8% of global oil production is dedicated to the production of plastics, we can conceive of plastics as a 'petroculture' integral to our lives in a globalised economy. The geographies of plastics are dispersed with plastic objects often crossing continents several times during their life cycles before ending up in powerplants, landfills, or worse, in the ocean. In recent years, plastics is increasingly seen as a problem, with various agents acting on plastics in different ways; from campaigns and corporate initiatives to governments in global south banning the use of PET bottles and plastic bags. Despite this attention, there is very little research that brings together the governance of plastic in a coherent way. The aim of this paper is to map initiatives and interventions aimed at shaping, disrupting and transforming current practices of plastic production, consumption and waste. The mapping includes different kinds of public and private initiatives (from bans and waste regulations) at different levels (from transnational to the city councils), covering different types of plastic use (from PET bottles to fibres and filling), and considers the entire value chain of plastic (from production to disposal). To complement this broad sweep of plastic governance, the paper zooms in on two instances: a) the current discussion at the EU level (circular economy) and b) the plastic bag lifecycle. As such, this paper provides both an overview and in-depth analysis of the multiplicity of plastic governance, and an integrated analysis of the prospects for decarbonising plastics, including key barriers, areas of conflict and limits of governance.

The Nexus between Autonomous Climate Change Adaptation and Social Protection: An Impact Evaluation Evidence from Rural Ethiopia

Reference 0240

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It is widely predicted that climate change will have an adverse impact on Ethiopian agriculture and exacerbate the problem of food insecurity. In this context, social protection schemes can potentially contribute to households' autonomous adaptation by reducing vulnerability to climatic shocks. This paper examines the impacts of the Productive Safety Net Programme, as the main the social protection scheme, on autonomous adaptation strategies by taking the case of household income diversification into non-farm activities. It uses non-experimental approaches namely; Difference-in-Differences combined with Propensity Score Matching for a panel of 1,306 rural households from the two recent rounds of the Ethiopian Rural Household surveys for the years 2004 and 2009. Taking advantage of the extensive data available on a range of activities and incomes, the paper makes a conceptual distinction between non-farm and off-farm income, and uses the recent Adaptive Social Protection framework to examine the impact of the programme. The results indicate that receiving transfers from the programme, on average increases income from non-farm activities. This partly confirms the hypothesis that social protection can promote positive adaptation strategies and serve as an effective means of reducing the vulnerability of smallholders to climate variability and change induced shocks. However, an increase in the off-farm income components may be taken as having a negative impact climate change adaptation.

Linking top-down and bottom-up climate action: Exploring state efforts for fostering private and public climate action

Reference 0252

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Achieving the target of halting global warming at 1.5°C compared to pre-industrial times set out in the Paris Agreement, requires a significant increase in efforts to mitigate greenhouse gas emissions. Mitigation initiatives by sub-national and non-state actors including cities, regions, and companies could support national governments ramping up their efforts. In this context, current research efforts on climate action by sub-national and non-state actors have focused primarily on how the United Nations Framework Convention on Climate Change (UNFCCC) could function as a catalyst for more climate action. However, there is a clear need to increase the understanding of what national governments can do to create conducive policy frameworks for fostering sub-national and non-state climate action. This paper describes to what extent current national policy frameworks incorporate sub-national authorities and private actors, and by what mechanisms. It then zooms in on three examples where sub-national and non-state climate action is particularly prominent in the national policy framework, providing a deeper understanding of these countries' policy frameworks. The primary data for the first part of the study is the Nationally Determined Contributions, where countries spell out their greenhouse gas reduction ambitions, and biennial reports for non-Annex I Parties. The texts are analyzed using a quantified discourse analysis tool, allowing for large amounts of texts to be examined. The second part is informed by national policy documents, providing more detail to the case-studies. The results of the paper provide a benchmark for studying sub-national and non-state climate actions in national policy framework and presents an innovative technique for analysing policy documents, seldom used in earth system governance research.

Using lessons learned from regime formation theory to contribute to the BBNJ debate

Reference 0257

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Marine areas beyond national jurisdiction (ABNJ) represent 64% of the total surface area of the oceans and around half of the planet's total surface area. Through their remoteness and vast expanse, they were largely protected from the human interference in the past. The Anthropocene era has brought increased threats to the biodiversity of the world's oceans coupled with technological advances that have removed the so-called remote protection, exposing this largely unknown and complex ecosystem to unsustainable human activities. To add one more complexity to this system, the ABNJ still lack of a legally binding mechanism for conservation and sustainable use of biological diversity.

In 2004, to address this gap, the UN General Assembly established the Ad Hoc Open-ended Informal Working Group (Working Group) to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction. After nine years of meetings, the Working Group reached consensus on the legally binding nature of a future agreement under United Nation Convention on Law of the Sea (UNCLOS) to better enable conservation in ABNJ, and in June 2015 the UN General Assembly (UNGA) adopted a resolution to develop such an agreement.

The idea of creating a new agreement is to fill the gaps in prevailing arrangements as part of the efforts to solve or at least to manage a wide range of problems associated with the impact of human actions in socioecological systems, but also to reduce the regulatory risks on certain types of activities. Sometimes the latter is even more important to some stakeholders.

As a new agreement is likely to emerge from these negotiations, it is imperative to reflect and discuss under the lenses of institutional diagnosis (Young, 2008), what would be the essential elements for the new institution. Thus, the paper will examine the current status of the developing an international legally binding agreement, using the lessons learned from regime formation theory, in order to provide elements for better governance for this complex system. The method does not guarantee agreement effectiveness per se, but it provides a way forward that might increase the likelihood of success of this new governance institution.

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Rhetoric in climate change public policy process: Persuasion strategies on the road to the Paris Agreement

Reference 0262

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Fundação Getulio Vargas

The debate on climate change (CC) has faced many challenges on communication and discourse between science, mass media, governments, private sector and civil society and involves different scales, levels, sectors and areas of knowledge. CC lies in a field of uncertainties and conflict of interests, where there is a need for efficient persuasion and communication in the context of agenda setting, elaboration and implementation of public policies.

Rhetoric is recognized as an important feature of the political process. The concept of rhetoric brings three means of persuasion: the moral character of the speaker (ethos); the emotion of the listener (pathos); and the arguments itself (logos). Any communication or speech act combines elements of logos, pathos and ethos, though different weights might be put by a speaker on any of these. However, the notion of rhetoric remains closely dominated by logos.

There are few studies on argumentative policy analyzes including these three modes of persuasion. Therefore, analyzing persuasion strategies considering phenomena such as trust, credibility, emotions and beliefs can contribute to better understand the use of rhetoric in decision and policy making on the road to the Paris Agreement and other national commitments on CC.

In this context, the study analyzes the use of rhetoric in the policy process on CC with focus on persuasion strategies adopted by key actors during the year of establishment of the Paris Agreement. The first focus is to identify the key actors who received considerable media and international community attention on the subject and who also had active participation during the negotiation process. The second is to select the main discourses of these actors published during the year of negotiation of the Paris Agreement.

Thereby, through discourse analysis the study aims to: classify the different strategies of persuasion present in the discourses including logos, pathos and ethos; present the strategy profiles used by each actor to persuade large audiences about their different climate approaches; and, contribute to expanding the notions about the use and types of climate rhetoric bringing the three elements of persuasion. The

research points to the need in bring back rhetoric into consideration in the analysis of decision and policy making specifically on climate change.

Governing borderless climate risks in a bordered world

Reference 0264

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Despite claims that globalization heralds the demise of the nation state, countries remain the most influential actors in global affairs. We still live in a "bordered world", albeit one in which risks and opportunities are increasingly characterized by cross-border flows of finance, goods, resources and people. This presents a challenge to strategic planners facing future climate change; how can and should countries act independently, divide responsibilities among themselves and coordinate their efforts to manage "borderless climate risks"? Scholarship on climate change adaptation has so far neglected this governance challenge, as it has tended to focus only on direct impacts within a (local or national) jurisdiction. This paper seeks to address this gap by defining "borderless climate risks", suggesting why they have been ignored thus far and exploring the prospects for improved governance at various scales. It finds that, whilst the capacity of nation states to effectively manage borderless climate risks is low, the prospects of governance mechanisms emerging at the supra-national level are also low. In this context, available means for better coordination and cooperation via existing mechanisms at the national and international level can and should be exploited more effectively. The implications of not doing so are likely to be serious. An evolution of the concepts and methods employed by research for climate change adaptation is urgently needed.

Understanding Climate Commitment at the State-Level: Lessons from Major Latin-American Countries: Argentina, Brazil, Colombia, Venezuela and, Mexico. 2007-2016

Reference 0266

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What elements, at the state level, are convergent with the cooperative effort needed to stabilize the climate system? This is, what drivers affect the level of climate commitment across countries? This is a major under-studied issue. From the natural sciences, engineering and, economics, humanity have gained knowledge on the main physical drivers of global climate change and plausible technological and economic paths of mitigation. However, social sciences have been less successful in identifying the way in which those paths could be implemented, bypassing the obstacles created by economic and political interests, values and ideas.

In the field of International Relations, the traditional focus on UNFCCC negotiations has shown limits for understanding the politics of climate stabilization. However, further understanding of the global politics of climate change can be gained by focusing on the political economy of the nation-states, considered as plural actors. This argument is increasingly compelling, particularly because of the characteristics of the Paris Agreement, assembled on a bottom-up “intended nationally determined contributions” (INDC) logic. Within this framework, this paper addresses the question of what drivers affect the level of climate commitment across countries, by comparing the experience of five major Latin-American countries, Argentina, Brazil, Mexico, Colombia and, Venezuela between 2007 and 2016. This is, why Mexico and Brazil showed higher levels of climate commitment– reducing emissions, establishing mitigation quantifiable targets and sanctioning national climate laws - while Argentina, Colombia and, Venezuela lagged behind?

The research shows that four drivers are associated with higher levels of climate commitment. First, the presence of a climate leader: both in Brazil and Mexico, the climate agenda was initially stirred by a major political figure, while such a leadership was absent in Venezuela and Argentina, and it was timid in Colombia. Second, the international insertion profile of the country. Those countries more reluctant to

accept the rules of the international liberal order – Argentina and Venezuela – were the less climate committed among these cases.

Third, the cost-benefit perception of climate policies. In both the positive cases, governments perceived that already existent low-cost mitigation options could be easily transformed into a climate policy - deforestation control in the Amazon in Brazil and oil substitution by natural gas in Mexico. Fourth, the position in the international system. Brazil and Mexico, the major players in Latin-American in term of GDP and global emission share, show the highest level of climate commitment in this sample.

Optimal policy decision-making of Common Pool Resources

Reference 0270

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Allocation and access for global governance of environmental challenges in the new millennium needs to understand how in developing countries some human institutions develop more effective mechanisms than others in governing Common Pool Resources (CPR). Particularly in lower income countries, institutions have difficulty to maintain a good balance of regulation in two policy sectors, the energy sector and the environmental sector. Although in these countries is predicted the most significant negative externalities of climate change as loss of biodiversity, risk of erosion, floods, etc. This paper aims to present a model which compares some institutional management mechanisms in both sectors based on game theory, institutional analysis and innovative governance theory. The model challenge is to verify the conditions for an optimal policy decision-making of CPR in the context of social-ecological systems management. This paper explores typical management paradigms related to CPRs in Latin America, comparing two illustrative cases of the complexity of ambivalent interests between environmental sustainability and economic growth through enforcement of energy policies. Based in this modelling comparison, it finds that considering a new discount factor for intertemporal trade off as well as benefits for further generations, facilitate the interinstitutional balance between both sectors, and a higher level of abatement in developing countries.

The model presents a new management scheme based in two questions: How combine in low income countries the benefits of energy policy and environmental policy policies to guarantee allocation and access for future generations? How does the governance make compatible intercultural resource use in protected areas beside extractive activities to improve patterns of optimal access and allocation of resources for future generations?

The two considered cases are: 1) the conflict occurred in the National Park Isiboro Sécure–TIPNIS(2011), when Bolivian government and Indigenous populations confronted around the constructions of a motorway connecting the Park to north with the capital La Paz and to south east with Brazil, meanwhile natives have used rivers as main transport mean for more than 186 years; 2) the case of the demand for the granting of mining titles in the Natural Park Yaigojé Apaporis(2012), previously declared by National

Natural Colombian Office as a protected area, the interests of the Canadian mining company are in tension with those of the indigenous communities and their traditional authorities. Both cases reveal failures on the allocation of resources, besides a higher environmental risk at local level.

Energy Poverty in Middle-development countries: an interdisciplinary science-policy dialogue from Chile

Reference 0283

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Since the beginning of the '90s, energy poverty has acquired an increasingly vital role both in the design and evaluation of energy policies, and in the international debates on sustainable development and equity.

Scholars have noted that no significant trade-off exists between overcoming energy poverty and fighting against climate and environmental change; conversely, important synergies can be achieved by pursuing both goals at the same time.

Most of the research, however, has tended to polarize either on poor underdeveloped countries, where the problem is usually identified with the lack of sufficient access to adequate, reliable and safe energy services; or on developed countries, where the concept, often relabeled as 'fuel poverty', focuses on issues of affordability and distributional equity.

Significantly less studies have taken into account the case of mid-range countries, such as Chile, where an highly developed network of electrical generation and distribution coexists with bubbles of absolute energetic isolation; with an even broader occurrence of recurrent blackouts and unreliable supply, lacking adequate resilience to the ever more frequent extreme weather events; and with the generalized primacy of gas-, oil- or wood-based solutions particularly for heating, mainly due to one of the most expensive electricity prices in all the region. At the same time, the country's energy matrix has been encountering growing criticism because of its dual dependence on mega-dams, with strong environmental and social impacts on the local level, and high vulnerability to mega-drought conditions expected under future climate change scenarios; and on imported fossil fuels, which have already led to multiple energy crises during the last decade.

In this context, addressing energy poverty and inequality can't be separated from the objectives of securing a reliable energy supply and preventing local and global environmental impacts, and must at the same time

consider all the complex and often debated interdependencies with broader development and equity objectives, and with the local social, environmental, and geophysical contexts.

Considering the urgency and complexity of these issues, a diverse team composed of researchers from the University of Chile and other national and international institutions has undertaken an interdisciplinary dialogue directed at building a collaborative definition of Energy Poverty in Chile, identifying its main dimensions, available knowledge and research needs in the country, fostering the emergence of a collaborative research network, and engaging key policy-makers from the energy sector. This paper discusses such experience and its outcomes, challenges and lessons learned.

The role of non-negotiation settings in facilitating transnational climate governance

Reference 0287

Katharine Rietig
Newcastle University

This contribution focuses on pathways along which ambitious transnational schemes strengthen and catalyze governance at the intergovernmental and domestic levels. While the formal climate change negotiations remained deadlocked until 2015 with incompatible national interests, learning among actors in non-negotiation settings helped to diffuse policies across countries and change negotiation positions in the core negotiations, resulting in the Paris Agreement. In combination with group pressure, these experience, knowledge and belief-based types of learning altered the negotiation dynamics within the United Nations Framework Convention on Climate Change (UNFCCC).

In particular non-state actors such as transgovernmental city networks and NGOs created non negotiation settings for governmental representatives to explore options and learn from other countries' successes. This began with their participation in and organization of round tables at the 'margins' of the inter-sessional UNFCCC meetings in 2011, which invited country representatives, business, cities and local governments, regions, NGOs and academics to focus on commonalities and opportunities of addressing climate change. Between 2011 and 2014 this evolved into lesson drawing and best practice sharing on national and sub-state level climate action among governments with the participation of non-state actors. The focus on non-negotiation settings enabled a more pragmatic and result-based exchange of experiences that freed government representatives of the need to repeat entrenched negotiation positions. Instead, they were able to focus on successful experiences with renewable energies and improving energy efficiency in both developed and developing countries.

This contribution examines the role of non-negotiation settings at the UNFCCC negotiations to allow countries to share experiences on domestic climate legislation and best practice in implementing low carbon economic development plans to ultimately learn from each other. In the second step, it explores how this mutual learning in non-negotiation settings diffused into the main-negotiations and changed the negotiation dynamics towards positive group pressure. Reflection on other countries' and non-state actors'

successful experiences with domestic climate policy helped shape national interests over time towards increasing cooperation on sustainable development. The article is based on elite interviews with key actors and participant observations of negotiation and non-negotiation settings at the UNFCCC negotiations between 2011 and 2016. It offers a novel perspective on the influence of non-state actors in shaping intergovernmental negotiations and thus ultimately international agreements by applying advances in the public policy and learning literature to analyse the activities and influence of transnational non-state actor networks within the UN climate change negotiations.

The Role of Policy Learning in Unlocking Deadlocked Negotiations

Reference 0289

Katharine Rietig

Newcastle University

The 20-year-old deadlock in the climate change negotiations has been resolved with the Paris Agreement in December 2015 following years of little progress due to incompatible national interests on low carbon economic development. Findings from the literature on trade negotiations and conflict resolution, where negotiation deadlocks traditionally occur, point towards the value of mediators who can overcome information asymmetries on parties' negotiation margins via inclusive processes and trustful relationships to suggest strong compromises. This contribution examines how breakthroughs in deadlocked policy-making situations can be achieved, particularly in UN intergovernmental negotiations. Based on elite interviews and observations at the climate change negotiations, it analyses how learning can be identified and used in conjunction with policy entrepreneurial strategies to create group pressure among countries to revise their positions towards positive climate action. This has strong implications for facilitating national legislation on e.g. energy and transport. The central hypothesis is that a better understanding and use of learning can contribute to overcoming negotiation deadlocks and help shape countries' national interests towards increasing cooperation on sustainable development. This research contributes to the global environmental governance literature and offers a fresh perspective on the wider literature on resolving negotiation deadlocks within regime theory at the intersection of liberal institutionalism and constructivism.

Policy Translation: Dealing with Complexity in Turbulent Times

Reference 0296

Farhad Mukhtarov

Utrecht University, National University of Singapore

Policy translation, or the travel of policy models across countries, is widely spread in contemporary public policy and international relations. Arguably, the process through which policy models spread across nations constitutes a form of earth system governance. Despite the ubiquity of this travel, public policy studies and international relations have fallen short in devising frameworks and methods to study and engage with this process. Conventional approaches of 'policy transfer', 'policy diffusion', and 'lesson-drawing' have been criticized for being apolitical, formulaic, and not taking complexity and the turbulence of social, political and economic conditions seriously.

New emerging framework of "policy translation" to study policy mobility calls attention to the primacy of context and power in understanding the travel of models. With the focus on the politics of scale, the mutations of the meaning in the process of policy travel, and inherent contingency of policy-making, this approach is gaining in popularity in urban planning, public policy and international relations. This paper explores the concept of contingency in the context of policy mobility in an increasingly turbulent world. The paper discusses two questions: a) what are the opportunities and limitations in studying policy mobility with the full consideration of policy contingency? and b) what methods are best suited to study policy mobility if we are to embrace inherent limits of policy design and foresight? The paper critically discusses the role of agents in policy mobility under the conditions of high contingency with illustrations of the proliferation of large dams across South and Southeast Asia.

Who will govern the bioeconomy? – Possibilities and barriers for voluntary certification schemes in the EU

Reference 0308

Sara Brogaard, Henner Busch, David Harnesk
Lund University

The global demand for biomaterials has grown drastically in recent decades. One of the main drivers was the expansion of the production of biofuels, especially in the European Union (EU) and the United States (US). This trend is expected to continue as the EU embarks on its project to transform its economy towards a bio-economy. While the bio-economy offers a number of advantages (lower greenhouse gas emissions, decreased dependence on fossil fuels) its demand for biomaterial raises a number of critical sustainability issues as large-scale production of biomaterials can have negative environmental effects such as biodiversity loss, excessive water use or a negative carbon balance if biomaterials are grown on carbon rich land. At the same time production of materials for the bio-economy has to take place in a socially just way.

In order to address sustainability aspects along transnational value chains market-based instruments and hybrid regulatory system that includes both state and private actors are increasingly applied. These regulations may lead to new forms of power on the environment and the political arena based on the nature of the regulator. The mechanisms included in the EU's sustainability criteria for biofuels is a key example of such systems. In recent years a number of voluntary certification schemes for biofuels have emerged as a response to the EU regulation of which 19 were approved by the EU. These schemes verify compliance of producers of raw materials for biofuels with the EU's criteria. The aim of this presentation is to analyze these 19 schemes under the assumption that they are key actors involved in shaping both content and processes around issues of sustainability in the bio-economy. First a categorisation of the different schemes is presented based on dimensions such as actors involved in the development of the standard, their main audience, part of the value chain covered and range in feedstock certified. This is followed by an analysis of the legitimacy of these schemes based on aspects such as inclusion, procedural fairness, consensual orientation, and transparency. Finally, the potential of these different schemes to become major players governing a future EU bio-economy is assessed.

The interaction of deep structures and civilizing processes in global environmental governance

Reference 0315

Christopher Orr

McGill University

Navigating the Anthropocene in a way that fosters a mutually enhancing human-Earth relationship is a critical challenge of humanity, and governance is central to this goal. This paper explores the interaction of deep structures and civilizing processes in global governance. It presents a historical analysis, from the Enlightenment until the present to identify the ideational features that dominate the global political economy. It identifies the influence of deep structure – the norms, ideas and cultural narratives – as a key limiting factor in governing transformations in the human-Earth relationship. Neither organizational tweaking nor new institutional arrangements will suffice on their own to ensure effective global environmental governance. Rather, the central problem is the norms and ideas dominant in the global political economy, captured by the “grand narrative” of progress and prosperity currently epitomized by neoliberalism and its imperative for unconstrained economic growth. What connects the *longue duree* to the present is that this deeply engrained belief system is perpetuated through civilizing processes that create both consent and coercion. This paper then identifies several critical civilizing processes that interact to create societies dependent upon these deep structural relationships, including continued economic growth. It concludes by exploring potential ecological civilizing processes that may create opportunities for change.

Participatory scenario-guided long term planning at sub-national levels: case studies from Honduras and Cambodia

Reference 00317

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In this paper we intend to investigate the extent to which participatory foresight methodologies can facilitate long term planning for the governance of climate change mitigation and adaptation initiatives on sub-national levels. Rather than solely basing plans and policies on a single vision of the future, foresight methods such as participatory scenario building, allow policymakers to consider a range of future uncertainties increasingly associated with climate change. Recent research has proven the usefulness of this approach to facilitate multiple stakeholder participation in regional and national level planning. There is no evidence of the use on sub-national and local scales.

However, effectively communicating and implementing national plans on sub national and local levels is a challenge on its own, especially in countries in the process of development. Difficulties in sub-national and local planning can vary from the lack of local capacities to insufficient planning and funding, as well as a deficient framework of institutional connections across scales. At the same time, when it comes to climate vulnerability, the access to and allocation of resources to enhance resilience, effective and efficient action on a local level is essential. Not to mention it's potential impact on climate change mitigation. Within this defiant planning landscape, can participatory scenario building and use offer a complementary method to effective regional planning? Or should the before mentioned more rudimentary issues be addressed in the first place? What capacities, actions and conditions facilitate the uptake of scenario guided recommendations?

Through a comparative multiple case approach, this study aims to contribute to an in depth understanding of the use of foresight methods in sub-national planning in agriculture and food security policy processes related to climate change. Based on a literature review, we will first map the general challenges identified in sub-national and local planning. Second, we look at Honduras and Cambodia - two cases in opposite contexts where a similar scenario methodology was implemented to guide sub-national planning. We describe the challenges encountered in each policy development process, analyze up to what

extent the scenarios methodology was useful to address them and under which circumstances it could be improved. We also suggest a preliminary set of conditions, actions and capacities which enable the uptake of scenario guided recommendations. We aim to contribute to the conference streams 4 and 5, namely theory and methodology, and earth system governance in turbulent times.

Stream 6: Other Papers

In addition to the five thematic streams, papers relevant to earth system governance in general were accepted as well.

When green turns brown: explaining the performance of renewable energies in Brazil

Reference 0029

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The Brazilian energy system is historically one of the cleanest in the world yet the share of energy-related greenhouse gas emissions is on the rise. Simultaneously, renewable energy sources are growing in a highly-uneven fashion. What accounts for the cross-sectoral variation? We construct a methodological baseline for comparing the relative performance of hydro-, solar- and wind energy, as well as the bioethanol- and biodiesel sectors. To account for the observed variation, we assess the explanatory power of four variables: the choice of policy instruments and the instrument mix; functional spillover; punctuated equilibria; and socio-technical lock-in. Combining within-case and cross-case analysis, preliminary findings are, first, that the explanatory power of socio-technical lock-in is surprisingly low. Second, negative spillovers lead to low performance in the relevant sectors, yet positive spillovers do not lead to high performance. Third, instrument choice directly affects performance yet, in several cases, this is offset by inconsistencies in the broader policy mix.

Polycentricity of Forest Commons: Enhancing Social Innovation for Well-Being in Marginalised Regions in Europe?

Reference 0044

Stanislava Brnkalakova, Tatiana Kluvankova, Andrej Udovc, Maria Nijnik, Miguel Sottomayor, Gun Lidestav

CE SPECTRA, Cetip Network, University of Ljubljana Department of Forest Resource Management Católica Porto Business School, Department of Forest Resource Management, Social

The increasing diversity of forest owners under the global economy has raised challenges for policy makers. In particular, it has raised concerns about significance of traditional ownership for management of private small scale forests. Reduction of connectivity to local resources negatively affect traditional local based management systems. In this respect the role of collective action, self-organisation and polycentric systems can play key variable for successful management of coupled systems. (Ostrom, 1990, 1999, Ostrom, Nagendra 2006, Poteete et al. 2010). Global scale actors who are not embedded in local institutional arenas often ignoring the sustainability and carrying capacity of forest resources, and thus challenge local institutions' ability to effectively govern them (Anderies et al., 2004, Kluvánková, Gezik, 2016, Prempl et al. 2015). We argue that forest commons in Europe with institutional capacity to adapt to on-going changes provides adaptive mechanism to address global change vulnerabilities and promotes social innovations in forest resource governance. Common pool resource regime can be seen as an effective governance polycentric mechanism in diffusing social innovations to address societal and environmental challenges such as inequity issues, unsustainable use, marginalisation or landscape abandonment. The analysed forest commons regimes in Europe show a wide range of institutional arrangements already in place between and even within countries. This is in line with the findings of Holmgren (2009), Kluvánková, Gezik (2016) and Prempl et al. (2015), Sandström et al. 2016). In Sweden, Slovakia, Slovenia, Romania, Germany, France, Bulgaria, Poland, Portugal and Italy we find examples of traditional forest commons, while new types of community woodlands are emerging in Scotland and Wales. Thus general conclusion of this paper is that robust common pool resources regimes in European forests are critical for sustainable forest management.

The long shadow of agricultural commodity production: navigating multi-scale environmental and economic tradeoffs in Vermont, USA.

Reference 0046

Michael Wironen, Jon Erickson

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Agriculture undergirds rural economies around the globe while also constituting the largest direct human impact on nature. As trade in agricultural commodities expands, rural hinterlands are integrating into global commodity markets and adopting modern production practices. The social, economic, and environmental impacts of this transformation are considerable and extend far beyond the farm. In this research, we use a case study from Vermont to highlight the multi-level, multi-scale governance challenges that emerge when regions specialize in export-oriented agriculture, focusing on nutrient management and “nonpoint source” water pollution.

We use material flow analysis to trace the movement of phosphorus through Vermont’s agricultural economy, examining how the use of feed and fertilizer, animal technology, and crop production have evolved over a sixty-year period during which much of Vermont’s agricultural output was exported. The research reveals the dependence of farmers on inputs produced outside Vermont, exposing farmers to volatility in both the cost of production and the price received for goods. It also demonstrates a mass-imbalance in phosphorus flows, with a net accumulation of phosphorus in Vermont’s landscape due to trade. The imbalance is directly linked to acute water quality problems facing the state, which threaten livelihoods, property values, recreational assets, and the water supply for thousands of people residing in a transboundary watershed.

To improve water quality, the State of Vermont is mandated to reduce phosphorus losses from agriculture by more than 50%, which is difficult given phosphorus’ role in agriculture. As a result, officials face a policy dilemma, perceiving acute tradeoffs between rural farm employment and environmental improvement. Due to the export-oriented nature of Vermont’s agricultural sector, officials cannot internalize the environmental costs of food production without placing producers at a competitive disadvantage. This tradeoff – and the ensuing governance challenges – are mirrored in many agricultural exporting regions worldwide.

We conclude by critically examining the discourse on agricultural nutrient pollution in Vermont and the United States, arguing that the “nonpoint source” framing unnecessarily limits the scope and leverage points considered in policy design. In light of this conclusion and the earlier empirical findings, we critically evaluate the potential of several regional-scale policy interventions, including: a deposit-refund scheme tied to nutrient management; modification of land use and tax laws; and opportunities to de-commodify agricultural production by transitioning to agroecological practices that produce a higher-value output with fewer inputs.

The influence on landscape development

Reference 0054

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The East Frisian Peninsula in Germany is a unique cultural landscape as the land is reclaimed from the sea and without continuous human activity the North Sea would flood the land again. This special relationship between humans and nature gave rise to a strong local identity. A multitude of regulations and laws apply to the area from standards to maintain the title of UNESCO biosphere reserve, EU environmental and agricultural policies to state and local economic development and spatial planning. Thus a complex web of formal and informal rules applies to the land. In this situation, the question is who are the actual agents that govern the land? We conducted twenty interviews using a participatory social network analysis method (Net-Map) in order to shed light on the question if and how local and regional agents are connected and influence the development of the landscape. We are not only interested in the who are these agents, but also in the scale they act on and in how power is distributed. We find that certain sectors, like agriculture, have pivotal meaning for the development. However, most interviewed groups were best connected to actors within the same sector and the public administration. Relationships to other stakeholder groups were less developed although they were often seen as more influential as the own group.

We suggest that information exchange and especially cooperation between different agent groups must be promoted in order to encourage fair and sustainable situation in the multifunctional landscapes. Roundtables on the county or regional level and a steering committee composed of representatives of the various stakeholder groups for the biosphere reserve could bridge between the single agents.

Synthesizing and Identifying Emerging Issues in Adaptiveness Research within the Earth System Governance Framework (2007-2017)-Harvesting Initiative on Adaptiveness.

Reference 0057

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The Earth System Governance Project lists “adaptiveness” as one of its core research themes. The term has been introduced as an “umbrella term for a set of related concepts—vulnerability, resilience, adaptation, robustness, adaptive capacity, social learning and so on—to describe changes made by social groups in response to, or in anticipation of, challenges created through environmental change”. The Science Plan formulates related questions: How can earth system governance conceptually and practically respond to the inherent uncertainties in human and natural systems? How can stability to ensure long-term governance solutions be combined with flexibility to react quickly to new findings and developments? What are the politics and conflictive dimensions of adaptiveness? Which governance processes foster it? What attributes of governance systems enhance capacities to adapt? How, when and why does adaptiveness influence earth system governance on different levels?.

Over the period of the past 10 years, significant progress has been made in the research on governance processes of adaptiveness and in answering these questions. In particular in the field of climate change adaptation significant conceptual and empirical work has been conducted on international, national-level and countless local and community-based activities. It is the goal of this paper to identify central strands of this research on adaptiveness including cross-cutting issues within the Earth System Governance community and to bring together essential findings. On this basis, the paper seeks to develop ideas for future research agendas and implementation needs in the field of adaptiveness.

The paper will be based on a literature review of the relevant contributions in the past 10 years as well as on a data collection within the adaptiveness community in the context of the Earth System Governance Project including the specific contributions to the harvesting initiative.

The 'Global Stocktake' in the Paris Agreement - What Lessons from other Regimes to Design an Effective Global Review Mechanism?

Reference 0062

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In 2015 the international community created a new international treaty on climate change - the Paris Agreement (PA). The PA has been praised as a new model of global environmental governance, combining bottom-up and top-down features into a hybrid model. Instead of internationally agreed-upon emission reduction targets (and other obligations), the agreement relies on countries' voluntary pledges and actions (Nationally Determined Contributions). One of the key mechanisms to keep track of progress towards shared global goals, to put pressure on countries to live up to their promises, and to increase ambition over time is the so-called 'Global Stocktake' (Art 14 PA). The modalities of the Global Stocktake have not yet been established, and will occupy climate negotiators over the coming years. Arguing that the Global Stocktake will be essential for the success of the new climate regime, this paper develops a number of lessons for designing the stocktaking process and institutions based on an analysis of a range of review mechanisms in other international regimes. I argue that these design questions have major implications for the future effectiveness of the climate change regime. I propose a set of design principles that focus on the differences between the Global Stocktake and existing review mechanisms. Combining conventional, vertical, sovereignty-based features of inter-nationalism with horizontal, transnational forms of governance, the Stocktake offers an opportunity for innovation in global governance with implications for regime effectiveness and legitimacy.

Agency in Earth System Governance: Preliminary findings from the Agency Harvesting Initiative

Reference 0064

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The Earth System Governance (ESG) Agency Harvesting Initiative compiles research findings related to the analytical problem of agency in ESG. In the context of the larger ESG project, “agents” are understood as authoritative actors whose ability to legitimately exercise power involves establishing a relationship with those whom they seek to influence or govern (Dellas, Pattberg and Betsill 2011). Agents include actors such as governments, NGOs, corporations, and individuals who work individually and often collectively in the pursuit of earth system governance. For nearly a decade, ESG scholars have sought a better understanding of agency in earth system governance through research on four core questions: 1) what is agency? 2) who are the agents of ESG? 3) how do agents exercise authority in ESG? and 4) how can the effects and effectiveness of agents be evaluated? Rather than pre-determining a set of topics for harvest outputs, we are engaging in a bottom-up approach to the harvesting process, informed by Weed’s (2008) method of interpretive synthesis with the goal of making sense of what ESG scholars have to say about agency. This paper will present the results of our initial coding of nearly 400 articles published between 2008 and 2016 years related to agency in ESG. Our paper presents preliminary findings related to the themes, patterns, and trends in ESG research on the analytical problem of agency. It will serve as the basis for an agency overview chapter to be included in an edited volume on the ESG Harvesting Initiative.

Polycentric Governance for Sustainability in Cross-border Regions in Central Europe

Reference 0087

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Although unfavourable geographic location loses importance in regional development, other "soft" conditions, often of institutional and governmental nature, still impede cross-border cooperation in Europe. Such conditions are especially relevant in new member states of the European Union (EU) characterised by limited tradition of collaborative governance and rather centralized decision taking. As a result there is an uneven development in Central European countries, where many peripheral areas are located in the border regions, whereas core regions - usually capital cities and other metropolitan areas - benefit from strong economic development. Despite the EU effort's to balance out regional disparities and support territorial integration through the implementation of Cohesion Policy, regional polarization has become even higher in Central Europe in recent decades. On the one hand, after accession to the EU there is continuous support of changes in governance in form of establishment and empowerment of regional and local governmental levels at the expenses of national governments or involvement of non-governmental actors into the decision-making processes in new member states. On the other hand the application of these changes resulted in different outcomes in particular countries and regions due to inconsistent implementation of EU policies under different institutional contexts. Thus a key challenge of EU cross-border multilevel governance is to identify appropriate mechanisms to coordinate actors and their interests that emerge at multi scales, diversified spaces and crossing pre-existing jurisdictions to enhance balanced and sustainable regional development. We argue that it is essential to implement innovative approaches within cross-border governance based on institutional co-evolution. Such co-evolution should be designed in relation to polycentric governance enabling cooperation among different levels of government as well as among different actors. The aim of the paper is to evaluate the main challenges of EU multilevel cross-border governance, such as multilevel mismatch or interactions between naturally fragmented decision structure in cross-border relations and hierarchical governmental structures, in relation to coordination of diversified groups of actors. It is important to take into account local institutional context that shapes behaviour of the actors in particular territory. The approach is

demonstrated on the model cross-border region - Slovakia (Bratislava), Austria (Wien) and Czech Republic (Brno) where interviews with key actors from both public and private sector were conducted. Specific attention is given to the discussion of the potential of polycentric governance to tackle these identified challenges and enhance sustainable development in cross-border regions.

Theorising Environmental Policy Integration: building blocks from a review of Climate Policy Integration research

Reference 0089

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Environmental Policy Integration (EPI) is generally considered as a promising strategy for dealing with complexities in environmental governance related to institutional fragmentation and the variety of actors and interests involved. EPI can not only remove contradictions between existing governance efforts, but is also potentially more effective and efficient than stand-alone environmental policy. Yet, EPI does not emerge spontaneously. Hence differences across countries, sectors and policy levels are observed.

More insight is needed into what factors influence progress in EPI. Theory development in this area however still is in its infancy. In this paper we aim to identify critical factors that influence the effectiveness of deliberate attempts to promote EPI by means of Environmental Impact Assessment or other instruments, legal provisions, organisational measures etc.

We take stock of peer-reviewed, empirical analyses of Climate Policy Integration (CPI), a specific form of EPI. We further delineate our systematic review by including only studies of the mainstreaming of climate adaptation objectives into sectoral policies for e.g. urban planning and agriculture. Eventually we identified 87 studies, worldwide.

It would seem in the interest of policy sectors to voluntarily adapt to climate change. Therefore we would expect CPI to be more successful than EPI. Nevertheless, our results show that although in most cases adaptation policy outputs are identified (e.g. explicit adaptation goals or plans), only in a minority of cases this translates into policy outcomes (i.e. measures on the ground). This 'implementation gap' is most strongly seen in developing countries. However when it comes to the effectiveness of outcomes, we found no difference across countries.

We identify four specific approaches in which CPI is promoted. These approaches in practice are usually employed in combination and therefore their relative effectiveness cannot be determined. We cluster

factors that contribute to CPI effectiveness in general in two groups: cases where both adaptation outputs and outcomes were observed (tentatively labels as 'effective', 'partly effective' or 'ineffective') and cases where adaptation outputs were not translated into outcomes (pointing to the above implementation gap). Partly similar but partly different factors are found.

Our findings are translated into more generic propositions for EPI. The results of our analysis do not only inform EPI and CPI literature, but also form a key contribution to the Working Group on Environmental Policy Integration, which forms part of the Earth System Governance Taskforce on Conceptual Foundations.

Carbon valuation in the transport sector: reflections on the Swedish case

Reference 097

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Cost-benefit analysis is an important tool for decisions in infrastructure and transport planning. One effect that is calculated in cost benefit analysis is climate effects and for this it is necessary to make valuation of the social cost of carbon. There are different ways to calculate this cost and there is no consensus on what method to use. In Sweden the social cost of carbon that is used in cost benefit analysis in the transport sector is based on the Swedish carbon tax on fossil fuels which today is 1.14 SEK/kg CO₂ (or approx. 114 €/tonnes CO₂). Within economics there is a longstanding discussion on how to calculate the social cost of carbon, while the question has not been studied from a broader social science perspective.

The aim of this paper is to analyse how the valuation and use of the social cost of carbon can be understood from a political science perspective, and whether it can contribute to effective climate policies.

The paper will address five questions:

To what extent can the current Swedish valuation of the social cost of carbon, which is based on the Swedish carbon tax, be interpreted as the political valuation of the costs of carbon emissions?

To what extent can the long term effects of climate change entail a different (and perhaps higher) valuation of the cost of carbon than the one presently used?

How can the Swedish valuation of the cost of carbon be understood in an international perspective?

The first question is analysed through a text analysis of three governmental reports on carbon tax in Sweden, from three different years (1989, 2009, 2016), where the focus has been to understand the motivations behind the level of the carbon tax and to what extent the level of the tax is linked to an estimation of the social cost of carbon. The conclusion is that the level of the tax is not linked to an estimation of the cost of carbon but rather to an estimation of what is needed in order to reduce emissions. Furthermore, other considerations are also important when the level of the carbon tax is decided, such as secondary effects, acceptance of the tax and interaction with other policy instruments. Questions two and three are analysed mainly through a review of earlier literature and research.

Livelihood Resilience in the face of Recurring Floods: An empirical evidence from Northwest Ethiopia

Reference 0121

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The recent trend of increasing incidents of floods in Ethiopia is disrupting the livelihoods of a significant proportion of the country's population. This study assesses the factors that shape the resilience and the vulnerability of rural households in the face of recurrent floods by taking the case of Dembia district of Northwest Ethiopia as one of the flood-prone areas in the country. The data for the study were collected through a survey of 284 households, two focus group discussions, and 12 key informant interviews. Principal Component Analysis, which served both for data reduction and identification of the dominant factors that explain resilience to flooding and simple linear regression, which was used to check the relationship between resilience and vulnerability, were used. Findings indicate that access and use of livelihood resources such as size of farmlands, availability of farm oxen, credit as well as ability to draw help from social networks were found to be the most important factors that determine the resilience of households to floods. Similarly, the coping strategies employed by households were found to be constrained mainly by the scale and impact of the recent floods and lack or shortage of basic infrastructural and social facilities. The results confirmed that most of the traditional coping strategies employed by households failed to effectively help households offset the impacts of flooding. This implies that policy should focus more on addressing the factors that expose people to flood disasters and shape their resilience, rather than focusing on short-term emergency responses which seems to be the norm in much of the flood-affected areas in the country.

Addressing climate change through sustainable agricultural practices in India with reference to biogas program: a review of state of Punjab

Reference 0132

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Punjab is an agrarian state and faces a critical problem of burning of crop residues to eliminate waste from agricultural fields. This emits large amount of particulate matters and Green House Gases (GHG) which adversely affect human health as well as the environment. In order to address problem Biogas is one of the renewable source to supply clean energy and green manure and is an excellent solution for mitigation of Climate Change . The National Biogas and Manure Management Programme (NBMMP) initiated by the Government of India in 2005 which aims to reduce LPG and other conventional fuels, reduce use of chemical fertilizers in fields, mitigate drudgery of women, and reduces climate mitigation and pressure on forests and link toilets with biogas plants. During 2012 to 2016, 3.22 lakh plants have been set up in India which led to direct saving of 1,615,000 tons of carbon dioxide annually and generating biogas capacity of 6.46 lakh cubic meter per day and producing about 88.4 lakh tones of organic enriched bio-manure per year. Punjab Energy Development Agency (PEDA) is a state designated agency for implementation of NBMMP in Punjab. The main objective of the paper is to explore the development of NBMMP scheme in Punjab while assessing the perspective of beneficiaries towards use of Biogas plant from three districts of Punjab (highest, medium and lowest no. of biogas plants installed). Random sampling method has been used to select 150 beneficiaries, 50 from each three districts respectively and questionnaire method is used to collect data. The paper had also analyzed the role and functionality of various institutional arrangements to deploy Biogas scheme effectively in Punjab while using secondary data. The analytical study shows that beneficiaries are satisfied with working and performance of biogas plants and this has reduced the carbon emission through use of unprocessed biomass and also decreased the use of synthetic chemical fertilizers in farms. The results of study highlighted the gaps in promoting awareness regarding biogas plants in rural areas through PEDA and lack of involvement of PEDA officials at grass root level. It was also found that Government provides high subsidies on conventional resources like LPG . It has been suggested to increase financial incentives and subsidies on biogas and state government should also

initiate competitions regarding Biogas plant installation in villages at district level in order to enhance the effective implementation of scheme to combat climate change.

An evaluation of decentralized rural electrification through solar energy with special reference to solar street lights: A case study of Punjab state (India)

Reference 0141

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Rural electrification is the backbone of the rural economy for their socio-economic development. Rural areas in India are highly dependent on electrification through centralized supply of power generated by conventional methods or they have access to electricity and facing energy deficit due to multiple factors. There is a need to adopt decentralized approach based on supply of power produced with renewable energy resources available locally. PV has potential as a technology for decentralized rural electrification and as a means to improve access to electricity in rural areas. Solar PV products include Solar Street Lights, Solar Home Lighting System and Solar Lanterns which bring benefits to energy sector of rural areas like providing access to electricity in reliable way by using available resources through sustainable energy source. MNRE had introduced a scheme under Jawaharlal Nehru National Solar Mission named "Off-grid and Decentralized Solar Application" to promote, support and sustain off-grid solar applications.

The main objective of the paper is to explore the development of Solar PV products (SSL, SHLS and SL) essential for rural electrification in Punjab while concentrating primarily on scope of Solar Street Lights in rural electrification. The paper also assesses the perspective of beneficiaries towards use of Solar Street Lights from three districts of Punjab (highest, medium and lowest no. of biogas plants installed). Random sampling method has been used to select beneficiaries and questionnaire method is used to collect data. The paper has also analyzed the role and functionality of PEDAs (State Nodal Agency) to deploy SSL effectively in Punjab.

The analytical study showed that the installation of SSL has improved access of energy in remote areas and reduced their dependency on conventional fuels for lightening and other household chores. The results of study highlighted the gaps in promoting awareness regarding SSL in rural areas through PEDAs. The study also highlighted that there is lack of maintenance provision by private companies and beneficiaries also faced difficulty in grievance redressal through PEDAs office/ private companies. The another challenge related to SSL is lack of information among beneficiaries related to company involved in installation of SSL. The available SSL from SNAs/ by dealers or channel partners of MNRE are expensive in comparison

to market rates and are of low quality as in lieu to provide subsidy under high pricing. There should be monitoring of Private companies and initiate feedback mechanism to improve implementation of SSL scheme in Punjab.

Legitimate Orchestration in Post-Paris Climate and Sustainable Development Action? An assessment framework

Reference 0161

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Orchestration, that is measures to align transnational actors with public goals and international agreements, is increasingly deployed as a mode of indirect governance, in global sustainable development as well as in the climate change area. While recent scholarship has described a growing number of such instances of orchestration, the determinants of successful orchestration are not well understood. In the run-up to the Paris Agreement we have witnessed the orchestration of for non-state and subnational climate actions by COP presidencies, the UN Secretary General and the UNFCCC secretariat. Paris has left non-state and subnational actors with the burden to deliver on the pre-2020 climate action agenda. Orchestration - in this context - is a high-risk strategy, and failure to deliver effective reductions and adaptation measures will undermine prospects to reach the long-term climate goal, as well as undercut credibility of transnational climate governance. Therefore, the legitimacy of orchestration is vital. We suggest a normative assessment framework for orchestration that emphasizes geographically balanced transnational governance, greater input and output legitimacy, inclusive decision making and implementation, and greater accountability and transparency. We assess the 2014 UN Climate Summit as a case of orchestration according to these legitimacy indicators, comparing with data on another prominent instance of orchestration in the sustainable development process, namely the World Summit on Sustainable Development. Using database studies on transnational initiatives by the German Development Institute and the London School of Economics and Political Science, and earlier work on partnerships at IVM Institute for Environmental Studies at VU University Amsterdam we assess the legitimacy of post-Paris climate governance. We conclude with policy implications of our assessment of legitimacy of orchestration. Three priorities towards an accountable orchestration framework should include the tracking of the performance of transnational climate actions, the encouragement of transparency and accountability within initiatives, and the facilitation and mobilization of stakeholders based in the global South.

Changing dynamics between science and politics and the effectiveness of soft-law international environmental regimes. The case study of the Arctic Council

Reference 0200

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The effectiveness of international environmental regimes deals with one of the most fundamental questions related to international institutions, namely a matter of contributions those institutions make to solve the problems that led to their formation. There have been many approaches to studying the effectiveness of regimes. Some scholars equated it with compliance, others directed their attention toward behavioural consequences, noting too the dynamic nature of institutions that change in response to endogenous forces and exogenous pressures. International environmental regimes are neither static, nor is their effectiveness fixed. On the contrary, it can vary significantly over the life cycle of a regime. Our understanding, though, of the dynamics of the regimes remains limited; even more so in the case of soft-law institutions. The scholarly community concentrated most of its attention on hard-law regimes, viewed as central elements to global environmental governance. Such a focus, however, leaves uncovered regimes of not legally-binding nature. How can we understand and define the effectiveness of such arrangements? What kind of contributions do they make to solve problems for which they were established and via what causal mechanisms? Finally, how does their effectiveness change over time? This paper aims to start filling those gaps with the case study of the Arctic Council (AC). The AC is the primary intergovernmental forum for cooperation on issues of environmental protection and sustainable development in the Arctic. The Council is a soft-law arrangement mandated primarily to generate knowledge on the rapidly changing circumpolar region and to address some of the issues arising in connection with those developments. The study focuses specifically on the effects of change between science and policy components of the AC over its lifetime on the effectiveness of the regime. First, it proposes a two-step approach to understanding of AC's effectiveness by separating the knowledge generation function of the Council, from its capacity to translate results of scientific knowledge into practice. In this last respect, it explores agenda formation as a causal mechanism through which the regime influences the behaviour of actors involved in the Council and beyond. Second, the study explores for each of the two above functions, the impact of the changing relationship between the science and policy components within the Council's structure. The case study

presented offers thus an excellent opportunity to understand the role of soft-law environmental arrangements and contributes to our comprehension of their dynamics as well as factors shaping their effectiveness.

The polity and politics of carbon-dioxide taxation in small European states

Reference 0217

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This paper examines the momentum achieved for carbon-dioxide taxes in seven European countries. Why is it that mainly smaller countries, despite being more vulnerable to forces of international competition, are more susceptible to introduce carbon-dioxide taxes to complement emissions trading? The review of experiences does not suggest the share of fossil fuels in the energy mix to define the space for such taxes, nor does it point to a strong role for political partisanship. It is rather deep-seated patterns of national policy arrangements, providing a protective device for small states with open economies, which are allowing macroeconomic stabilization policies to become subject to more intense negotiations and coordination. They offer altogether more and better opportunities for redistribution mechanisms by means of emission-reducing carbon-dioxide taxes to be introduced, provided that the national polity enables adequate representation of interests and voters with clear preferences for climate mitigation policies.

Small is beautiful? The politics of climate change in small European states

Reference 0223

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How do the distinctive characteristics of small European states shape their responses to climate change?

Small states are characterised by conflicting expectations with respect to climate politics. Smallness may make it easier to sustain collective action and to maintain policy consistency over time. In the study of political economy, smallness has been associated with agility and a capacity to generate consensus (Katzenstein 1985, Keating 2015). However, smallness may also foster feelings of inefficacy in the face of a global problem. And while openness can stimulate policy innovation, it can also lead to risk aversion and concerns about the impact of policy change on competitiveness. How do these competing forces play out and influence climate policy in specific national contexts? Focussing on European states, this paper will develop an analytical framework to assess how these contradictory forces shape climate policy ambition and outcomes in small states, operationalised as states contributing less than 0.5% of global greenhouse gas emissions. The framework will examine how 'smallness' influences a number of dimensions of climate politics that shape policy outputs and outcomes: representative politics; the broader policy status quo and mechanisms of increasing returns; interest group articulation; and the interplay between competitiveness concerns and the search for comparative advantage in the wider economy. The level of climate ambition in each case will be measured by a holistic assessment of climate policy outputs, with outcomes measured by per capita emissions and emissions trajectories over time. After descriptively comparing small and large European states, this framework will be used to analyse four case studies: Ireland, Denmark, Finland, and Norway. The cases encompass traditional leaders (Denmark, Norway) and laggards (Ireland) as well as 'middle of the road' countries (Finland), and within-case variation over time (e.g., recent climate policy retrenchment in Denmark and Ireland). The four case studies will examine how these contradictory expectations play out and will explain diverse policy outputs and outcomes in each case.

The role of governmental actors in public and private partnerships: an analysis within the palm oil industry

Reference 0237

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Partnerships have been identified as important organisational set-ups in transnational sustainability governance for addressing a variety of sustainability issues in global value chains. The engagement of governmental actors in these partnerships increasingly is a topic of interest for academics and practitioners alike.

Partnerships are often initiated by either public or private organizations, in many cases even in the same sector following more or less similar objectives. Despite the fact that these types of partnerships are based on either a public or a private governance rationale, the engagement of governmental actors is generally assumed to be crucial for maximizing and sustaining the impact of the partnership intervention. In general and ideal terms, the strength of governmental actors for partnerships stems from its legal authority, the mandate that it has to act directly with (or delegate responsibility to) other stakeholder groups, its legitimacy, and its control of resources. How governmental actors contribute these strengths to partnerships can however differ.

This paper unravels the diversity of roles of governmental actors in two types of partnerships (private versus public partnerships). In order to do so, the paper conducts a systematic literature review on the role of governmental actors in partnerships approached from both a private and a public governance perspective. The empirical illustration/application of this paper is in the palm oil sector in which both a public and a private partnership were established. In 2004, international businesses and NGOs set up the Roundtable on Sustainable Palm Oil (RSPO) with the objective to transform markets to make sustainable palm oil the norm. Around the same time, the Dutch, Malaysian and Indonesian government started a trilateral partnership for enhancing market access, for amongst others palm oil, through capacity building. Despite the fact that both partnerships were inspired by the general rationale of collaboration - together actors can achieve more than addressing challenges individually -, they created different levels of involvement and respective roles of governmental actors.

This paper compares and contrasts the different roles of governmental actors in the two types of partnerships (public and private governance oriented) and analyses upon what conditions these role are contingent. Furthermore, it discusses the implications for these different roles in addressing sustainability challenges in global value chains.

Multi-level Global Climate Governance in the Global South. Case Studies from India and Indonesia

Reference 0254

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This paper analyzes and compares multi-level global climate governance in India and Indonesia by combining theoretical approaches of international relations and comparative politics. It sheds light on the research question of how developments in the UNFCCC have triggered institutional and policy changes for mitigating climate change in nation-states of the Global South.

The paper thus addresses two existing research gaps. Firstly, the effects of the UNFCCC and its intergovernmentally agreed global climate governance arrangements on domestic climate governance developments have not yet been sufficiently scrutinized. Such a multi-level governance inquiry seems especially promising with regard to the emergent domestic climate governance systems in the Global South. Secondly, several scholars of climate politics have not only observed a lack of multi-level governance research but also of in-depth comparative analyzes of domestic climate politics in the Global South. Most academic contributors tend to use single case studies or descriptions and focus primarily on industrialized countries.

Given these shortcomings, this paper develops a theoretical framework comprising elements from research on global governance, multi-level governance, socialization, rational choice as well as institutional and policy change. For answering the research question, it uses semi-structured expert interviews, process tracing, structured-focused comparison and centers on the workings of global climate governance arrangements which are intergovernmentally agreed within the UNFCCC as "Reducing Emissions from Deforestation and Forest Degradation" (REDD+) and "Nationally Appropriate Mitigation Actions" (NAMAs).

In order to analyze the effects of these global climate governance arrangements on nation-states in the Global South, the developed theoretical framework is then applied to the case countries India and Indonesia by looking at climate governance activities of the last decade. Research on climate politics in India and Indonesia is particularly relevant as both are among the largest greenhouse gas emitters in the world.

The paper shows how the central governments' involvement in the UNFCCC has contributed to the establishment of domestic climate governance frameworks and to resulting policy changes in both countries. The paper fits nicely in the Earth System Governance research focus as it shows how developments in the UNFCCC have led to the stimulation and diffusion of new forms of policy and governance for climate change, such as REDD+ and NAMAs, in countries of the Global South. It is thus a research contribution to the current discussions on multi-level climate policy-making in the run-up to the Paris Agreement.

Reinventing Decarbonization: Investigating the role of agency in EU low carbon transition pathways

Reference 0274

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The EU 2050 emission targets towards a low carbon economy urge for the decarbonization of key emission intensive sectors, including industry and agriculture. The decarbonization of these sectors requires the deployment of a series of innovations across value chains as well as profound transformations in modern financing, production and consumption patterns. Transitions literature, which consists of a number of different perspectives, has been very influential in analyzing the dynamics of such transformations. However, as many scholars have pointed out, low carbon transitions are highly political processes. Transitions literature has not yet fully conceptualized politics and often undermines the role of agency in shaping decarbonization pathways. To that end, this paper places agency at the center in order to conceptualize the role of key actors, including businesses and civil society organizations, in shaping low carbon transition pathways for emission intensive sectors. Particularly, it builds further on the integrated framework of multi-level perspective and innovation systems, emphasizing the role of agency and political strategies. This combination contributes to the conceptualization of the niche-regime relationship and actors' strategies as they attempt to dominate the field and shape decarbonization pathways of emission intensive sectors. The framework is tested empirically by investigating agency in the growing popularity of plant-based diets. A shift to plant-based diets is seen as a promising mitigation option for the greenhouse gas emission intensity of the meat and dairy sector. The framework of this paper enables an analysis about the ways different actors attempt to promote or inhibit the emergence of such mitigation options and contributes in the deeper and systematic analysis of politics in transitions. Data for this paper will be generated by literature review, semi-structured interviews with experts and stakeholders at the EU level, and analyzed by triangulation of results with policy documents and reports.

International Diffusion and Domestic Policy Processes: Exploring the Adoption of Carbon Pricing Policies

Reference 0286

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Carbon pricing, in the form of carbon taxation or emissions trading, is an effective policy response to the transboundary collective action problem of climate change. It is adopted by a rather diverse group of states. The diffusion of carbon pricing between states have also been slower and more uneven in pace than what might be expected by the policy diffusion literature. In this paper we argue that this puzzling pattern of adoption can be explained by the interaction of mechanisms originating from the international and domestic levels, which is often not emphasised in diffusion studies. In the paper we develop a theoretical framework integrating theories of policy diffusion and public policy, in order to enable explanations of what role international and domestic mechanisms have played in the national adoption of carbon pricing. Focusing on the process through which different international and domestic mechanisms affect policy decisions, we distinguish between three mechanisms; ideational change, learning and changes to the relative power of actors. These mechanisms are emphasized in both policy diffusion and public policy literature. In the theoretical framework these mechanisms are understood to strengthen or weaken the agency of actors, and thereby agents' possibilities to adopt different strategies to influence decision-making. Strategies included in the framework are framing, venue-shopping, and coalition-building. Importantly, this focus on how the mechanisms play out through the strategies is what sets this theoretical framework apart from those in most diffusion studies. Similarly, our contribution in relation to public policy studies is the possibility to assess the relative importance of international and domestic mechanisms. Based on the framework we formulate a number of hypotheses about the expected relation between the three mechanisms; international and domestic sources of mechanisms; the interaction of mechanisms and strategies; and their influence on decisions to adopt carbon pricing. The paper contributes to explain why some states have adopted carbon pricing whereas others have not, an issue that has become increasingly important after the Paris Agreement. Further, the framework also contributes to our possibilities to more generally understand transboundary issues where decision-making becomes focused on the national level rather than on the international level.

Hail to democracy? Revisiting institutional preconditions for sustainable development

Reference 0288

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The current global agendas like the Paris Agreement on Climate Change and the Agenda 2030 for Sustainable Development rest on the understanding that all countries need to transform in order to respond to pressing ecological challenges. While academic attention in this context has largely been focussed on issues like sector-specific policies, policy integration or modes of international cooperation, I argue that it is also necessary to critically examine the very institutional foundations on which nation-states are built. Empirical studies comparing the environmental performance between democratic and authoritarian regimes find that democracies perform slightly better on average, but present inconclusive evidence. In the spirit of universality reflected in the global sustainability agendas, I argue that national institutional set-ups are largely ill-suited to tackle the ecological challenges ahead and thus need to adapt, irrespective of the nature of the political system. The proposed contribution is a literature review on the effects of political institutions on sustainable development, taking the example of climate change. While the paper starts with an overview of empirical evidence along the democratic-authoritarian divide, it also explores the systemic factors inherent to democracies that are related to their inadequate performance with view to climate policies. Based on previous research, the paper aims at providing a systematic overview of avenues for institutional reforms.

Community-based stories of water and livelihoods in Kenyan drylands

Reference 0301

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In the drylands of Turkana County, Kenya, the lives of local pastoral livestock herders and fishermen are tied tightly to the environment through access to water and forage resources that are highly variable across space and time. We conducted focus groups with men and women of six communities in Turkana County in 2015 to investigate the relationship between people and water, and the influence of governance on use and livelihood sustainability given the distribution of benefits and burdens of decision-making. What we came away with was a complex picture of local to international decision-making impacts on individual communities. The relationship between people and resources is being altered by changes in policies and governance of resources, as well as a changing climate that people report to be less predictable, less reliable, and more frequently delivering extreme events such as droughts and floods. The combined impact of these forces on resource access leaves local communities in complex situations of altered livelihood viability, often necessitating movement of livestock into insecure areas, inspiring innovation in land use and livelihoods, and threatening families' and communities' food security and potentially long-term persistence. These stories of climate, policy and decision-making, governance and access, and community impacts vary across diverse contexts of space and time, giving a broad picture of the consequences of these forces for communities at the local level.

Pricing carbon by economic reason: The case of the Swedish carbon tax

Reference 0312

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Sweden was one of the first pioneering states to adopt a tax on carbon dioxide emissions in 1991. The tax has increased since then and today it represents the highest carbon tax rate worldwide. The Swedish carbon tax is the centerpiece of national climate policy, by many seen as the key driver for the Swedish cuts in carbon emissions. But how come Sweden was so early to introduce the tax in the first place, at a time when international climate policy was not even agreed and the social costs of carbon was neither recognized nor measured? The objective of this paper is to explore the reasons behind adopting carbon taxation by investigating the Swedish policy process leading to the introduction of the carbon tax.

In solving global collective action problems such as climate change, the literature shows that action is taken as a response either to competition and to avoid free-riding, or to international norms. In Sweden neither of these pressures was in place at that time. The Swedish tax was introduced before the UNFCCC negotiations were even concluded and Sweden had entered any international commitments on climate policy. This is puzzling making the case interesting for exploring which mechanisms affect states to adopt domestic policies such as carbon taxation.

Our study shows that a number of factors interacted to enable the carbon tax. Most importantly, the primary rationale for its introduction was not to combat climate change but the tax was part of a larger economic policy package restructuring the Swedish income taxation following the liberalization initiated in the late 1980's. Purchase taxes such as the carbon tax were reframed into an opportunity to extend the tax base, while improving the environmental steering of the tax system. Therefore it seems a plausible explanation that the tax was introduced solely on domestic grounds. However, without the interplay between international influences, including a series of conferences attended by scientists and policy officers as well as the work with the first IPCC report, and domestic policy dynamics, the early adoption of the Swedish tax would have been less expected.

In the study we utilize Kingdon's Multiple Streams Framework in order to trace the influence of different factors and analyse the interaction of international factors and domestic mechanisms. The study is based

on analysis of policy documents and interviews with key informants such as politicians, policy officers and scientists involved in the process.