Thor Heyerdahl Summer School in Environmental Governance

Global Environmental Governance

Papers from the 2012 course

Edited by Arild Vatn, Darley Kjosavik, Kassim Kulindwa and Pål Vedeld

Student Papers

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Student Papers

Thor Heyerdahl Summer School in Environmental Governance

Volume 2

Papers from the course
'Global Environmental Governance'
June 25 – July 6, 2012

Arild Vatn, Darley Kjosavik, Kassim Kulindwa and Pål Vedeld (eds.)

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Norwegian University of Life Sciences

The Thor Heyerdahl Summer School (THSS) in Environmental Governance offers PhDs and young researchers the opportunity to develop high level skills in analyzing governance issues such as climate change, biodiversity conservation, the sustainable use of biological resources, water management, and pollution. The Summer School creates an arena for critical reflection on the present status of both theory and practice in the field, and an opportunity to discuss alternatives to current developments and solutions.

The annual two-week THSS is hosted by the Department of International Environment and Development Studies, Noragric, at the Norwegian University of Life Science in Aas, Norway. The THSS is also supported financially by the Thor Heyerdahl Institute, Noragric's institutional agreements with partners in the South and the Research Council of Norway. THSS has a reference group consisting of scholars from CICERO, the Fridtjof Nansen Institute, the Norwegian Institute of International Affairs (NUPI) and the Thor Heyerdahl institute. The THSS is endorsed by the European Society for Ecological Economics, the International Society for Ecological Economics and the Earth System Governance Project.

The student papers in this publication are the result of the second THSS in 2012. The views expressed in the articles are entirely those of the authors and cannot be attributed directly to the Department of International Environment and Development Studies (UMB/Noragric) or any of the above-mentioned partners. Extracts from this publication may only be reproduced after prior consultation with the coordinator of the THSS at Noragric.

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PREFACE

This report includes the student papers from the second course of the Thor Heyerdahl Summer School in Environmental Governance. The course was titled 'Global Environmental Governance' and ran from June 25 - July 6 2012. An overview of the programme is found at http://www.umb.no/thor-heyerdahl-summer-school.

Altogether 24 students – PhDs and young researchers – from 19 countries all over the world participated. Their engagement and wide variety of backgrounds were very important for the success of the course. Important was also the engagement of a long list of renowned lecturers – including Frank Biermann, Clive Spash and Oran Young.

On behalf of the Department of International Environment and Development Studies at the Norwegian University of Life Sciences, we would also like to thank the external financers; The Thor Heyerdahl Institute, Noragric's institutional agreements with partners in the South and the Research Council of Norway. We would also like to thank external members of the reference group for the summer school consisting of scholars from CICERO, the Fridtjof Nansen Institute, the Norwegian Institute of International Affairs (NUPI) and the Thor Heyerdahl Institute.

Noragric, UMB, December 2013

Arild Vatn, Darley Kjosavik, Kassim Kulindwa and Pål Vedeld (eds.)

Introduction

This report covers student papers produced by participants of the second course of the Thor Heyerdahl Summer School in Environmental Governance. The topic for this course was 'Global environmental governance' and attracted several renowned researchers as teachers – e.g., Frank Biermann, Clive Spash and Oran Young. The Summer School is organized by the Department of International Environment and Development Studies at the Norwegian University of Life Sciences. It offers PhDs/young researchers the opportunity to develop their skills in analysing environmental governance issues. It provides an arena for critical reflection on the present status of both theory and practice in the field, and the search and assessment of possible alternatives to current practices. The course on global environmental governance ran from June 25 - July 6, 2012. An overview of the program is found at http://www.umb.no/thor-heyerdahl-summer-school.

The course covered frontiers of theory formation in the field of global environmental governance as well as making enquiries into a wide variety of empirical topics regarding the processes of formulating environmental regimes, their interplay and the relationships between environmental regimes and core institutions governing the global economy. The course had also a strong emphasis on interdisciplinary analyses.

Like in the first course, an enthusiastic and critically-minded group of students with diverse backgrounds and interests was brought together. One of the tasks of the course was to join together in groups, agree on a theme of common interest, and analyse that topic drawing on the tools and insights gathered during the course. While outlines were made during the two weeks of the course, the writing took place after participants returned to their home universities/institutes.

The results of their work are presented in this publication. The papers cover a wide range of topics from analysing policies to combat biodiversity loss to a study of the clean development mechanism, as well as from justice in environmental policy to valuation and the problem of time lags. What follows is a brief presentation of the altogether 8 papers included in this report. The presentation is based on the paper abstracts.

The first paper, by Biljana Macura, Bibhu Prasad Nayak, Monika Suškevičs and Tendro Tondrasoa, is focused at a core global concern – that of biodiversity loss and degradation. The authors note that the worrying development in this field has called for concerted action in the form of international and continent-wide policies for conservation. They also observe a variety of discourses for conservation to be distinguished at the international level shaping different approaches to practical conservation at national and sub-national levels. Their paper explores "local manifestations of international conservation ideologies", emphasizing dimensions of conflict. It visualizes the interactions between three levels: international or EU conservation regimes, national biodiversity governance strategies and local PAs governance in India, Madagascar and Estonia. The authors develop an institutional framework for conflict analysis that connects those levels and tries to dis-aggregate the problem and find solutions. The analysis shows that the conflicts are manifested differently, but they do depend on the nature of participation, the level of dependence on natural resources, local institutional and

historical context as well as influences of international and national conservation agendas. Cases display a path-dependency of PA governance arrangements that in spite of recent shifts in global discourses towards more participatory approaches lag behind, due to administrative or institutional resilience. However, all cases show a necessity for acknowledging local people's needs, value systems, culture, norms and more genuine participation in decision-making processes. The paper concludes that tailored solutions adapted to the local context and existing institutions are necessary preconditions for the resolution of problems in the governance of protected areas.

After the paper on biodiversity governance, follow two papers on REDD+; on programs for reduced emissions from deforestation and forest degradation. The first of these papers is written by Rebecca Pearse and Bryan Bushley and examines the global disagreement over the prospect of a market-based finance mechanism for REDD+. The authors first identify potential institutional arrangements for REDD+, and then scrutinise the views of different actors on a market-based vs. a fund-based approach. They unpack the perspectives of key actors from diverse sectors via a textual analysis of reports and UNFCCC statements of 25 actors. Based on this analysis, Rebecca and Bryan illuminate eight broad challenges of implementing a market-based approach that are of common concern to most actors. Key challenges relate to: 1) generating adequate and sustainable levels of finance; 2) providing suitable and culturally appropriate economic incentives; 3) preventing further socioeconomic inequality; 4) clarifying and protecting land rights in the context of instituting carbon rights, especially for local and indigenous peoples; 5) attaining community consent; 6) addressing additionality and leakage; 7) establishing reliable methods for measurement, reporting and verification (MRV); and 8) addressing the potential for corruption. There authors observe that there are fundamental differences in the explanations of the source of these challenges, and about how or whether they can be ameliorated in the context of market-based approach to REDD+. These divergent views point to a need to pursue more critical discussion about the substantive as well as theoretical basis for disagreements between political actors.

The second REDD+ paper is written by Kanizio Fredrick Manyika and Mary Gorret Nantongo. It looks at the establishment of governance structures for REDD+ in Tanzania. The country is one of the pioneering African countries regarding REDD+, having embarked on this process in 2008. The paper reviews the emerging institutional structures for establishing REDD+ both at national and local level. The paper is based on institutional theory focusing at institutional change in the context of REDD+. The concept of institutional interplay is emphasized. The paper analyses next the proposed governance structures as developed at both national and local level and the interplay of actors and institutions as operating at these scales. A core observation is the detachment between the processes at these levels. The process at national level is grounded in existing political bodies and agencies, and has resulted in a set of nationally structured actors and institutions to govern REDD+ processes. Part of this structure is a national REDD+ fund. The local initiatives are run by NGOs and are oriented towards market based funding. The authors conclude that the divergent nature of the financial and technical structures evolving at national and local levels are a threat to successful implementation of REDD+ in Tanzania and suggest that more interaction of actors at both levels is necessary for the process to be legitimate to the involved actors.

The fourth paper, by Maarit Laihonen and Elena Kiryushkina, takes us to another important global issue: the role of power structures in the United Nations (UN) sustainable development negotiations. The more specific focus of the paper is at the Rio+20 and the negotiations around the energy sector. The authors analyse the development of the institutions framing the preparation and the actual negotiations. The data consists of official policy documents by the UN and different business actors operating around Rio+20. In addition, for contextualizing Rio+20 to its historical development, Maarit and Elena briefly look at the development in negotiation discourses from the original Rio Summit in 1992 and Johannesburg 2002. The focused empirical interest lies in the debate that energy questions raise in the sustainable development negotiations. The paper contributes to the understanding of the UN negotiations as an institutionalized forum for business corporations to influence global environmental governance.

The next paper is by Keerthi Kiran Bandru and Lu Yu. It looks at the Clean Development Mechanism (CDM) as part of the Kyoto Protocol. This protocol is the first international agreement developed to reduce greenhouse gas emissions through project-based exchanges between developed and developing nations. The CDM is exposed and criticized with regard to its efficiency and function to reach the fundamental goals of sustainable development and technology transfer. The paper focuses at the two biggest host nations – China and India – and their engagement in implementing industrial gas reduction projects (i.e., HFC-23 and N_2O) and generating CERs for these to be traded in international markets. These projects have been criticized for not contributing to reaching the goals of the Kyoto Protocol. The present paper analyses the institutional arrangements in China and India to identify the strategic behaviour behind accepting the industrial gas reduction projects, despite of the doubts regarding the impact of these projects on sustainable development. The authors use secondary data sources from the CDM web sites, NGO reports and scientific publications and performed qualitative analysis. China and India have followed similar strategies to implement the CDM projects. The high economic gains from HFC-23 and N_2O projects in terms of a high volume of CERs generated with limited investment provides a strong incentive to the project proponents in both countries. One of the differences between the nations, is the civil society participation, which plays an important role in India, while is deficient in China. The civil society is contributing to generate on ground information and it is also demanding efficient monitoring to check the emission reductions. However, there is an urgent need to perform case specific analysis to understand the influence of civil society participation in the outcome of the CDM implementation.

The report closes with three papers that are looking at more generic issues of importance to environmental policy both at global and national levels. The first of these is written by Klara Helene Stumpf, Susanne Hanger and Igor Ferraz da Fonseca. The paper focuses on the aspect of justice in environmental governance. The authors hence propose to include dimensions of justice more explicitly into institutional and policy analysis of environmental governance. More specifically the authors investigate how alternative frameworks for the analysis of environmental governance and institutions – the IAD framework by Elinor Ostrom, the Environmental Governance framework by Arild Vatn, and the Diagnostic Approach by Oran Young – address concerns of justice. More specifically, they ask: (1) What dimensions and elements of justice are relevant for institutional analysis and design? (2) Do these dimensions

appear in existing frameworks for institutional analysis? (3) If not, can these frameworks be adapted to include core elements of justice? Based on the political philosophy literature on justice the authors develop a check-list of different dimensions and aspects of justice, which they use when analyzing the different frameworks for institutional analysis. They find that the investigated frameworks, although not explicitly excluding questions of justice, do not fully exploit their potential to consider different dimensions and categories of justice. Drawing on the conceptual analysis as well as on the limited examples of empirical studies which examined justice as part of an institutional analysis, the authors suggest ways to improve the analysis of justice in institutional analysis frameworks.

The paper by Leslie Carnoye and Rita Lopes is focused on the issue of valuation of environmental functions or services. They note that it is often argued that monetary valuation and cost-benefit analysis are important tools to motivate public investment and decision-makers for a better protection of the environment. The authors argue, however, that the way valuation methods in general relate to real institutional structures and decision-makers remains is unclear. They emphasize that apprehending valuation methods as "value articulating institutions" (VAIs) provides a useful framework in disentangling the relevance and quality of various methods in concrete contexts. The concept emphasizes that seeing valuation methods as institutional structures, the emphasis will be on them as sets of rules defining what value is and how and in what form participants can make inputs into the valuation process. No method is able to deal with all the problems involved in environmental valuation. At the same time, the authors argue that methods which emphasize social rationalities and the understanding of complex problems are most suited. In that sense, the authors find that the recent trend towards the combination of methods such as deliberative monetary valuation and deliberative multicriteria analysis seem promising, though numerous issues remain. This paper underlines that the VAI perspective fundamentally questions the linkages between valuing and decision-making as it emphasizes that data production cannot be understood without including its sociopolitical contexts. The theoretical analysis is supplemented by an in-depth qualitative analysis of four case studies, each having implemented different types of methodologies for the valuation of multiple ecosystem services. This part of the analysis is focused on the emerging technical problems when combining approaches for valuing ecosystem services and what inputs the valuation process produce for decision-making.

The last paper is by Johan Munck af Rosenschöld, Laura Alex Frye-Levine, Jaap Rozema and Håkon Sælen. It deals with the coexistence of time lags in institutional and ecological systems, on the one hand, and the need for timely climate policy measures, on the other – a phenomenon the authors have called the urgency/lag complex. Climate scientists have long called for urgent mitigating action in order to avoid the most adverse effects of climate change. However, within the economics and political science community the notion of urgency remains an underdeveloped concept. This paper reviews the literature of both disciplines and analyses the ways in which urgency is depicted. The analysis suggests that "time" is implicated in the research, but that there are incoherencies within the literature to address urgency more specifically. The authors conclude that by situating time lags into the centre of analyses as well as extending the focus to include institutional processes, a more consistent approach to examining urgency would be possible.

The papers presented in this report bring forward some of the challenging issues that were addressed during the Summer School course of 2012. We are certain that the material presented in this report will offer interesting and helpful reading for scholars in the field of environmental governance.

Noragric/UMB, December, 2013

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Local Manifestations of International Conservation Ideologies and Biodiversity Conflicts in Developing Economies

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Abstract

The global concern for biodiversity loss and degradation has called for concerted action in the form of international and continent-wide policies for biodiversity conservation. Yet, various discourses for conservation can be distinguished at the international level, giving basis and shaping different approaches to practical conservation at national and sub-national levels. This study explores "local manifestations of international conservation ideologies" through lenses of conflicts. It visualizes the interactions between three levels: international or EU conservation regimes, national biodiversity governance strategies and local PAs governance in India, Madagascar and Estonia. We developed an institutional framework for conflict analysis that connects those levels and tries to dis-aggregate the problem and find solutions. Our analysis shows that the conflicts are manifested differently, but they do depend on the nature of participation, dependence on natural resources, local institutional and historical context as well as influences of international and national conservation agendas. Cases display a path-dependency of PA governance arrangements that in spite of recent shifts in global discourses towards more participatory approaches lag behind, due to administrative or institutional resilience. However, all cases have shown a necessity for acknowledging local people's needs, value systems, culture, norms and more genuine participation in decision-making processes. Finally, the paper concludes that tailored solutions adapted to the local context and existing institutions, are necessary preconditions for the resolution of problems in the governance of protected areas.

1. Introduction

"Conservation is a shifting ideological framework, set of policies, and practical actions. While carried out in specific locales, its form is guided by global environmentalist discourse as well as agendas for economic development" (Gezon, 2007: 42)

The global concern for biodiversity conservation has resulted in the emergence of several international multilateral agreements, among which the Convention on Biological Diversity (CBD) is the most important one. This convention is calling for "*in situ*" conservation envisioned in establishing more protected areas (PAs), as well as an increase in the total area to be protected (CBD, 1992). As a response, national governments are increasing the number

of PAs on their territories, frequently connecting them into the vast ecological networks, such as Natura 2000 in the European Union. Consequently, PAs are today covering 12% of the total world's land surface (Dudley, 2008).

Nevertheless, at the national and local level there are a number of actors with different and contrasting needs and interests related to natural resources. Conflicts between local communities and PA management authorities are frequent and negative attitudes towards PAs emerge when PA establishment and management create higher social costs over benefits (Ormsby and Kaplin, 2005). Resource access constraints or the imposition of stricter resource use rules to local communities, human-wildlife conflicts, unequal share of benefits, displacements, loss of job opportunities are all drivers of disputes and negative attitudes toward PAs (see Macura et al., 2011). Consequently, these conflicts may influence the ecological effectiveness of PAs and ultimately affect the fulfillment of obligations towards international agreements related to biodiversity conservation. Nevertheless, changes in the conservation approach, towards more inclusionary or market-oriented practices, are gaining popularity (Brown, 2002) and this is presumably due to pressures from both, the local and international level to resolve some of the mentioned problems.

However, little is known how the interaction between different governance levels is conceptualized and in which way different international conservation discourses shape national conservation policy and how those translate to the local conservation practices and governance of PAs.

The objective of this study is to analyse "*local manifestations of international conservation ideologies*" (Kull et al., 2007: 724), the interactions between international - and specifically EU - conservation regimes, national biodiversity governance strategies and local PAs governance in India, Madagascar and Estonia. These three case studies reflect various socio-economic and ecological conditions that characterize different regions of the world in the context of biodiversity conservation. We will conduct a bottom-up analysis, by looking at the locally created conflicts within PAs and discern associated factors and drivers of conflict on the local, national and international levels.

The following exploratory questions lead this study:

1 What is the experience of different countries under study with PA governance in the context of international or EU biodiversity conservation regimes?

2 What kind of factors at international, national and local level affect conservation conflicts in different contexts?

The paper is structured as follows. In the second section we present background information and theoretical concepts on conservation. The third section describes our analytical framework for the institutional analysis of PA governance conflicts in the case-examples. The sections thereafter present three case studies followed by discussion and conclusions in the last section.

2. Background and Theory

As "*spatially defined conservation units, parks and protected areas regulate resource use through controlling (and eliminating certain forms of) access*" (Campbell et al., 2008: 203)**.** Their governance have been reshaped to fit different interests and needs of various powerful actors, donors, big international non-governmental organizations (NGOs) and national governments that were creating and enforcing different conservation regimes. We especially focus on global discourses or narratives in this section, as they can be drivers of institutional change by molding the problems and the solutions in a particular way, and they can also influence "*actor's beliefs and the perceived legitimacy of the rules*" (Clement, 2013: 1).

Three leading narratives can be identified in conservation policy and practices (Dryzek, 2005; Blaikie and Jearnrenaud, 1997). Firstly, the "Yellowstone National Park" model of *command-and-control* and exclusion of local people from parks has been spread throughout the colonial world, especially in Africa and Asia. In this model prevails the discourse of *administrative rationalism* (Dryzek, 2005). Expert knowledge is often prescribed as a top-down solution for resource conservation problems in this 'old' type of conservation governance (Brown, 2002). Several Central and Eastern European (CEE) countries have followed a similar approach, with strong administrative structures employed to manage biodiversity (Keilbach, 2006) but without exclusions or displacements, which are frequent in the tropics (to be elaborated in Indian case study below).

However, many authors argue that a top-down hierarchical governance style is not able to handle the size and complexity of PAs (Borrini-Feyerabend, 2003). Moreover, it frequently leads to various social conflicts at the local level stemming from unequal distribution of power, rights, and benefits (Kothari, 2008). This conservation approach is still widespread especially in the South (Borrini-Feyerabend, 2003).

The second, *populist* narrative emerged with the call for more inclusive and participatory conservation policy and practice, relying on local people's support and calling for decentralization, which would result in more legitimate conservation. In this approach two phases could be identified. The first innovation in this field has been the '*people-oriented*' conservation exercised through integrated conservation and development projects (ICDPs). A decade later, a more inclusive '*people-based*' conservation paradigm was materialized through community-based conservation (CBC) (Brown, 2002).

Thirdly, the *neo-liberal conservation* narrative emerged being founded on the idea that conservation has not achieved its goals due to "*inappropriate right arrangements and insufficient institutional designs"*, hence, the *"best use of free market*" is being encouraged (Meguro, 2009: 5) and the payments-based schemes that try to integrate (presumed) efficiency of the market with conservation goals have being introduced (Lele et al., 2010).

These new conservation solutions appear to "*integrate protected areas into the economic and social context locally, nationally and internationally*" and conservation changed focus from the state to the local, integrating new concepts from ecology that acknowledge complexity and gradually adopting neoliberal "*conservation through use"* reasoning (Brown, 2002: 6; Hulme and Murphree, 1999).

The summary of new populist and neo-liberal conservation narratives, their principles and difficulties when implemented in practice are depicted in Table 1 (Brown, 2002). The nuances between these approaches are distinguished on the basis of linkages among biodiversity and livelihood concerns (Salafsky and Wollenberg, 2000) (Table 1, second column). The old 'exclusionary conservation' discourse implies dissociation among biodiversity and livelihood (not shown in the table), while 'new conservation' discourse - as we have explained -, implicitly or explicitly aims to integrate people and biodiversity. Linking indirectly livelihoods and conservation creates economical substitutions to decrease local dependency on natural resources. A different tactic is to provide direct benefits to local people from biodiversity and create incentives for conservation that are driven by the livelihood needs. This is described as direct link between biodiversity and livelihoods (Salafsky and Wollenberg, 2000).

Table 1: New conservation practice (Source: Brown, 2002)

Approach	Assumed Linkage/Premise	Agenda	Principles	Difficulties
Integrated conservation and development projects-ICDPs Started 1980s	Direct and indirect linkage	'People oriented conservation' but still based on protected areas-remain conservation-driven	Need to get people 'involved' in protected areas Assumes conservation and development complementary Conservation as 'community outreach'	Based on existing protected areas
Community based conservation-1990s	Direct linkage	'People based conservation' reflected in populist conservation and development discourses	Participation as a key process Bottom-up and grassroots approaches	Assumes a simplistic homogeneous community Who participates, how? Doesn't address fundamental causes of biodiversity loss
Wildlife utilization and extractive reserves-1990s	Direct linkage	'Use it or lose it' Neo-liberal agendas-making biodiversity pay, plus empowerment	Recognition of community rights Benefit sharing	Requires explicit clarification of property rights Economic feasibility of projects often suspect Difficult to define sustainable offtake or harvesting levels

3. Methodology

To understand PA governance processes and the interplay between local, national and global conservation stakeholders we use an analytical framework depicted in the Figure 1. The framework, building on Vatn's (2011) and Ostrom's (2011) institutional analysis frameworks, is adapted to our specific research objectives. The framework serves to dis-aggregate the presented conflict into a set of analytical elements, guide analysis and finally compare specific country cases. These steps facilitate understanding of the conservation governance complexity and mismatches between different governance levels; help to identify causes of conflicts and to suggest adequate solutions.

Our analysis specifically focuses on conflicts around biodiversity conservation within PAs that are created in the complex interaction of three different levels 1) global or EU conservation players and their (changing) interests, 2) national governments, and finally, 3) local conservation stakeholders with different nature of participation employed in the decision-making process, their livelihood needs and differing levels of the access to the natural resources, embedded in the local historical and institutional context.

In the following paragraphs we explain elements of the proposed framework, define our understanding of each element, and hypothesize links between them.

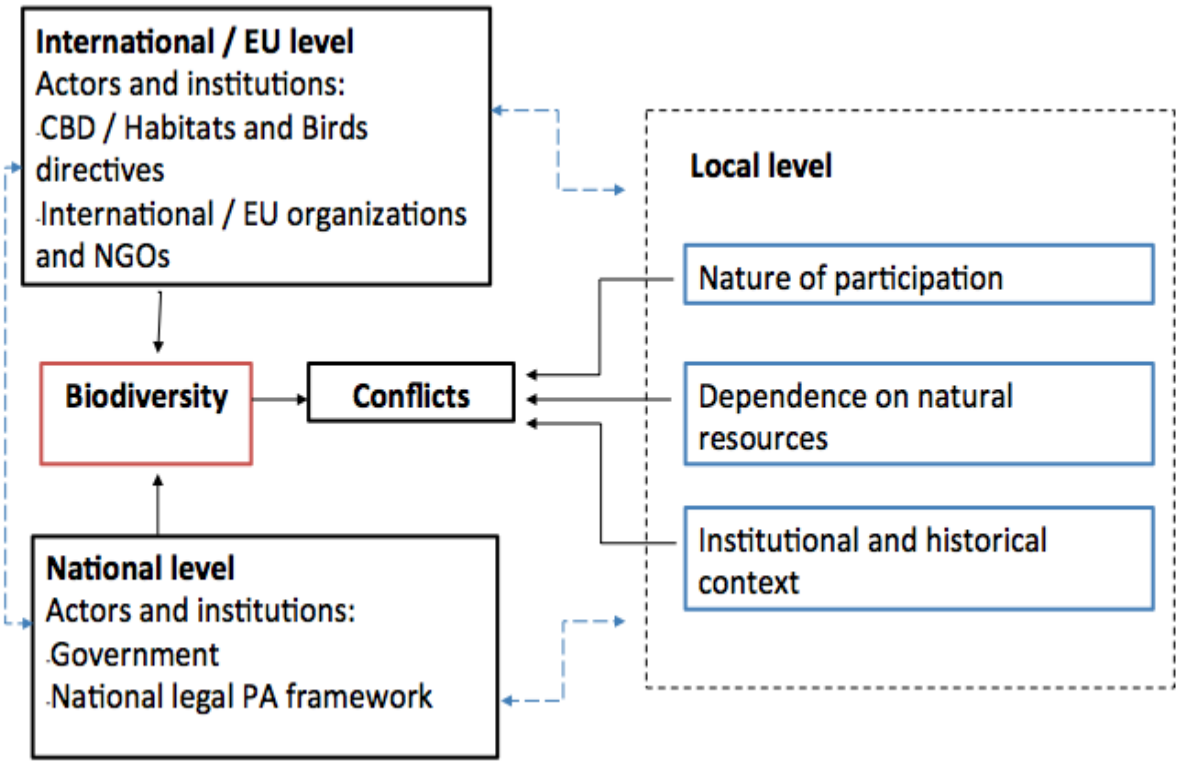

Figure 1: Analytical framework. Full arrows represent direct link between focal issues in our analysis: international, national and local level variables. Dashed arrows depict links and feedback loops among different governance levels that are not of the main concern in the analysis but might still affect the outcomes.

3.1 Conflicts

Conflicts in biodiversity conservation often emerge over the use and preservation of resources (Paavola, 2004). Contrasting beliefs, worldviews and institutional factors play a significant role here (White et al., 2009). Opposition to conservation practices comes from intrusion of conservation "*onto other domains of politics of nature such as local sustenance, productive practices and infrastructural development*" (Haila, 2012: 41). Therefore, conflicts frequently occur between local, rural and indigenous people, their wants and needs from one side, and national and international conservation agenda from another (Hutton et al., 2011). The intensity of a conflict may depend on the conservation narrative and whether local people are perceived as "encroachers" and "poachers" or whether they are seen as partners in conservation governance (see Campbell, 2002). For analytical purposes, we define conflict as the in-acceptance of a conservation initiative, specifically during the establishment and management of PAs. Conflicts can be measured with 1) attitudinal factors, such as trust, level of agreement, emotional evaluations; 2) behavioral factors, like protest, aggressive behavior, intentional kill of certain species, intentional fires; and/or 3) outcome-related indicators that are direct consequence of negative attitudes or unsustainable behaviors, e.g. changes in biodiversity level or institutions (see White et al., 2009).

Based on literature review, we have selected five variables for analyzing biodiversity conflicts related to PAs and our analysis encompasses 3 analytical levels. On the local level, we look at the a) nature of participation, b) livelihood and resource dependence, and c) institutional and historical context. At national and international levels, we analyze main conservation actors and institutions. In the following paragraphs, we describe each variable.

3.2 Nature of local participation

Participation can be defined as provision of more direct opportunities (as compared to representative democracy) for the public or stakeholders to influence the decisions that affect them (after Young, 2002). Participation is usually seen as a panacea solution for resource management problems and it is frequently employed to increase trust, improve legitimacy and thus, solve conflicts between local community and PA authorities. However, there are many different levels and modes of participation, from manipulative and passive participation (such as co-option and consultation) to an interactive or self-mobilizing process that actively engage participant (Pretty, 1994). Therefore, participatory processes not always successfully address power imbalances and underlying conflicts, and may even aggravate them (Brown, 2002).

3.3 Local livelihood and resource dependence

Rural local people depend on natural resources for their livelihoods, especially in the developing countries. Conflicts are frequently emerging when the access to the resources is curtailed and certain forms of land-uses restricted. Thus, the local poor incur majority of costs. This frequently leads to negative attitudes of the local community towards conservation practices (Shibia, 2010), illegal activities, and it ultimately hampers ecological effectiveness

of PAs.

3.4 Local institutional and historical context

PAs are not isolated entities. They are embedded in the local cultural and political context, playing an important role in social and cultural spheres (see Brechin et al., 2002). Moreover, local PAs governance is molded by the historical events; colonial legacy and policies, locally developed and established institutions, rules and cultural values. Factors such as the degree of (de)centralization of decision-making, local governance structure, tenure rights, history of country's conservation and colonial influences are all important for better understanding of PA governance and emerging conflicts, visualizing local facets of a dispute.

3.5 Main international and national actors and institutions

Conservation is directed by a small group of powerful actors that include big international NGOs, donor agencies, consultants (Vermeulen and Sheilas, 2007) and international agreements that are all creating conservation discourses and are guiding conservation policy of the nation-states (see Chapin, 2004 for details on international conservation organizations and funding). Similarly, on the national level, national governments and agencies with the tendency to practice certain modes of conservation, influence local practice of conservation. Hence, international and national institutions are important factors for the conception of the local conflicts within PAs.

To gather data and collect evidence on conservation policies and the associated conflicts in the PAs in India, Madagascar and Estonia, we conducted a review of relevant literature on PAs and current national and international conservation legislation. We used primary empirical studies as our sources for case studies. The Estonian case focuses on the PA establishment within the context of the EU (since the union has played a most significant role in influencing national conservation practices during the last decade), while the Indian and Malagasy case studies are compilations of different cases, and thus having a more "bird-eye" perspective on conservation governance.

4. Case Studies

4.1. Estonia

4.1.1. Introduction

Estonia is a north European country (57–59N, 22–24E) of modest size (45 227 km^2) and flat topography, mostly below 300 m, but exhibiting large natural variability: limestone bedrock in the north, sandstone in the south, marine climate in the west and more continental climate in the east (Tuvi et al., 2011). Estonia belongs to the Boreal region, dominated by coniferous forests and wetlands (European Commission, 2005). Forestry and agriculture are among dominant land uses in Estonia, accounting for around 50% and 32% respectively (Pärt et al., 2010).

Estonia has ratified several international biodiversity conventions, such as the CBD, the Bern or Ramsar convention. However, since Estonia's joining with the European Union (EU) in 2004, the union has also played a significant role in influencing national nature conservation policies and legislation, mostly through an EU-wide network of PAs – Natura 2000. This case looks at PAs governance in Estonia, with a specific focus on the conflicts that occurred when designating the Natura 2000 areas.

4.1.2. Conflicts

Becoming a member of the EU, Estonia took the responsibility to comply with the Birds and Habitats directives – the cornerstones of EU nature protection law. These give basis to the designation and management of an EU-wide network of PAs: the Natura 2000 network.

However, the conflict occurred in the designation phase and shortly after. It was mostly manifested by negative attitudes from several stakeholders towards the decision-making process, and the written claims from stakeholders (mostly landowners) to the state authorities, opposing and protesting against the designations.

Decision-making around designations was accompanied by certain participatory events, mainly in the form of consultations. Yet, the consultation rounds resulted in 858 written claims to the Ministry of Environment (MoE) from landowners, out of which 75.3% submissions proposed to exclude the land from the network; 20.2% requested more information on land use restrictions, and only 4.5% of the landowners proposed their land to be included into the network (Suškevičs, 2006). According to two case studies conducted in North- and South-Estonia (Suškevičs and Külvik, 2007; Suškevičs and Külvik, 2011), after the designations landowners expressed a rather negative attitude towards designation processes because of

- inadequate information provision regarding socio-economic implications of designations (e.g. land use restrictions, compensation and subsidiary mechanisms);
- skepticism towards the scientific nature of inventories;
- their perception that the EU laws had been implemented in a way that did not take into account local conditions;
- consultations were not regarded as genuinely inclusive w.r.t. decision-making process.

4.1.3. Nature of participation

The first draft-list of potential Natura 2000 areas in Estonia was compiled by a set of experts representing the Estonian Ministry of Environment (MoE) and its regional departments, universities and research centres, and conservation NGOs (Suškevičs and Külvik, 2011).

During the designations, several information distribution activities were carried out, and the MoE and its divisions organized two formal consultations in 2004. The campaign included the launching of a national Natura 2000 web page, production of several posters, booklets, and some radio and television broadcasts. Information days, mainly targeted at landowners, were arranged by county environmental departments and PAs administrations. The information campaign and the following consultation periods were accompanied by printed media

coverage on Natura 2000. (ibid.)

The core aim of these consultations was to negotiate the boundaries of the selected areas with the landowners, who were expected to comment on the lists of potential Natura 2000 areas, e.g. to give their opinions on the sufficiency of the lists, to express their consent for designations. In the first official consultation period (spring 2004), landowners were also invited to comment on the proposed and-use restrictions on those areas. During the second consultation round (summer 2004) administrative acts outlining the planned land use conditions and paper-based maps of potential Natura 2000 sites were made publicly available in county environmental departments, municipalities and PAs administrations. In addition, starting from 2002, maps of potential Natura 2000 areas were permanently available on the national Natura 2000 website. All concerned landowners received an official letter with basic information about Natura 2000 and an invitation to comment on the issue. The results of this commenting period were discussed at public meetings. The meetings aimed at introducing the basic information on Natura 2000 to the landowners, answering their questions, and clarifying misunderstandings. (ibid.)

4.1.4. Dependence on natural resources

Compared to other countries in the EU or elsewhere in the world, the total population number and density in Estonia is small: in 2011, 1.3 million people live in Estonia which makes up an average of ca. 30 people per km^2, but this number is often much smaller in rural areas. Only about 4% of the national GDP in Estonia comes from the primary sector (Estonica, 2012). Forestry and agriculture account for 2.2% of the national GDP (ibid.), however, they can be important activities for people in rural areas (Grubbström and Sooväli-Sepping, 2012), although not always people depend on these activities on a subsistence basis.

4.1.5. Local institutions and historical context

As in several other northern European countries, in Estonia, people are allowed to live on PAs and economic activities are not necessarily precluded and are, in fact, often quite widely tolerated (Caddell, 2009). However, certain legally defined land use restrictions apply on PAs and these, together with ownership issues and the availability of compensation mechanisms and subsidies may play a role in people's overall acceptance of PAs. After Estonia regained independence, the land restitution process began (Ahas, 1999). In 2006, the greatest share of land on Natura 2000 areas was state property (50%), 27% was privately owned and 22% was unregistered (Eesti looduse kaitse..., 2007). According to an opinion poll among local people within seven biggest PAs in Estonia (before joining the EU) (Kartau and Kaur, 1999), conflicts most frequently result in from legally set limitations on resource uses, and the most important restrictions creating conflicts were those on the use of private property, especially forests. However, the results also indicated that the management style of a concrete PA matters, i.e. the availability of cooperation opportunities between the administration and local people (ibid.).

The exact nature of land use restrictions on Natura 2000 areas depend on the conservation purposes of each area and also on the conservation regime. There are six PA management categories in Estonia that correspond to the IUCN categories, out of which category VI (among least strict regimes) is the most widespread (Eesti looduse kaitse..., 2007). Yet, in

general, most regulations relating to livelihoods concern restrictions to forest use. There are also different mechanisms whereby the state compensates and / or subsidizes the management of Natura 2000 areas. These mostly concern subsidies for managing semi-natural grasslands and a forest subsidy for private forest owners from the year 2008.

The first Estonian PA was established in 1910 (Sepp et al., 1999), and the century-long history of nature protection has witnessed the Russian Empire, an independent Estonian Republic before the Second World War, 50 years of Soviet occupation, restored independence, and finally membership in the EU (Figure 2) (Tuvi et al., 2011).

During the Soviet period, PAs were governed by forestry administrations (SEI, 2000), and scientists and other experts tended to have a central role in decision-making (Ostergren and Jacques, 2002). With the re-establishment of Estonian independence in 1991, many former "routines" were abandoned and the Soviet style "command-and-control planning" was rapidly abandoned (Stoll-Kleemann and Welp, 2008).

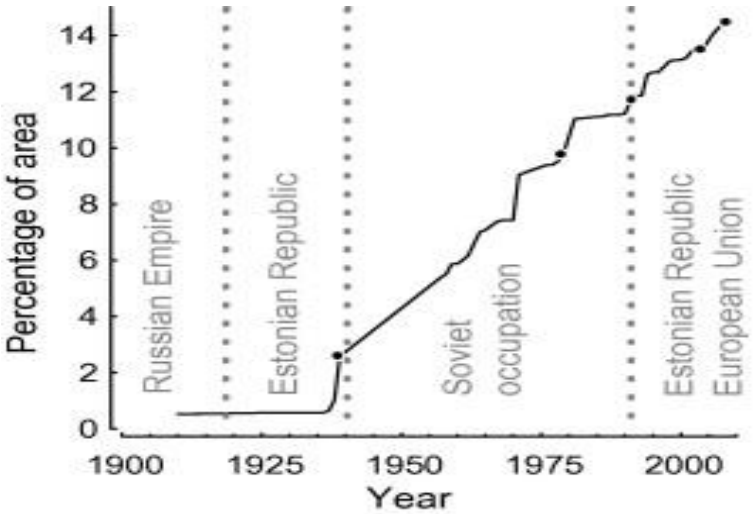

Figure 2: Establishment of PAs in Estonia (percentage of land protected) during the last century (only traditional PAs with separate protection rules are included, together with limited PAs the total coverage is currently 18%). Main political systems are indicated on the graph. Points show five periods that reflect different environmental legislation. (Source: Tuvi et al., 2011)

Indeed, during the last decades, the Estonian environmental decision-making has become more decentralised and provisions for public participation have become part of the national nature conservation legislation. For example, in the case of the West-Estonian Biosphere Reserve a great interest in applying participatory approaches has been shown, and several efforts to involve local people in democratic decision-making have been made (ibid.).

However, the lingering traditions of the former political system have also influenced people's willingness to participate (ibid.), as well as administration's capacities to organise participation. For example, some local people compare the Natura 2000 designations with certain characteristics of decision-making processes during the Soviet era, e.g. land expropriation (Suškevičs and Külvik, 2011). Moreover, the decision-making regarding Natura

2000 designations have been argued to manifest poor administrative capacity: foremost in terms of coordination between decision-making levels, transparency and information flows to primary stakeholders (Drechsler, 2004).

4.1.6. International and national actors and institutions

The period after regaining independence in 1991 has witnessed Estonia's ratification of several international biodiversity agreements, such as the CBD in 1994. The Estonian MoE regularly monitors the progress of implementing the convention, and what concerns *in situ* conservation, the obligations of the convention have been fulfilled rather well (Ministry of the Environment, 2008). Problems have been encountered mainly with achieving the other two aims of CBD – the sustainable use of biodiversity, and the fair and equitable sharing of genetic resources; the main obstacles here relate to insufficient integration of biodiversity issues into ministerial and sectorial policies (due to e.g. insufficient information exchange and communication between sectors) and the concurrent lack of cooperation between different sectors and organizations (ibid.).

However, after Estonia joined the EU in 2004, the creation of the Natura 2000 network of PAs represented the biggest and most ambitious nature conservation project in the recent decades, increasing the coverage of terrestrial PAs from 10.7% (2003) to around 18% currently. As a result, the national nature conservation legislation was amended, in order it would comply with the Habitats and Birds Directives: a new Nature Conservation Act (2004) was launched and the Environmental Impact Assessment and Environmental Management System Act (2005) was amended to both include specific requirements for land use and managing of Natura 2000 areas.

In general, PA management has gone through several reforms during the last decades in Estonia (SEI, 2010). A reform from 2008 brought about the biggest changes in PA governance: by reforming local PA administrations into 8 regional departments of the State Nature Conservation Centre (ibid.). Since 2009, PAs are managed by the Environmental Board (subordinate to the MoE), which has the duty to govern the PAs and carry out practical work.

Concerning Natura 2000 areas, each member state has to report to the European Commission the biodiversity status on the designated areas over a period of 6 years. Estonia's first report (2008) has pointed at certain deficiencies in this regard, e.g. the insufficiency of the proposed lists of habitat types, especially concerning forests (Palo et al., 2008).

4.2. India

4.2.1. Introduction

India, one of the ten biodiversity-rich nations of the world, has 4 global biodiversity hotspots. With its 3.28 million km^2 of land area and 7517 km of coastline, India has a variety of ecosystems: forests, grassland, wetlands, deserts, coastal and marine that support more than 91200 and 45000 recorded species of animals and plants respectively (MoEF, 2008). As on 1st Sept 2011, there are 661 PAs covering around 4.8 % of the total area (MoEF, undated) including 99 national parks, 515 wildlife sanctuaries, 43 conservation reserves and 4 community reserves (by level of strictness/enforcement). The area under the PA network is

continuously expanding with new PAs being notified every year. India has also species-specific conservation programmes within PAs (e.g. for tigers, elephants, rhinos, crocodiles, Asian lions).

However, India has a huge human population living in and around PAs. This case demonstrates how human-wildlife conflicts have emerged in this institutional setting and discusses some reasons for these conflicts.

4.2.2. Conflicts

The PAs (national parks and sanctuaries) in India mainly operate on a core-buffer strategy: core areas are kept free of any kind of human disturbances and forestry operations, and buffer areas are managed as 'multiple use areas' with limited use access for the local community. So every time a national park or sanctuary is declared, local communities lose their traditional rights to use forest resources, face displacement and often loss of life and livelihood, as well as damage to agricultural crops, loss of livestock, spread of diseases, etc. (Gopal, 2012; Gubbi, 2012; Jeyasingh and Davidar, 2003). The exclusive conservation approach imposes enormous social and economic costs that result in growing dissent among local communities against such initiatives, which often have adverse impacts on conservation practice (Johannesen, 2007; Skonhoft, 1998).

Relocation and resettlement of the local communities from the PAs is often seen as a solution for improved management of reserves as well as for the economic development of people who move out. The claims and counterclaims about the effectiveness of this approach have been highly controversial as livelihood of the local communities is intricately linked with natural resources inside PAs. The efforts to relocate people out of protected areas were initiated in 1960s (Rangrajan and Shahabuddin, 2006). However, this strategy can be effective only when it's planned and executed well (Karanth, 2007).

The awareness among local communities about conservation objectives and their perception towards the conservation practices can influence the PA effectiveness significantly. A study by Karanth and Nepal (2011) on the perception of the households living close to five PAs in India and Nepal suggests that the majority (81%) of the respondents have a positive attitude towards the existence and importance of PAs, but perceive negatively (69%) the officials of PAs. The benefits from the PAs include provision on firewood, fodder other forest products and revenue from tourism. A study on local people's attitudes towards wildlife tourism in Sariska Tiger Reserve suggests that around two-thirds of the respondents are positive towards conservation as well as tourism (Sekhar, 2003). The study found that the local people are well aware of the fact that well-conserved PAs would attract more tourists, which in turn would enhance their income. However, there is some discontent about the unequal distribution of tourism benefits, lack of locals' involvement in tourism planning and development. So the strategies with balanced approach towards conservation and livelihood concerns of the local community would enhance the effectiveness of PAs in conservation.

4.2.3. Nature of participation

The exclusionary conservation approach has resulted in widespread discontent among the

local communities and also conflicts, as it is these communities who bear huge social and economic costs associated with conservation. This understanding has induced a shift towards addressing the livelihood concerns of the local communities through more participatory eco-development activities in villages around PAs.
Although the role of local communities in managing forests has been recognized in forest management policies (e.g. through Joint Forest Management initiatives), the same is not the case of PA governance in India. Despite immense cultural, socio-economic and institutional opportunities, participatory management of PAs has not been materialized for various reasons: such as the attitudinal issues of the forest bureaucracy, lack of adequate legal provisions facilitating opportunities for participation of local communities in the management processes (Kothari, 1996). For example, the Wildlife Protection Act 1972 gave the officials discretionary power to involve local communities if it is in the interest of the conservation and; hence, all it needs is to 'creatively interpret' the act, to create space for participatory management (Dey, 1996; Kothari, 1996). However, in practice, corporate interests have been favoured (Kothari, 1996). The same happened with the Biodiversity Conservation Act (2002) and the Forest Right Act (2006): these made provisions for constitution of Biodiversity Management Committees and Community Reserve Management Committees with involvement of local communities which however were never implemented.

Eco-development programmes are examples of initiatives in India that aim at implementing various measures for socio-economic development for the villages in and around PAs. However, their effectiveness remains contentious (Rishi et al., 2008; Mahanty, 2002). These programmes include some elements of participation (like eco-development committees around the villages close to PAs), but these do not intend to genuinely involve local communities into PA management. Rather, their objective is to reduce local communities' dependence on natural resources and also to win locals' hearts for the conservation agenda. The government interventions under eco-development programmes are often not in line with the needs of the local population, which affects their motivation level adversely (Rishi et al., 2008). They lack social, cultural and personal acceptability of the community members. They might be more effective if they would better recognize the livelihood importance of these areas for local communities, along with their emphasis on ecological objectives (Shah, 2007).

4.2.4. Dependence on natural resources

PAs in India are located in human dominated landscapes and the local demand for land and resources are in direct competition with the wildlife conservation (DeFries et al., 2010). The human densities around PAs are estimated to be 300 people per square km (Rodgers et al., 2003). Studies conducted a decade back estimated that more than 5 million people live inside these reserves, and around 147 million people directly depended for their livelihoods on natural resources (Kutty and Kothari, 2001).

The households living in and around these PAs depend on the forests in PAs for fuel-wood, food, fodder, house construction materials and a range of edible and non-edible minor forest produces for their own use as well as for selling them in market. So forest plays a critical for the sustenance of these communities. Such extensive dependence on natural resources is believed to have resulted in loss of biodiversity, fragmentation of wildlife habitats and land use changes (Karanth et al., 2006). However, such adverse impact is often attributed to

several other factors, like historical resource management practices of the government agencies, undermining the traditional knowledge and lifestyles of local people (Kothari, 1996; Gadgil and Guha, 1992; among others). The dependence pattern and its impact also vary for the communities living in and outside the PAs. Nagendra et al. (2006) found that the dependence of the villages located outside the reserves have greater impact on deforestation and habitat fragmentation than the villages located inside the reserves. This is because of the differential use and resource extraction pattern of the communities located in different parts of the PA. The dependence pattern in "*periphery appears to be largely aimed at the extraction of specific species of trees, most likely for their timber value*", while people living inside the PA are using forest resources mainly for their subsistence as they are more isolated and have lower connectivity to local markets (Nagendra et al., 2006: 2907).

4.2.5. Local institutional and historical context

India has a long cultural tradition of protecting the natural resources. The religious traditions emphasized upon the divinity of the nature and it has resulted in conservation without any enforcement. During colonial time, natural resources were protected against local people and many hunting reserves were designated to preserve resources for the colonial needs. Property rights were radically redefined in colonial period, conflicting earlier system of local resource use and control. However, after India's independence in 1947, conservation policy has not changed and the same strict administrative rules for biodiversity conservation continued to apply, along with the exclusions and high social costs of conservation projects and practices (Gadgil and Guha, 1992)

The Wildlife Protection Act 1972 is the first attempt to have a uniform legislation for wildlife conservation in the country. The subsequent amendment of the constitution in 1976 that put forest and wildlife conservation in the 'concurrent list' has empowered the central government to establish and notify PAs in consultation with the states. These changes in legislation have resulted in massive increase in the number and coverage of PAs in the country (see Figure 3). The onus of management of these PAs lies with the state governments and the union government provide policy direction, guidance, planning and funding support for the conservation activities (Gopal, 2012). National parks have intensive conservation approach and placed in the top among the PA hierarchy. The management rights of the Conservation and community reserves and are vested with the local community and the state government can declare such reserves only after consultation with them. However, the fact that there are few officially recognized conservation and community reserves reflects little scope for participation of the local communities in PA management.

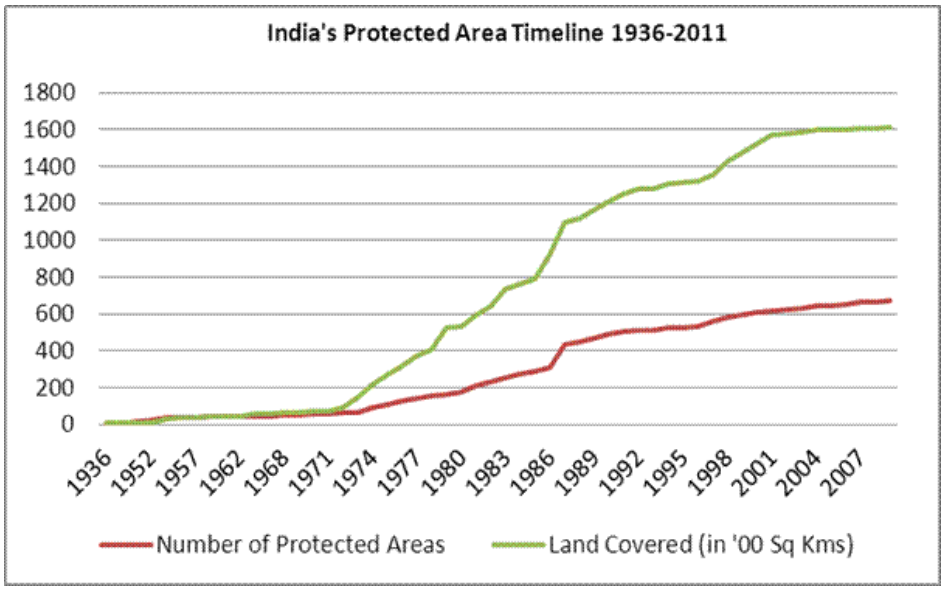

Figure 3: Increase in the number and area under PAs in India from 1936 to 2011. (Source: Author's plotting based on data from MoEF, undated)

4.2.6. International and national institutions and actors

India is signatory to all major multilateral conventions and protocols concerning wildlife and biodiversity conservation, such as the CBD and CITES. It endorsed various resolutions and recommendation of the 1st World Conference on National Parks held in 1962 in Seattle and initiated several measures in that regard (Gopal, 2012). Several national and international conservation NGOs like Bombay Natural History Society, WWF-India, The Wildlife Preservation Society of India, IUCN and WWF have also played a significant role in shaping conservation strategies in the country. However, this influence was significant till early 1970s. However, the political dynamics of 1970s resulted in a shift from this orientation to a government bureaucracy led management approaches with little involvement of scientists-both domestic and international (Lewis, 2005). India's 4th National Report to CBD suggests that the National Policy and Macro level Action Strategy on Biodiversity initiated in 1999 is in pursuance of the CBD and aimed at consolidating existing biodiversity programmes and initiating new measures to fulfill the national commitments for the international convention (MoEF, 2009). The national report also maintains that the country came up with a "*policy framework, legislations and action plans*" which includes Biological Diversity Act 2002, National Wildlife and Action Plan 2002-2016; National Environmental Policy 2006, National Biodiversity Action Plan 2008, and National Action Plan on Climate Change 2008 in recent years to achieve all the three objectives of CBD (ibid: 3).

4.3. Madagascar

4.3.1 Introduction

Two key features in understanding Madagascar's conservation policy are people and biodiversity. Madagascar is the fourth largest island in the world with 587,000 km2 of land area. It is a country of biodiversity hot-spot (Mittermeier et. al, 1998) with high level of species endemism and endangered habitats. There is a wide range of biomes from rain-forest, dry sclerophyllous forest, spiny deserts savannas and woodlands. This island is home for an estimated 250,000 species representing 5% of the whole world fauna and flora (WWF, 2011). More than 86% of all species in Madagascar are not found elsewhere in the world (Hannah et al., 2008). There is however a clear sign indicating that Madagascar's biodiversity is under threat because of human actions. One of them is the continuous loss of species habitat, although annual deforestation rate is lower compared to decade ago (Harper, 2008).

Setting aside land for protection has taken place in Madagascar since 1927. By 1991, PAs size were up to 1.05 million hectares (1.8 % of total surface) when major changes in environmental institution have taken place. As of 2012, Madagascar has 79 terrestrial PAs totaling a little less than 5.4 million hectares. An additional 71 tentative PAs (1.4 Million hectares) are awaiting full designation. Madagascar has ratified as well many international agreements related to biodiversity among which CBD in 1995 and Ramsar in 1998.

Plea for the preservation of this unique biodiversity has been echoed by many international and national environmental organizations and has lead to the current national conservation policies and actions. Different policy prescriptions have occurred since the early 1990 but none of them have successfully managed to stop the degradation of natural resources or the persisting threat to the unique biodiversity. This case on Madagascar describes the compilation of conflicts in the PAs, focusing on the interactions between international and local governance levels.

4.3.2 Conflicts

Dependency on natural resources has created conflicts between PA authorities and local people. These conflicts manifest through a range of behaviors, from simple illegal access to natural resources (e.g. timber collection and bushmeat hunting), anti-PA sentiments, intentional burning, to land encroachment (Gezon, 2007; Kull, 2002b; Golden, 2009).

All PAs belong to the State and are forbidden to settle inside without the necessary approval (Repoblikan'i Madagasikara, 2002; 2005). Additionally, the updated Protected Area Code of 2008 prohibits any deforestation activities, burning, taking plant or animal and many more activities inside PAs. This government act is seen as reinforcing the park managers' authority and would create more conflicts in the future (Corson, 2001). People from Madagascar, however, have a very strong attachment to their land, and any form of control over that land from any outside entity are seen as intrusive to local right (Ferraro, 2002). For many years, weak and remote government made forested land as de-facto open sources with a minimal control. Until now, many PAs are considered as paper parks (Kull, 2002a) and their protection status does not guaranty its conservation (Horning, 2006). Consequently, land acquisition for traditional farming, slash and burn agriculture, still continue, although it is illegal. It is

believed to be the leading cause of deforestation in Madagascar and in direct conflict with PAs protection.

Setting fires to forested land and grassland reoccurs every year all over the country in Madagascar (MODIS data, 2010). These are human induced fires, and their causes are much more complex. Fires can be seen as agricultural management practices for clearing agricultural land and renewing pasture land. They could also have more political or resistance base against external stakeholders or PA resource constraints (Kull, 2002a, 2002b). For decades, fight against fires mantra has pushed for increase of Madagascar's PAs size and area (ibid) although this has not decrease the use of fires.

Conflicts over boundaries between PA and surrounding land of local communities are very common because a large portion of land belonging to the adjacent community is now classified as part of the park. These parcels have seen several decades of settlement before establishing the park, but now classified under restricted agricultural zone or occupation zone by the PA code. PAs and local community boundary overlap was observed for instance in Montaigne d'Ambre - the first officially designated PA in Madagascar. A traditional leader of Ankarana tribe is at the top of hierarchy of decision making in the area. He performs traditional ritual inside old caves within the PA boundary without asking permission, claims ownership of land and agricultural product inside the restricted zone of PA, clearly contesting the park boundary and restrictions (Gezon, 1997). In The south east, loss of large forest cover prompted for more than a decade the redrawn of Ranomafana National Park's boundary. Peters (1999) reported that this park boundary is contested and encroached because a large agricultural fields and old settlement were included inside. This old settlement represents in at least two third of the park in zone so called undisturbed forest or primary forest.

4.3.3 Nature of participation

Earlier PAs were designated as either Strict Nature Reserves (IUCN Category I), Special Reserves (cat IV) or National Parks (cat II). Categories II and IV take up to 64% of the PAs, respectively 27 and 24 in total number for each (Rasoavahiny et. al, 2004). Because of the nature of PAs governance, decisions were taken from top at either the government level or park manager level without any consultation of other actors (e.g. local community). Since 2003, the majority of newly created PAs fall under the categories V, with 10 PAs, and category VI with 8 PAs. This shift over time can be explained by the change in conservation policy to accommodate the call for people-oriented approaches (Borrini-Feyerabend and Dudley, 2005). This governance however does not guarantee full participation of all actors, as we will discuss in the following paragraph.

The first form of community participation in conservation and protection of biodiversity was defined by the GELOSE law in 1998 (Bertrand, 1999). But, following recommendation from IUCN and WCPA in 2005 to use IUCN PA definition and categories local community can be co-manager or full manager of PAs (Borrini-Feyerabend and Dudley, 2005). Back in 1998, communities living near Kirindy in western Madagascar were the first to adhere into the system of COBA manager. Community participation sometimes gathered around specific activities when they live in adjacent to PA, for instance silk project, essential oil project, ginger project, etc. that can generate a enough cash to fund community conservation

(Chaboud, 2007).

Under amended GELOSE law, central government agrees to give local community the management decision over their land and resources after fulfilling posed requirements. Because of the long and complicated process, local communities work with NGOs, international or locals, to obtain management transfer. Many communities managing forests outside of protected areas were forced into protectionism attitude rather than having to make a productive management decision of their resources (Hockley and Andriamarovololona, 2007). Management objectives are usually defined by the NGOs and imposed to include strict forest conservation and forest restoration even if that is not the community's priority (Razafy and Rambeloarisoa, 2007). This attitude is not expected to change under the much more restrictive PA law; it may get worse. This is nothing new since NGOs are injecting their agenda into community conservation practices and this is questioned by many actors, and called as non-voluntary participation of a community in the conservation (Raik and Decker, 2007; Randriarimalala, n.d.).

4.3.4 Dependence on natural resources

Madagascar is of the world's poorest country (World Bank, 2005). Roughly 80% of Madagascar's population lives in rural area where they rely on natural resources such as timber for house construction and fuel wood, bushmeat, roots, honey, and other non-timber forest products for household consumption (Kull, 1998; Golden, 2009; AEO, 2012; Nawrotzki et. al, 2012). Agriculture, forestry, fishing and hunting represent 28% of the total Madagascar's GDP (AEO, 2012). Access to forest and non-forest products cushion the bad crop seasons, as they are reliable food substitution during crop failure (Ferraro, 2002; Casse et al., 2004; Brooks et. al, 2009). Hence, restriction of resource uses to achieve biodiversity conservation would be devastating for a large percentage of the population.

4.3.5 Local institutions and historical context

Past change in policy and institution have clearly shaped PAs outcome in Madagascar (Figure 4). A conference on conservation for sustainable development was organized in Madagascar in 1985, which has lead into the publication of the first National Environmental Action Plan (NEAP) with the help of foreign donor and landing institution (Gezon, 2007; Kull, et al., 2007; Peters, 1998). NEAP defines the general framework under which conservation policy should be implemented. NEAP had three phases that are marked by a shift in policy and actions.

NEAP Phase 1 (1991 – 1997) was looking to establish the new environmental policy while creating new institutions (1) Protected Area Management agency ANGAP (later on changed into Madagascar National Parks - MNP); (2) actions on rural development by ANAE - Environmental Actions Office; (3) education, outreach, training, and research by ONE - National Office Environment. Out of 188 million US dollar fund for NEAP 1 from mainly USAID and World Bank, 80 % were used to establish these new institutions (World Bank, 2005). NEAP 1 ended with heavy critics on lack of attention for local community. Locals were seen as direct threat to natural resources instead of full participant to its management. Still, there were laws enacted to bring 50% of the revenue from park entrance fee to fund local communities' project (Peters, 1998).

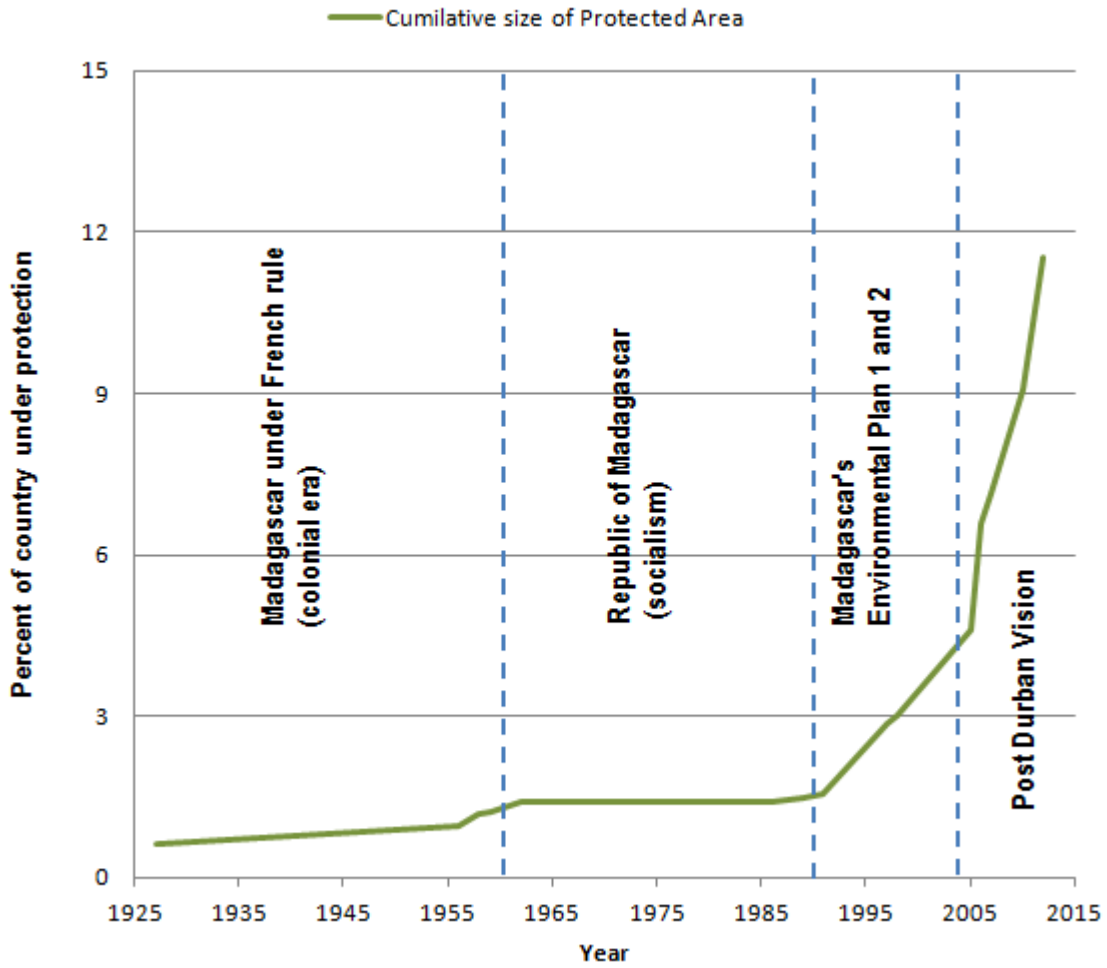

Figure 4: Establishment of PAs in Madagascar as percentage of the country size. Less than 10% of Madagascar is under protections. Shifts in political system or conservation policy are indicated. (Source: Tondrasoa, unpublished 2012)

NEAP Phase 2 (1997 - 2003) started with a focus on local communities' role in natural resources management. While NEAP 1 was seen as crafted by the donors and international institutions, NEAP 2 looked to be a result of more concerted effort from local actors and nationals (Gezon, 2007). GELOSE (Local secured management) legislation was enacted to delegate the management and responsibility of natural resources to local community (commonly called COBA). Massive restructuring took place and resulted into creation of over dozen new institutions, sub components of institution and agencies including the office for the implementation of GELOSE. Many of these institutions were dropped by 2001 to simplify institutional framework. Decentralizing natural resources and biodiversity management were stressed under NEAP 2. However, this was not a policy specific to Madagascar but observed throughout the world especially in sub Saharan Africa (Ibid.).

NEAP Phase 3 started in the second half of 2003. The program was not officially funded until

July of 2004 when cooperation between Madagascar government and International Development Association / Global Environmental Facility (GEF) was signed. Three major changes occurred at the early stage of NEAP 3, which concurred with the world park congress meeting in Durban, South Africa. The first one is the call from international conservation NGOs acting in Madagascar to adopt the IUCN six categories system for PAs (Borrini-Feyerabend and Dudley, 2005). The second policy is the plea of the President of Madagascar to triple the size of PAs, which was at 1.8 million hectares at that time. This policy is famously called Durban Vision. The last one is the introduction of sustainable (or long term) funding for parks and reserves. This latter policy came along with some of the ideas of payment for ecosystem services that has become a trend in the world to better conserve biodiversity using logic of market.

4.3.6. International and national institutions and actors

Primarily, the World Bank has funded Madagascar's environmental policy. Other donors include USAID, International Development Association, the government of Norway, Switzerland, France, GTZ, UNESCO and UNDP, GEF, European Development Fund, African Development Bank, WWF, and Conservation International (Horning, 2006). This list is not exhaustive but represents the most implicated organization in funding. In 2005, Madagascar Foundation for Protected Areas and Biodiversity was created to collect funds, expand PA network and protect biodiversity. This foundation is a key player in achieving the Durban Vision goal to triple Madagascar's PA size.

Management of PAs is overseen by the Ministry of Environment and Forestry. They delegate the task to a Communication Department, which monitor the main executive agency for PAs management (Chabout, 2007). Currently, 51 out of 79 official PAs are managed by MNP, a national association created by the State government mandated to manage network of PAs in Madagascar. Based on the PAs governance structure, local communities, national and international NGOs are considered as the State's collaborators. They have the full capacity to manage PAs. As of 2012, two Parks are managed exclusively by COBA , and another 4 as co-management with the international NGOs (Rebioma data, 2010). National and international NGOs such as WWF, Conservation international, Wildlife Conservation Society, and various State University manage around third of PAs (at total of 27 parks and reserves).

5. Discussion and conclusions

5.1. Divergent manifestations of the conflict

In all three cases conflicts manifested differently which is not surprising as all examples have different backgrounds. In the Estonian case, the Natura 2000 conflict materialized through complaint letters and negative attitudes towards PA administration and indirectly, towards the EU. In India and Madagascar, a conflict was more direct: meaning human-wildlife encounters, depredation and even losses of human lives, displacement and marginalization of local people, resistance and an open protest against PA management authorities. External drivers as well as historical legacy embedded into the conservation administration structures may play a significant role in conflict resolution in both settings. These factors will be

elaborated in more detail in the following paragraphs.

5.2. Double faced nature of participation

The nature of participation can considerably affect the direction of a dispute and exacerbate the conflicts. Both are important: the way in which participation is organized, as well as how stakeholders respond to it.

In the Estonian case, certain opportunities for participation existed, but these were not regarded as legitimate ways to influence the decisions, lowering the potential effectiveness of a participatory process. Interestingly, the historical institutional context may have played a role in the way participation is exercised. The Estonian local stakeholders often compared the EU decision-making practices with those of the past from the Soviet Union: in both occasions, the self-determining opportunities were seen as restricted by the people. Additionally, due to the path-dependency of the decision-making patterns from the Soviet Union, and due to people's low trust in PA managers, officials as well as people had few experiences with participatory decision-making.

In Madagascar some communities were forced into participation defined by the project objectives of different NGOs. Such enforced participation driven by foreign forces might be perceived as a burden to local communities and change their attitudes towards PAs (Macura et al., 2011) and finally, worsen existing conflicts.

Some provisions for public participation have been included in the national legislation and there is a considerable interest in applying participatory approaches in all three cases, but this shift has not fully realized. In the Indian case, there is a shift towards participatory governance, but it is estimated not to be well developed either in the legislation nor in the practice.

Moreover, participation is frequently not proactive enough (only as a consent) or it is not fulfilling initial objectives, having volatile meaning and practice. Agarwal (2001) has written about "*participatory exclusions*" of decentralized institutions in the Indian context (but might be applicable elsewhere in similar socio-economic and ecological settings). She noted how women, but also marginalized people and lower castes, do not have their say in decision-making processes – although they are present at meetings – because of existing power structures, deeply embedded in the society's structure, norms and perceptions. Thus, certain modes of participation can exclude some groups and emphasize existing divides in the society.

Thus, to overcome the above-mentioned problems, voluntary, more genuine and proactive participation with actual empowerment of participants could help to resolve such conflicts, if adapted to the local contexts.

5.3. High dependence on natural resources in the tropics

In India and Madagascar, conflicts tend to concentrate mostly around questions of resource use. In these cases, resource dependence is significant and the “GDP of the poor” is high. Thus, conflicts have mainly emerged because PA management does not take into account people's concerns for livelihood fully. Consequently, these concerns need to be addressed and fully accounted into the PA management plans.

In contrast, Estonia is a low populated country and the dependence of local people on natural resources is not comparable of those in India and Madagascar. However, in the Estonian case, land ownership issues, as well as insufficient information provision on land use restrictions and subsidies may have played a role in the conflict. Thus, for the Estonian case, transparency in the decision-making process, provision of valid information and downward accountability of conservation authorities might be a solution for altering the negative attitudes of local landowners and decreasing the conflict intensity.

5.4. Diverse local institutions and the influential historical context

The cases have indicated that informal institutions, i.e. local historical and cultural traditions, norms and value systems, could also play a role in aggravating or resolving conflicts related to PAs, as these might clash with national and international conservation agendas.

Top-down governance and imposed expert knowledge in a PA management practice can undermine traditional knowledge and lifestyles of local people. This might create new conflicts or worsen existing ones. Moreover, it has been argued that such practices may adversely impact conservation efforts (Kothari, 1996; Gadgil and Guha, 1992). Such conflicts or adverse perception of people might even have bigger impact on biodiversity than the high dependence of local people on natural resources attributed for Indian or Malagasy context. In Estonia too, the scientific inputs in Natura 2000 areas' designations made people skeptical towards the administration, and diminished the legitimacy of the whole process.

Moreover, long tradition of local voluntary nature conservation practices, when clashing with new formal institutions, could exacerbate conflicts. For example, in India the religious traditions resulted in conservation without any enforcement. Yet, colonial influences made a radical property rights re-definition and conflicted with the earlier system of local use and control. Similarly, the case of Madagascar has shown that if the formal institutions do not genuinely respect people’s traditional land use rights, conflicts emerge.

5.5. Influential international institutions and organizations

Influential interplays between international powerful actors and local institutions have been visible in two cases: Estonia and Madagascar. In the Estonian case, the European Union (EU) has played a significant role in national nature conservation policies and legislation in the

recent decade. Big international NGOs had the same role in Madagascar. In contrast, the Indian national institutions with a strict administrative structure do not allow for much international influence. The international actors need to have a more clear idea of the situation in the field in order to foresee potential conflicts at the local level.

* * * *

The overall PA governance style and related discourses seem to be an important determinant of conflicts. PA management strategies at national level do not change in the same pace as international conservation discourses and this also varies across countries. Overall, the misfit between international and national governance levels, different interests and needs are all leading to mismanagement of the local resources and intensifying local conflict.

We show that conservation is much more a social and political problem than an ecological one (Lele et al., 2010), but these processes are well-hidden when focusing only on biodiversity-side while assessing the effectiveness of conservation (Brechin et al., 2002). All cases have demonstrated that the PA coverage has increased throughout time; however we can say that their social effectiveness has decreased as they create costs to local people. This might influence the ecological effectiveness of PAs in the long run, also because of the unsustainable behavior of local actors who do not perceive PA authorities as legitimate management bodies. Consequently, the compliance with conservation institutions is very low.

In order to increase conservation effectiveness we do need the support from local people, otherwise conservation is doomed to failure (Vermeulen and Sheil, 2007). Local people and their needs, culture, institutions as well as attitudes have to be taken into account, as they are the key for effective conservation.

We have also shown how various context-dependent variables may influence conflicts, thus instead of panaceas, i.e. universal prescriptions to problems (Ostrom and Cox, 2010), localized solutions adapted to a particular context are needed. This requires involvement of the local stakeholders that are active and fully empowered to have their voice in the decision-making process.

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Debating the prospects for market-funded REDD

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Abstract
This paper examines the global disagreement over the prospect of a market-based finance mechanism for REDD. We first identify potential institutional arrangements for REDD, and then scrutinise the views of different actors on a market-based vs. a fund-based approach. We unpack the perspectives of key actors from diverse sectors via a textual analysis of reports and UNFCCC statements of 25 actors. Based on this analysis, we illuminate eight broad challenges of implementing a market-based approach that are of common concern to most actors. Key challenges relate to the: 1) generating adequate and sustainable levels of finance; 2) providing suitable and culturally appropriate economic incentives; 3) preventing further socio-economic inequality; 4) clarifying and protecting land rights in the context of instituting carbon rights, especially for local and indigenous peoples; 5) attaining community consent; 6) addressing additionality and leakage; 7) establishing reliable methods for measurement, reporting and verification (MRV); and 8) addressing the potential for corruption. Within these issues areas, there are fundamental differences in the explanations of the source of these challenges, and about how or whether they can be ameliorated in the context of market-based approach to REDD. These divergent views point to a need to pursue more critical discussion about the substantive as well as theoretical basis for disagreements between political actors.

1. Introduction

Multi-coloured lights flash across a viaduct in the historic centre of Rio de Janeiro, pulsating rhythms boom from the speakers while people gather in the streets to socialise and take in the show. Suddenly images of falling trees, burning forests and the havoc wreaked by climate change fill the viaduct, punctuated by the words “We can stop this” and “There is a solution”, followed by a wave of images of exuberant rural communities, healthy forests and charismatic mega-fauna around the world. This is part of a campaign called *Code REDD*, led by corporations to promote private investment in forest conservation through carbon offsetting.

Less than a mile away at the *Cúpula dos Povos* (People’s Summit) the streets are filled with demonstrators representing local and indigenous communities and anti-capitalist activists expounding against the dangers and injustices of REDD—an emerging global forest-carbon trading mechanism—crying “No Rights, No REDD” or simply “No REDD”. On the outskirts of Rio, indigenous people from around the globe gather to sign the *Kari-Oca 2 Declaration*, which asserts, “We reject REDD, REDD+ and other market-based solutions that focus on our forests, to continue the violation of our inherent rights to self-determination and [our] right to our lands, territories, waters, and natural resources, and the Earth’s right to create and sustain life” (IEN, 2012: 3).

These contrasting scenes occurred within the space of a few days during the Rio+20 UN Conference on Sustainable Development in June 2012. They reveal a longstanding disagreement over an emerging approach to addressing climate change via 'forest carbon' trading in particular, and over market-based solutions to global environmental problems in general.

1.1 Problem statement

Rio+20 is the latest in a long line of global meetings where debates over the prospect of a forest carbon market are occurring within and outside of official inter-state structures. The design and implementation of a program for Reducing Emissions from Deforestation and Forest Degradation in Developing countries (REDD) has been under negotiation by parties to the United Nations Framework Convention on Climate Change (UNFCCC) since 2005. What we now know as REDD was born in controversy. The inclusion of forest protection in climate change mitigation agreements was debated and rejected during the initial design and implementation of the Clean Development Mechanism (CDM) offset program and the 1997 Kyoto Protocol. However, new energy has developed around including forest-based mitigation in a future multilateral agreement. A UNFCCC REDD governance structure is likely - although not certain - to entail a market-based mechanism for funding at the international level (Corbera, Estrada & Brown, 2010; Okereke & Dooley, 2010). A polarised debate has emerged over the question of whether a market mechanism is appropriate for funding REDD. A variety of interlocutors in civil society, affected community groups, carbon market actors, intergovernmental organisations and state officials have engaged in the debate over what form REDD should take. The design of finance mechanism is a key point of contention.

The two questions addressed in the paper are as follows: *What are the different institutional options for REDD financing (e.g., from market-based to fund-based)? Which options are favoured by central interlocutors in the REDD debate?* With regard to institutional options, we outlined the mix of market and non-market models for REDD finance have been discussed by experts and policy makers. We illustrate what these options would involve for international and local institutions. We then look at the politics of REDD, focusing on the debate over market-based financing between state, market and civil society actors. There are five discernible positions taken by participants in the debate: 1) those advocating market-based funding for REDD, 2) those supporting a mixture of market and fund-based REDD, 3) those who are agnostic about the form of financing, 4) those opposed to market-based REDD, and 5) those who oppose all forms of REDD. In this paper we seek to map out and clarify the key points of concern related to these positions.

1.2 Objectives and methods

This paper seeks to extend and strengthen the debate over market-based REDD funding. We begin from a position which values disagreement as a generative part of political action (Goodman, 2009; Maddison & Scalmer, 2006). In order to grasp the political economic and

social dynamics at play, we combine institutional analysis with attention to the political debate between state, market and civil society actors.

The first section is an inquiry into what the institutional shape of market-based REDD funding is likely to take (section 2). Drawing on existing literature and analyses of the likely institutional forms for REDD funding, we define what a market-based mechanism is in the context of carbon trading. We also address how a market-based mechanism differs from a fund-based model for generating REDD financing.

Our second task is to unpack the key arguments put forward by proponents and opponents of marketised REDD funding arrangements at the international level, and to look at the spectrum of views on market-based mechanisms in general, and on REDD in particular (section 3). We examine written texts from 25 actors involved in the REDD debate—donor states, host states, inter-governmental organizations, market actors (private investors/companies), research institutes, implementing NGOs, and (advocacy) NGOs—and map these actors across the five positions (Table 1).

We took a purposive sample of actors based on our knowledge of key organizations and states involved in REDD and tried to achieve a balance between those financing and implementing REDD and those who are recipients of financial and technical support. Next, through an Internet search, we identified key documents produced by each organization relevant to the debate on REDD in general, and on REDD financing in particular, including official UNFCCC documents and reports. We read each document carefully to assess each actor's position on market-funded REDD, and to pick out specific key issues and concerns. See Appendix for a full list of actors and sources used for this analysis.

Through our qualitative textual analysis, we identified eight issues of critical importance and concern related to REDD financing and implementation. In section 3.1 we examine points of divergence and convergence on these issues among the different actors. The eight issues are: (1) delivering adequate and sustainable levels of funding; (2) providing suitable and culturally appropriate economic incentives; (3) risks of increased socioeconomic inequality; (4) clarity of land and carbon rights; (5) attaining community consent; (6) reliable measurement, reporting and verification (MRV); (7) additionality and leakage; and (8) the potential for corruption.

2. Potential funding structures for REDD

The future UNFCCC REDD funding mechanism could have broad socio-ecological impacts. These will be determined in large part by the specific institutions that come to underpin REDD. REDD is an incentive-based model of conservation, that introduces payments for the provision of ecosystem services. The model of international financing for REDD programs has not yet been confirmed in international negotiations. A key question being debated is whether finance for REDD programs will be instituted as a market mechanism or through non-market, public finance channels. A strict division between market and fund-based REDD does not fully capture the institutional forms REDD has taken in pilot programs and seems

likely to take when/if it is instituted through the UNFCCC. For this reason, we attempt to clarify what is involved in a market-based versus a fund-based funding mechanism. We then outline a set of possibilities for new and existing institutions to govern REDD finance.

A market-based funding model for REDD involves the generation of finance by the sale of emissions 'credits' to companies, either through the voluntary carbon market, or through compliance markets. In the latter, credits are sold to companies in Annex I countries (i.e. industrialised countries with high levels of greenhouse gas emissions), who will use them to offset part of their emissions to help meet their obligations to reduce polluting activities under an international agreement. A future UN REDD program will either come under the CDM or under a new, similar mechanism for generating offset credits. In both voluntary and compliance markets, REDD project developers would undertake their activities according to the guidelines and methodologies set by relevant institutions.

Two key aspects of any market that need to be instituted via social and political action are property rights and market rules, which in turn shape supply and demand. Where goods or services are complex and abstract, as in the case of REDD, elaborate evaluation and information systems for verifying their quantity, quality and/or authenticity are required. For carbon trading and REDD, the commodities produced are 'carbon credits', or the property rights to equivalent metric tonnes of carbon dioxide (CO_2-e) avoided or reduced as a result of realizing the targeted activity (e.g. avoided deforestation in an area of land at risk). Carbon credits may also be produced by enhancing carbon stores in land ('carbon sinks') created by changing to a more sustainable mode of land use in a project area. The calculation and commensuration of a variety of socio-ecological practices involved in each REDD project into a fungible commodity has been a key point of contention (Lövbrand & Stripple, 2011).

In the context of forest carbon trading, a market-based approach must entail discrete buyers and sellers exchanging 'carbon credits' at a mutually acceptable price and based on the fulfilment of some jointly agreed-upon and readily quantifiable criteria. The transaction could be facilitated by an intergovernmental institution, an international NGO, and/or a private investment firm, and would typically involve a project-based approach. The nature of the incentives that the buyers of carbon credits are given (and the nature of the buyers themselves) is also important in defining whether a transaction is truly market-based. Theoretically the buyers should act out of a motivation to reduce their overall responsibility for carbon emissions. This motivation can stem from either a legal or a moral obligation, corresponding to a *compliance* (or 'regulatory') market or a *voluntary* market, respectively.

A compliance market for REDD would derive from legal obligations that parties sign on to as participants in international, regional or bilateral agreements. Motivation to buy credits in compliance schemes is bound by the demand created in REDD market rules (Isenberg & Potvin, 2010). Market demand for REDD would result from the emissions reduction targets installed by national and international bodies, as well as the specific rules for REDD offsets. These two key design features operate together. In the first instance, if emissions reduction targets are not strict enough, demand for REDD credits will not be produced. Further, market rules need to allow for the sale of REDD credits to compliance buyers.

The voluntary market results from organised efforts to tap into a corporation's or an individual's sense of social or environmental (i.e., moral) responsibility by investing in projects that aim to reduce greenhouse gas emissions. Voluntary markets are more 'market-based' in the free-enterprise sense that they do not derive from legal obligations, but depend on an individual's or a company's free choice to purchase carbon offsets. Having said that, voluntary markets clearly grow in anticipation of compliance markets – the rise of REDD-like offsets in the voluntary market is identified by market analysts as a response to the prospect of a multilateral deal over REDD carbon credits. Further, growth has desisted in the context of waning international commitment to a post-Kyoto treaty (Diaz, Hamilton & Johnson, 2011).

Voluntary carbon markets rely on different systems of trading and verification compared to compliance markets. They can be more flexible in terms of the 'product' they provide, since there are several different independent 'standards' or systems for MRV and the exchange occurs directly between investors and project-level partners. REDD and afforestation/reforestation (A/R) offsets, for instance, comprise a much higher percentage of the voluntary market volume (9% and 10%, respectively) than their counterpart compliance markets (A/R credits make up less than 1%, in part because complex institutional arrangements have deterred market take-up). Conversely, compliance markets are typically more integrated (and some would argue more burdened) with broader national systems for carbon measurement, accounting and reporting. However, in order to be legitimate, voluntary markets must also achieve some degree of government buy-in. Examples of state support for voluntary markets are the offset standards that Australia and the UK have installed.[1]

Whether voluntary or regulatory, carbon markets necessarily entail the creation of new institutions and organizations to manage and facilitate transactions, which creates additional transaction costs (Vatn & Vedeld, 2011). In contrast, fund-based approaches could rely on existing channels for the distribution of funds, like those established under previous development assistance programs. However, new cross-scale institutional structures might also be necessary for a fund-based mechanism, such as the Green Climate Fund under negotiation in the UNFCCC.

A fund-based approach to REDD implies non-market transactions, whereby funds are received from multilateral or bilateral donor organizations, INGOs and/or governments and distributed to communities and landholders who manage forests effectively, according to a set of predetermined criteria. The generation of public funds over time will ultimately be shaped by agreements made about finance and institutional architecture within the UNFCCC, or by the absence of a multilateral agreement. Since the Copenhagen Accord pledge of $30 million in 2010-2012, a heterarchy of bilateral and multilateral donors have administered the funds, mostly as official development assistance (ODA). Contrary to popular understanding, a fund-based mechanism for REDD financing could still involve carbon offsetting, whereby donors contribute funds for REDD projects in a bilateral or multilateral scheme that allows for emissions reductions from those projects to be counted against the donor nation's emissions reduction obligation.

[1] These are the National Carbon Offset Standard and Quality Assurance Scheme (QAS) for offsets in Australia and the UK respectively.

In Figure 1, we outline a set of possibilities for REDD financing based on a purely market-based approach (voluntary market), a purely fund-based model (national budget support), and various hybrid approaches or mixtures of the two.

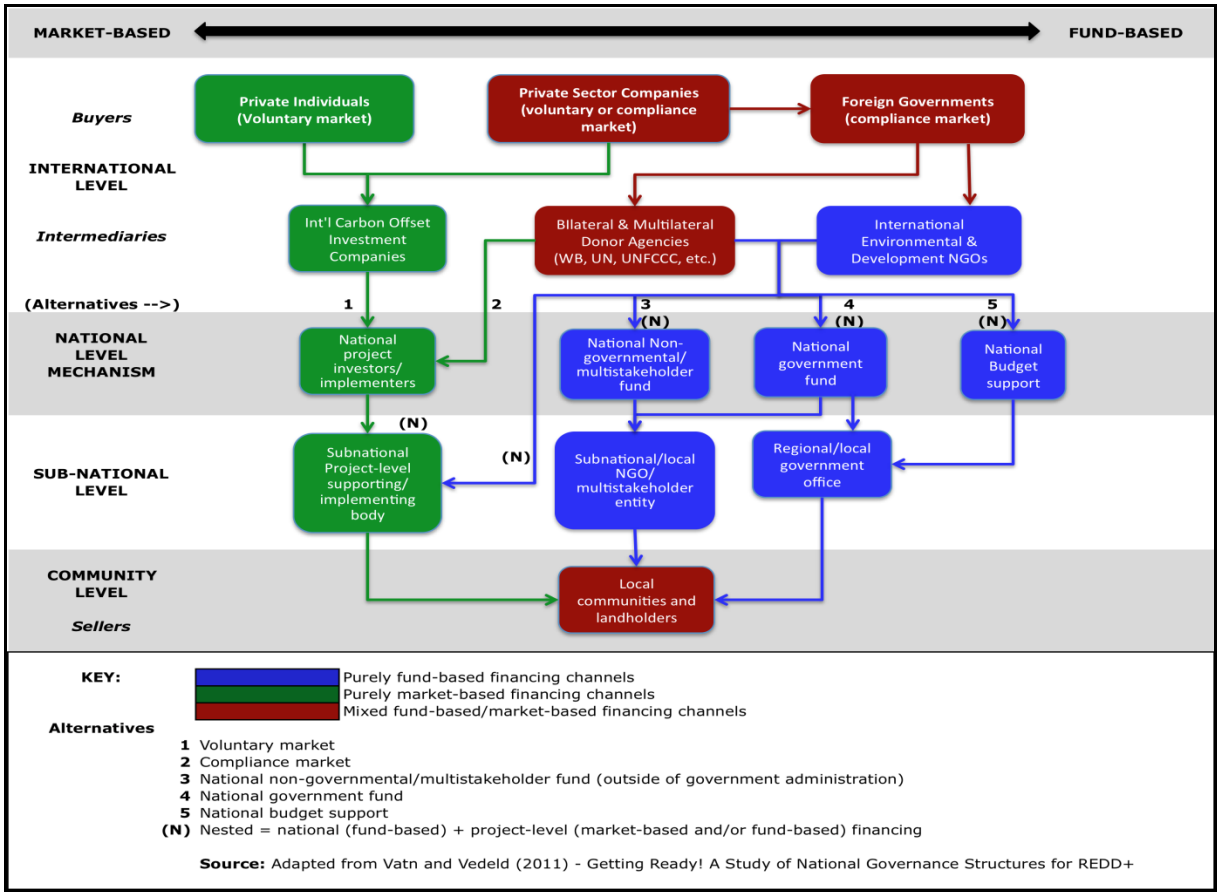

Figure 1. Options for market-based and fund-based institutional structures for REDD finance

Building on the typologies outlined in Vatn and Vedeld (2011)[2] and Streck and Parker (2012)[3] we have identified five distinct institutional structures for funding REDD, indicated

[2] Vatn and Vedeld (2011) outline four basic institutional options for REDD funding: (1) A market/project based architecture; (2) Funds outside existing national administrations; (3) Funds inside national administrations; and (4) Conditional budget support. In addition, they outline four types or modes [rules] of interaction: (1) market exchange; (2) command/state based interaction rules; (3) reciprocity/cooperation based interaction rules; (4) no rules defined.

[3] Streck and Parker identify four potential sources of funding for REDD based on two binary variables: international/national (scale) and public/private (sector). In this schematic, *international public* funding includes readiness support, policy support and results-based payments, while *national public* entails budgetary support and extra-budgetary funds. Fiscal transfers from international to national are also foreseen. Both *international private* and *national private* funding, include payments for forest management, investments addressing drivers of deforestation, carbon project development, and PES investments. Private sector funds are further divided into *direct sources* (voluntary and compliance markets, watershed services payments, biodiversity offsets) and *indirect sources* (green commodities, certified timber); while public sector financing includes both *market-linked sources* (auctioning of allowances, financial transaction tax, carbon taxes and fees) and *non-market sources* (international ODA funds and domestic budgetary allocations) (Streck & Parker, 2012).

by the following numbers in the diagram in Figure 1: 1) voluntary market; 2) compliance market; 3) national independent (non-governmental/multi-stakeholder) fund; 4) national government fund; and 5) national budget support.

These alternative institutional models are presented against a scalar dimension from community to international, and roughly in order of the most market-based option (1) to the most fund-based model (5), and refer to the interface between the international funders (or buyers of carbon credits) and the national level entity, which determines the nature and source of the financing mechanism. The initial source of funds for a voluntary market approach could be either private companies or individuals, while sources of funding for a compliance market or a fund-based model could be private companies and/or governments. Also, funding for the national non-governmental/multi-stakeholder fund, the national government fund and direct national budget support could come from either multilateral/bilateral donors or from international NGOs, though the latter would be less likely to provide direct support to the national budget.

Each of the five abovementioned models has different implications for a number of variables associated with REDD and carbon trading: MRV, property rights, resource access and benefits for communities, responsibility, accountability, corruption, bureaucracy and broader questions of political economic reform (not the least of which concerns the ability to impact drivers of deforestation and forest degradation). We discuss this further below.

3. Mapping actor's positions on REDD

The following is an account of the debate over marketised REDD in terms of the different positions that state, market and civil society actors employ. We identified key actors involved in REDD discussions, which comprise the seven categories or sub-groups listed below. See the Appendix for a full reference list of actors considered.

- Donor nation-states
- Host nation-states
- Intergovernmental organisations
- Market actors
- Research institutes
- Implementing NGOs
- NGOs and social movement collectives

Organisations were chosen on the basis of their sustained participation in REDD debates within the UNFCCC and, in some cases, their participation in implementing REDD governance initiatives already underway. For example the World Bank and UNDP both launched multi-country trial REDD programs in 2007. In the case of civil society, we created a separate category – 'implementing NGOs' - to signal their unique role in the debate and current/future institutional architecture of REDD. Research organisations were also considered as a distinct form of organisation. These groups are less overtly political and often seek a neutral political stance. Forty six texts were identified for content analysis on the basis of their relevance to the

question of REDD funding. This paper reports on the findings from twenty of these texts, analysed in depth.

The texts were mostly reports—in the case of market, research and civil society organisations—and country submissions to the UNFCCC process. Reports were deemed a superior type of textual data since they go into more detail about the current and future governance of REDD. For instance, position statements for media and public consumption are often shorter and provide less detail in terms of the outlook of actors seeking sway in the debate. Many NGO reports were taken from the UNFCCC website (www.unfccc.int) where they had been submitted for consideration by the Ad hoc Working Group on Long-Term Cooperative Action (AWG-LCA), where most inter-state discussions over REDD finance are focused. Most were downloaded directly from the respective organisation's website.

We analysed these statements and reports written by key contributors to the debate over REDD in order to determine what position each organisation had taken on the question of REDD finance.

3.1 Unpacking the debate over REDD

Here we outline problems for REDD that are recognised by most actors on a general level, and discuss them in relation to how actor's positions on market-funding are reflected in and shape their views on these issues. In a broad sense, the issues hold for both market and non-market forms of REDD funding, albeit with differing perspectives on the implications in terms of their distributive effects and risks.

Actors understand and emphasise these risks in different ways that, to a significant degree, trace back to the question of funding structure. Not all actors discuss the issues outlined below in detail in their public statements. However, in general, there seems to be a pattern of recognition—from government, the private sector and civil society—on these issues. For each issue, we signal areas where there are points of departure in terms of the assumptions that inform actor's positioning.

Despite the divergent and sometimes polarised views on REDD funding, nearly all of actors argue that there is need for various social protections to ensure that REDD functions in an efficient, equitable and just manner. However, the definition of what constitutes adequate social protection is contested. Those who oppose REDD marketisation and/or REDD outright do so on the basis of what they argue to be a lack of adequate social protections for some stakeholders. Specific points of agreement and disagreement are explored further in the sub-section 3.1.

Table 1. Matrix of positions on REDD funding

Positions →	*Supports transition to market-dominated REDD*	*Supports mixture of market and fund-based REDD*	*Agnostic about funding mechanism for REDD*	*Against market-based REDD*	*Against all forms of REDD*
Donor states	Norway Australia	USA			
Host states		Brazil Indonesia		Bolivia	
IGOs	OECD/IEA WB-FCPF	UN-REDD			
Market	IETA Code-REDD	Munden Project			
Research institutes		Forests Dialogue	CIFOR IDDRI	CIRAD	
Implementing NGOs		WWF Conservation Int'l	CARE		
NGOs		Accra Caucus	Global Witness	Friends of the Earth RFUK	Carbon Trade Watch No REDD! platform

Note: Official UNFCCC statements and reports from each of these actors were reviewed in detail in order to place them in the respective categories. Citations for these sources can be found in the Appendix.

Delivering adequate and sustainable levels of funding over time is a challenge in both forms of finance. If large, continuous sums of money are to be realised, a multilateral UN agreement installing a compliance REDD regime is needed (whether a market model or not). Many actors in favour of market-based REDD argue that public sources and institutions will not generate sufficient levels of finance.[4] The voluntary carbon market alone will not provide finance on the scale necessary, and it seems doubtful that bilateral pledges will add up without a multilateral accord.[5] Meanwhile there are clearly problems with the international aid regime (see below). How will the market produce the levels of finance needed? Institutions are the answer for even market liberals. Market actors and host nations impress upon states that REDD demands must be created through policy choices, specifically by committing to ambitious targets or creating a quota for REDD credits within market schemes.[6]

For some research institutes and NGOs, only an international fund and national investments to reform agricultural, mining and forestry sectors will contribute to an approach that addresses the structural causes of deforestation.[7] The assumption here is that finance must be available for reforms with unmeasurable (i.e., unquantifiable) impacts - something the market cannot do. Further, the fund-based approach is potentially more flexible than a market-based approach in terms of its purpose, and may allow for financing of multiple non-carbon objectives such as biodiversity and sustainable development.[8] Some actors point to existing multilateral funds under the UNFCCC, such as the Green Climate Fund, as the most efficient means for distributing incentive-based payments for REDD.[9]

A central problem of fund-based REDD, which parallels that of general aid funds, is that the scale of finance needed may not be forthcoming. Multilateral commitments to boost ODA levels have not been met in the past. Only six nations have met the 1970 UN General Assembly resolution 2626 for developed countries to aim to deliver 0.7 per cent of their GDP as ODA. Average OECD levels are 0.4% of GNP (OECD, 2010). The levels of public funding for REDD will be, to a large extent, determined by UNFCCC commitments. Even multilateral organizations admit that, while pledges for climate finance within the UNFCCC negotiations have increased markedly since 2009, they are still well below the estimates of funds needed for climate mitigation and adaptation in developing countries.[10] Moreover, the disbursement of such funds through bilateral and multilateral channels has been a fraction of the money pledged (Schalatek, Bird & Brown, 2010). The EU proposed using some of the revenue generated by the auction of emissions allowances planned for the post-2013 period to combat deforestation. However, this has not materialised, and would still be insufficient to tackle the magnitude of the threat. Some actors propose a more flexible approach to REDD, acknowledging the magnitude of funding needed and imploring for the need to consider all potential sources of funding during both the readiness and implementation phases[11]

Some proponents of marketised REDD argue that price signals stemming from multilateral compliance mechanisms are the best means of attaching adequate value to carbon and thereby

[4] IETA, CMIA, Australia, Indonesia, OECD/IEA, UN-REDD
[5] Australia
[6] IETA
[7] CIRAD, UN-REDD
[8] CIRAD
[9] Brazil, Indonesia
[10] WB-FCPF
[11] USA, Indonesia

creating sufficient incentives to override existing drivers of deforestation.[12] However, there is another set of arguments that have been put forth by actors who are critical of REDD's marketisation. They argue that there are specific risks involved in relying on price signals produced in (flawed) carbon markets, and they point out that the price signal in carbon markets are unreliable, not least of all because it is firmly tied to (waning) political commitment to reduce emissions over time. With the advent of cheap and potentially abundant REDD credits, there is a risk that carbon markets would be flooded, thereby reducing the price of carbon, and increasing the likelihood that destructive practices would remain economically more attractive.[13] Research institutes and market actors argue there is a way to deal with this political economic dynamic of carbon markets. In response, they argue for institutional checks such as quotas for REDD credits that limit the volume that can be purchased.[14]

Providing suitable and culturally appropriate economic incentives to local communities and land managers to protect and conserve forests is a significant challenge. Some actors argue that important institutional building blocks critical the global carbon market are already in place in many countries, such as PES, SFM certification, voluntary carbon markets, participatory/co-management arrangements, and tenure reform.[15] However, most NGO and research institute actors comment on aspects of the political economy of postcolonial states and markets that must be considered, and the socio-cultural context where REDD programs seeks to incentivise change is also a crucial determinant of whether and how payments for ecosystem services regimes elicit changes in behaviour. NGOs and research institutes have argued that the incentive model for REDD ignores the complex political economic, social and cultural context within which forest destruction occurs.[16] For most NGOs, and some states, engaged in collective social struggle for sweeping change, this context is framed in regard to global capitalism, neo-colonialism, patriarchy and a destructive attitude toward nature.[17] With this in view, their position on risks for local and indigenous communities are understood as structural, and therefore not easily resolved through institutional reform.

In an incentive model, most states where REDD is implemented, many of which are 'failed' or 'fragile', are assumed to be an economic agent weighing up alternatives in regard to known opportunity costs. However, the assumption that these states, on the basis of cost-benefit analysis, would move to implement and enforce reforms to reduce deforestation is optimistic at best (Karsenty & Ongolo, 2011). This kind of critique appears to be the main reason behind the decision of some actors to reject all forms of REDD.[18] They argue that participating in efforts to reform (or salvage) the REDD idea amounts to support for a set of institutions and asocial logic that causes deforestation in the first place. Yet other actors claim that a focus on climate mitigation and carbon incentive payments alone risks harming or neglecting a range of other important social and ecological functions provided by forests and call for a more

[12] Norway, Brazil
[13] Friends of the Earth, Carbon Trade Watch, OECD/IEA
[14] Climate Focus.
[15] WB-FCPF
[16] CIRAD, Friends of the Earth, Carbon Trade Watch
[17] Carbon Trade Watch, Friends of the Earth, Accra Caucus, Bolivia
[18] The No REDD! platform members include Carbon Trade Watch, IEN, Global Justice Ecology Project, Rising Tide, WRM, Acción Ecológica, Amazon Watch, Censat Agua Viva, COECOCEIBA-AT (Friends of the Earth Costa Rica), ETC Group, OFRANEH.

holistic approach to forest conservation that embraces mitigation and adaptation functions, and non-market transfers from developed to developing countries.[19]

Risks of increased socioeconomic inequality must be addressed. Issues related to inequality are expressed through concerns about the international and global/local distribution of risks and benefits from REDD. On an international basis, marketised REDD has been criticised since it was first discussed as a way for developed nations to displace their responsibility to reduce emissions to less developed nations where offset programs are hosted.[20] Further, given the incentive theory behind REDD, critics point out that it is effectively a reward scheme for nations with heavy deforestation rates, such as Brazil and Indonesia, while countries with more sustainable forestry practices miss out.[21]

The question of inequality is also discussed in more local terms. For instance, there is a risk of recentralization of forest management under national REDD programs (Phelps, Webb & Agrawal, 2010). The increased land values created through REDD may increase the risk of land-grabbing at the expense of forest-dependent peoples, particularly for those whose land tenure is unclear.[22] Other risks such as the potential loss of land and resource access rights at conservation sites, and the possibility of corruption between resource extractors and government officials mean that vulnerable groups may be further marginalised and impoverished through REDD. In the context of marketisation, these issues are compounded, and a new layer of elites are created who potentially profit before local communities.[23]

In contrast, market-oriented actors assert that introducing strong incentive payments is an effective means of mobilizing efforts and ensuring transparency for the realization of various social and environmental safeguards, including governance and tenure reforms, multi-stakeholder participation, responsible trade policies and investments in sustainable supply chains (though they acknowledge the role of public funds in paying for such safeguards).[24] However, multilateral actors engaged in pilot schemes acknowledge that an incentive-based program like REDD cannot be expected to initially meet all the expectations of all stakeholders, or to quickly address issues of governance and corruption that have long plagued the forestry sector in many countries, but that it should be allowed to develop in spite of such issues.[25]

Clarity of land and carbon rights is an essential element of REDD. The unclear status of land tenure for local and indigenous peoples, particularly in different postcolonial settings, creates complications for defining carbon rights. There is a debate over the appropriate relationship between carbon rights and other forms of rights (human rights, territorial rights, property rights, and the right to Free, Prior, Informed Consent or FPIC). Many actors, including both those critical and supportive of market-based approaches, argue for the need to ensure the integrity of land and resource rights and access in the process of implementing a REDD

[19] Bolivia
[20] Brazil, AOSIS
[21] Friends of the Earth.
[22] Global Witness, Friends of the Earth
[23] Global Witness, Friends of the Earth, No REDD!, Carbon Trade Watch
[24] Norway, UN-REDD
[25] WB-FCPF

regime, both to protect the rights and interests of local and indigenous communities, and as a prerequisite for attracting private investments for REDD[26]

NGOs taking a critical stance state that the commodification of carbon, and the process of ascribing land and resource rights to this end, endangers the social, cultural and economic rights of local and indigenous people.[27]

Attaining community consent and administering project activities may produce conflict regardless of the funding model. There is significant ongoing debate over the potential inclusion of Free Prior and Informed Consent (FPIC), versus the World Bank definition of 'Free Prior and Informed *Consultation'* in negotiations over safeguards policies in the UNFCCC. Further, a broad layer of civil society is calling for the full implementation of the UN Declaration of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), and in accordance with the International Labour Organization's Convention 169 on the Rights of Indigenous and Tribal Peoples (ILO 169).[28]

Reliable measurement, reporting and verification (MRV) of carbon enhancements is a common concern across all funding models.[29] This includes problems of determining baselines against which REDD activities are measured. Land-use, land-use change and forestry (LULUCF) data is incredibly complex, presenting difficulties for producing baselines,[30] and future projections (only needed for market funded REDD). There is often limited, or a complete lack of, the necessary ecological and social data in REDD nations in both the North[31] and the South.[32] There is also an ongoing debate about the most appropriate means of measurement. Parties differ on whether REDD should be measured on the basis of a national historical baseline, or on a project-level basis with projections about the hypothesised future emissions rate at business as usual.

There is a great deal of critical commentary about the problems of measuring forest carbon with the accuracy that is required for REDD to operate. Many talk about the MRV problems in a general sense, and are not concerned with the specific problems associated with measurement limitations and the creation of REDD commodities. One market actor points out that the problems of measurement could make marketised REDD unviable.[33] Some multilateral actors also acknowledge that the existing imprecision and lack of international standardization and capacity in MRV practices makes a global market unachievable for now and serve as a strong barrier to entry for many would-be REDD countries.[34] However most express confidence that the limitations can be addressed.[35]

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[26] Australia/Indonesia, UN-REDD
[27] Friends of the Earth
[28] Accra Caucus.
[29] A stem issue is that there is currently no definition of 'forest' under the UNFCCC at present. Adopting the UN-FAO forest classification would allow natural forests to be distinguished from plantations, but no agreement on this has been reached. There is also contention over whether REDD should be measured in gross or net terms. Deforestation of natural forests could be hidden in a net approach by including plantations in the total figure. It may even hide the resulting emissions from conversion of natural forests through creative accounting. Accra Caucus.
[30] CIRAD
[31] Australia Institute
[32] CIRAD
[33] Munden Project
[34] OECD/IEA, WB-FCPF
[35] IETA, CMIA

Additionality and leakage are problems that have attracted much attention and a variety of views. Additionality is a conundrum in that REDD only provides incentives in contexts where existing activities to protect or restore land are not viable; thus those sites where successful forestry management programs are in place are not eligible.[36] Further, additionality requirements for REDD projects may act as a perverse initial incentive to destroy or degrade forests, since project developers and landowners must prove that the site is at risk in order to be eligible for REDD finance.

The burden of proving that there is no 'leakage' or transfer of deforestation activities to other areas as a result of REDD projects can also be conceptually and technically challenging. The scale of the potential leakage area matters significantly. Leakage to smaller areas surrounding the project site can be relatively easier to assess with effective remote sensing technologies and sample plots, but leakage at larger scales and more remote locations can be difficult to assess. Actors vary in terms of seeing additionality and leakage as unresolvable problems or as ones that can be addressed through rigorous measurement procedures and technologies.

A common argument amongst research institutions[37] and NGOs about the voluntary market is that it is even weaker in terms of MRV for additionality and leakage than compliance markets.

Potential for corruption by both state and non-state actors (foreign and domestic) holds regardless of the funding source. Corruption has been a significant problem in the forestry sector in many countries where REDD is now being implemented. Corruption or collusion is also possible among private actors and the government officials who have to approve their projects. Some NGOs argue that large rewards would promote more corruption and abuse, or instead present an opportunity to reform governance of the forest sector in recipient countries.

The problems of measurement and commensuration of carbon commodities relates to the potential for corruption. NGO critics argue that new forms of corruption not previously seen in the forest sector, such as questionable carbon accounting and manipulation of forest carbon measurements are possible under REDD.[38] There is also potential for more blatant forms of corruption in the form of the false issuing or misrepresentation of carbon credits (i.e., certificates), as occurred in Papua New Guinea during negotiations over forest carbon rights (Leggett & Lovell, in press).[39] Some NGOs present marketisation as a hindrance to resolution of these issues, whilst others see it as a general problem in least developed countries.[40]

4. Conclusion

In this paper we have sought to clarify key arguments and positions in the debate over REDD finance in the hope that we can contribute to public deliberation on an issue of great environmental and social importance. We found significant similarities between interlocutors with regard to identification of eight broad challenges involved in creating a market for REDD: We argue that eight broad challenges of implementing a market-based approach that

[36] CIRAD
[37] CIRAD
[38] Global Witness, CIRAD.
[39] Friends of the Earth, No REDD!
[40] Greenpeace

are of common concern to most actors. Key challenges relate to the: 1) generating adequate and sustainable levels of finance; 2) providing suitable and culturally appropriate economic incentives; 3) preventing further socioeconomic inequality; 4) clarifying and protecting land rights in the context of instituting carbon rights, especially for local and indigenous peoples; 5) attaining community consent; 6) addressing additionality and leakage; 7) establishing reliable methods for measurement, reporting and verification (MRV); and 8) addressing the potential for corruption.

Fundamental differences exist in explanations of the source of these challenges, and in views on how or whether they can be addressed in the context of market-based REDD finance arrangements. The provision of sufficient funding levels is a primary concern among most actors, whether a fund-based or market-based approach (and a compliance or voluntary market) is adopted. However, significant differences emerge regarding who should be responsible for providing funding, and the effectiveness of financial incentives or price signals in influencing the behaviour of buyers and sellers. The appropriateness of the incentive structure is also debated. Some see the proposed system of (perverse) incentives contributing to increased deforestation and/or corruption, and ignoring important social, cultural and ecological functions and concerns. The risk of increased inequality is also a major concern, at global, national and local levels, with some suggesting that REDD may lead to a recentralisation of forest governance, while others feel that, although it poses risks for some, proper institutional arrangements can help ensure that risks are avoided and that costs and benefits are shared equitably.

One of the most common concerns has to do with delineating appropriate carbon rights, the legal basis for benefits from REDD. Some see carbon rights as something that can be instituted as an extension of existing forest governance and land tenure arrangements. Others see tenure and resource access rights as related to more fundamental social rights, which they argue are at risk when carbon rights are instituted.

The consent of local and indigenous communities is another related issue that has grabbed the attention of numerous actors. Advocates of these communities point to experiences in existing REDD pilot programs to demonstrate the problems arising in relation to informed consent. There is a split in civil society in terms of NGOs that call for stronger safeguards based on international legal precedents that require explicit local permission and/or consensus for the implementation of external programs (e.g. FPIC, UNDRIP, ILO 169), and NGOs that argue against REDD altogether. Those arguing for REDD with strong safeguards tend to either be agnostic about the role of market funding or opposed to market-based funding model. There is another set of implementing NGOs, and government actors that see consultation and the establishment of a less demanding form of safeguards as adequate.

Fair and adequate systems for measurement, reporting and verification of carbon stocks and land-use change are seen by some actors as a technical imperative that should receive the full attention of governments and donors actively pursuing REDD, and by others as an insurmountable challenge for its viability. Similarly, ensuring additionality and preventing leakage are viewed, alternatively, as a rigorous technical challenge, or as an insurmountable problem. Finally, most actors see a potential for corruption, regardless of source of financing. This potential is connected with the challenges of reliable measurement and accounting, and with uncertainties in land tenure and payment systems. For those opposed to REDD, marketisation increases opportunity for corruption. Other NGOs argue that there are particular

nations not ready for REDD but imply it is possible with greater state capacity and good institutional design.

These divergent views point to a need to pursue more critical discussion about the substantive as well as theoretical basis for disagreements between political actors. The next stage of research in the vein we have developed should seek to conceptualise both the political worldviews and the substantive evidence underpinning the arguments put forward by key actors.

Reference	Organisation

Appendix (data sources)

Donor states	Australia EU Japan	Norway Switzerland USA	Various submissions to UNFCCC (2008, 2011, 2012b, a)
Host states	Bangladesh et al. Bolivia Brazil China Colombia et al. LDC Group Gambia	Guyana India Indonesia Malaysia Phillipines PNG Tuvalu	Various submissions to UNFCCC (2008, 2011, 2012b, a)
IGOs	Karousakis & Corfee-Morlot (2007) UNEP (2011) Sukhdev et al. (2012) FCPF (2010)		OECD / International Energy Agency United Nations Environment Programme UN-REDD Programme Secretariat World Bank Forest Carbon Partnership Facility
Market	Waage and Hamilton (2011) Nauclér & Enkvist (2009) Munden Project (2011) IETA (2011a, b) CMIA		Forest Trends, The Katoomba Group, Ecosystem Marketplace, and Bio-Logical Capital McKinsey & Co. Munden Project International Emissions Trading Association Climate Markets & Investment Assoc.
Research institutes	Pirard (2008), Alvarado & Wertz-Kanounnikoff (2007) Macintosh (2010) Angelson (2008), Angelsen et al. (2009; 2012) Karsenty (2009, 2012) The Forests Dialogue (2008, 2010)		Institut du Développement Durable et des Relations Internationales (IDDRI) Australia Institute CIFOR CIRAD Yale School of Forestry, The Samdhana Center, World Resources Institute, IUCN and The World Bank
Implementing NGOs	WWF (2012) CARE (2010) TNC (2009) FFI (undated) Harvey et al. (2011)		World Wildlife Fund for Nature CARE The Nature Conservancy Flora & Fauna International Conservation International
NGOs	Cabello & Gilbertson (2010) Benton-Connell (2011) Leach (2008), Dyer et al. (2012) FERN (2011), Dooley et al. (2008) Griffith (2008) Hall (2008, 2010) Accra Caucus (2008, 2010) Greenpeace (2009; 2010; 2011) Global Witness (2011, undated) RRI (2008)		Carbon Trade Watch, and Indigenous Environment Network Democracy Centre Rainforest Foundation UK FERN and others Forest People's Programme Friends of the Earth International Accra Caucus on Forests and Climate Change Greenpeace International Global Witness Rights and Resource Initiative

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Emerging Institutional Structures for implementing REDD+ at national and local level in Tanzania

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Abstract
Tanzania is one of the pioneer countries piloting REDD+ policy in Africa having embarked on this process in 2008. This paper reviews the emerging institutional structures underlining REDD+ at national and local level in Tanzania. Using the theory of institutions focusing on institutional change in the context of REDD+, and further the concept of institutional interplay, we analyse the proposed governance structures and vertical interplay of actors at national and local level. We find that the divergent nature of the financial and technical structures evolving at national and local levels are a threat to successful implementation of REDD+ in Tanzania and suggest that more interaction of actors at both levels is necessary for the process to be legitimate to all actors involved.

1. Introduction

Reducing emissions from Deforestation and forest Degradation, and enhancing forest carbon stocks (REDD+) is recognized as a potentially low cost and win-win option in the international climate change mitigation agenda (Angelsen 2008; Viana et al. 2009).The main objective of the international climate change regimes under REDD initiatives is to encourage countries to undertake measures to minimize existing rates of deforestation and forest degradation through a payment mechanism (IPCC 2007; Karsenty 2008). The REDD initiatives recognizes the role of the forests as an essential component of the global climate system. It also emphasizes the involvement of local communities because of the far-reaching implications it has for their livelihoods.

Tanzania is one of the pioneering REDD countries in Africa that embarked on pilot REDD+ implementation after signing a letter of intent in April 2008 with Norway on a Climate Change Partnership (URT 2009). A National REDD Task Force was formed to initiate strategy development and oversee all REDD+ activities in the country (Dere et al. 2009; URT 2010).

So far, a total of nine projects are being implemented by NGOs, in cooperation with central and local governments, academic institutions and the private sector. The projects were selected and received funding to kick start the REDD+ initiative to generate knowledge and experience on deforestation, carbon accounting and capacity building towards climate change challenges and to test out different REDD mechanisms. Also at national level, a process to establish the REDD+ financing mechanism has been initiated (URT, 2013). However, this financing mechanism remains a challenge in the international REDD design as well as at the national level (Angelsen 2008).

The financing concerns hinge on the sources, amounts available and the means of distribution to recipients (Vatn & Angelsen 2009). A number of options have been proposed that could be

considered part of the governance structure. The notable financing mechanisms under discussion include the market based approach where by a country will be allowed to undertake voluntary actions that reduce their deforestation rate or maintain carbon stocks to generate carbon credits, which they can offer in the carbon market at a pre-determined price per ton of carbon dioxide reduced.

The second option is the non-market approach which relies on contributions to a fund or funds from developed country governments and other sources such as Official Development Assistance (ODA), international financial institutions and the private sector. Each country aspiring to participate in REDD+ implementation is supposed to select the governance structure which matches with national circumstances. Thus the design of the REDD payment system and successful implementation of the REDD+ scheme requires clear governance structures as well as legitimate processes hinged on mutually supportive and cooperative relationships among the actors that will be involved in implementation process (Mwakalobo *et al*. 2011; Schmidt 2009). Yet the institutional structures for implementing REDD+ at both national and local level in Tanzania are still unclear. While the national and local level governance processes are emerging simultaneously, there is need to investigate the governance structure establishment processes in order to understand their implication for REDD+ implementation. To understand the institutional structures emerging at national and local levels, we will attempt to answer three questions.

(i) What are the proposed REDD governance structures at local and national level?
(ii) What are the processes and actors involved in formulating these governance structures? How legitimate was the process?
(iii) How do the proposed governance structures at local and national levels ‘fit’ together?

2. Theoretical framework

The concept of institutionalisation and institutions in particular has evolved over time and is understood differently in the literature. Hence, there is no common understanding of the theory and concept as scholars from the various disciplines define institutions differently depending on the way they interpret human behavior (Vatn 2005). Broadly, the concept can be distinguished as having grounding from the social constructivist and individualist ontologies, and the related theory lies on a continuum between these two extremes.

Scholars with a social constructivist understanding of institutions view human behavior as being formed by the social/cultural world in which individuals are raised (Berger & Luckmann 1967; Veblen 1919). On other hand, the individualists do not see institutions as forming man. Rather, institutions are seen only as external rules that constrain human choices as people transact to maximize their own utility. Since transactions are costly, institutions are developed to reduce transaction costs (North 1990). This is the position of understanding of institutions normally taken by the neoclassical economists.

Scott integrates aspects from both traditions when he describes institutions as cognitive, normative and regulative structures that structure social behavior (Scott 1995). Vatn (2005), while being a social constructivist, builds his definition on Scott’s three dimensions In the context of this paper, we use his definition, i.e., we see institutions as "conventions, norms and formally sanctioned rules of a society. They provide expectations, stability and meaning essential to human existence and coordination. Institutions regularize life, support values and protect and produce interests” (Vatn 2005:60). Institutions define who has access to which

resources and the power to make decisions (Vatn & Angelsen 2009).

In analyzing institutions, the concept of governance is central. Governance is the interaction between actors and institutions. Given the complexity of environmental problems, the functioning of institutions involves a multitude of actors who interact at varying levels to form the institutions which also in turn form them (Lemos & Agrawal 2006). Institutional structures that govern the environment are known as resource or environmental regimes (Vatn 2011; Young 2008). Through institutions, actors aim at establishing and maintaining environment related incentives to influence related actions and ultimately outcomes. Against this background, we now proceed to give a theoretical outlook of the REDD+ governance structure in Tanzania.

2.1 Governance

In this paper, governance itself encompasses the processes that shape social priorities, how human coordination is facilitated and how conflicts are acknowledged and possibly resolved (Vatn 2010). REDD+ governance structures are one of the key issues in the REDD+ governance process (Vatn & Angelsen 2009; Vatn & Vedeld 2011).

As mentioned earlier, the concept of a governance structure denotes a system of institutions and actors (Vatn & Angelsen 2009). The governance structures define the capacities and responsibilities of the different actors involved and their interaction rules (Vatn & Angelsen 2009). They reflect the type of actors involved, their capabilities and competencies as well as structures facilitating the interaction/coordination between the actors (Vatn & Vedeld 2011). The types of actors involved, their capacities, interests and specific roles in actual governance structures influence the outcome. Similarly, the type of interaction between the actors influences the capacity of the overall system (ibid).

Furthermore, actors in REDD+ are categorized as private (e.g. individual households and firms), public (i.e. the state and state bureaucracies and municipal/district councils) and community organizations (village councils, NGOs and other CBO) on the basis of the property rights and thus their interests and the decision making process (Lemos & Agrawal 2006; Vatn & Angelsen 2009; Vatn & Vedeld 2011).

Moreover, REDD+ actors involved in a governance process can be divided in two; economic actors, i.e., actors with access to productive resources; and political actors, i.e., actors with power to influence access and interaction rules (Vatn 2011; Vatn & Vedeld 2011). The pattern of interaction among actors in the REDD+ governance structure will include market exchange, command and reciprocal arrangement where rules are defined or anarchy where no rules are defined (Vatn & Vedeld 2011). However, the pattern of interaction varies from system to system and among actors.

Institutional structures also influence the way actors see issues and what motivates their actions. In addition, motivations vary across institutional systems and the positions people have. Both economic and political actors are concerned and have deep stakes in the REDD+ governance process. Therefore, the overall functioning of the REDD+ governance structure will depend on the procedures established for decision making.

In this respect, the concept of legitimacy matters since institutions will only function well if they are viewed as legitimate by the democratic public (Quack, 2010). Legitimacy is granted through social consent, given formally or informally and thus it is an important source of rule compliance since actors are compelled to obey the institution and norms once they perceive them as being legitimate (Bäckstrand 2006; Quack 2010). This study emphasizes and uses the typology of input/process legitimacy and output legitimacy to assess the governance structures at both central and local levels. Input legitimacy refers to the procedures by which decisions are made, including issues such as representation, distribution of power and resources, accountability and transparency (Bäckstrand 2006). Criteria for evaluation of input legitimacy include representation and participation focusing on how to ensure the inclusiveness of potentially affected stakeholders and the responsiveness of decision-makers (Quack, 2010). This is because building REDD+ institutional governance structures requires democratic processes, transparency, accountability and broad participation of stakeholders (Dyngeland & Ericksson 2011).

Output legitimacy focuses on consequences in that it revolves around effectiveness or 'problem solving capacity' of the governance system (Bäckstrand 2006; Vatn 2011; Quack, 2010). Since the REDD+ governance process in Tanzania is still at early stages of development, this study only focuses on input/process legitimacy.

According to a model by Vatn (2005), six conceptual variables will be important when analyzing the governance structures for REDD+ implementation in Tanzania. These include (i) Attributes of the resource and the infrastructure and technology available for resource utilization; (ii) Institutions governing the policy process, including conventions, norms and formal rules; (iii) Resource regimes that govern access to resources and interaction between actors (iv) Political and economic actors and their preferences; (v) Patterns of interaction derived from choices made by the actors; (6) Outcomes, which can affect future policies and the resource use. However, in the context of this paper, the attributes of resources and infrastructure and technology will not be analyzed, even though we acknowledge that they will have an influence on the functioning of the selected REDD+ governance structure.

2.2 Institutional interaction or interplay

Introduction of the REDD+ regime in Tanzania will involve institutional changes at various scales and levels. Thus implementation of the regime will require the interaction of actors producing complex cross-scale and cross-level dynamics in the governance of the forest resource. We define scale as the spatial, temporal, quantitative or analytical dimensions used to measure and study any phenomenon and levels as the units of analysis located at different points on the scale (Gibson *et al.* 2000). For the purposes of this paper our main focus will be on the jurisdictional and institutional scales although other scales such as the management, knowledge, networks, spatial and temporal scales are documented in the literature (see Cash et al. 2006).

On a jurisdictional scale, analysis revolves around clearly bounded political units like counties, towns, states, or localities with constitutional and statutory instruments creating linkages among the actors. The institutional scale on the other hand has a hierarchy of rules ranging from the basic operating rules and norms to systems of rules for making rules and constitutions (Cash *et al*. 2006).

While the scope of our analysis limits itself to vertical interplay as explained by (Berkes 2002; Young 2002), it is important to note that in the REDD+ regime in Tanzania there will also exist horizontal interplay among institutional structures at the same level of social organization for example at the national, regional or local administrative levels.

According to Young (2006), the cross-level interactions produce one or a mixture of different patterns or types of interplay which could be dominance, separation, merger, negotiated agreement or system change. Such interaction is likely to occur under the Tanzanian REDD+ regime. Ultimately, the pattern of interplay that will be observed will depend on the power relations inherent in these interactions and the transactions costs associated with them (Adger et al. 2005; Ostrom 1990; Peluso 1992; Wade 1994).

At the national level, actors in the REDD+ regime are bound to exercise power over local level actors due to their power from the constitutional mandate, financial and material resources or even scientific knowledge. Lower level actors by virtue of power from traditional ecological knowledge may also exercise their power to resist and block higher level commands. For example although the Tanzanian government has the mandate to oversee the implementation of the REDD+ regime, they may have limited capacity in terms of finance and other resources to enforce these rules and have to rely on the local level forest dwellers. In fact several scholars of common property regimes have in recent years shown that local communities have the capacity to manage their resources provided that they have support from 'above'. (Ostrom 1990; Peluso 1992; Wade 1994). The intellectual contribution of these authors has fostered a shift from more centralized to decentralized forms of environmental governance expressed in varying forms of co-management and community based natural resource management (Lemos & Agrawal 2006). Given the complex interactions that result, it is important how decisions are negotiated and how local users are made to participate in the process (Arce & Long 1992).

Adger et al. (2005) have illustrated that this vertical interplay may have positive outcomes if top level actors exercise their power to promote participation, enhance public debate on the political process and empower local level actors, conditions which are essential for trust building, accountability and legitimacy of the process. If on the other hand, these interactions encourage the more powerful agents to engage in rent seeking behavior or the less powerful agents to resist or bypass the process, potential benefits from the interplay maybe undermined.

Another important aspect is the transaction costs related to the interactions. Transaction costs may include the costs of making contracts, exchanges, information seeking and building trust through repeated interactions. They may also include transaction costs of resource management such as negotiations over shared values, objectives and sustainability (Adger et al. 2005). When the costs of setting up and maintaining these interactions are high, access to information and knowledge maybe skewed towards the more powerful who have the resources to invest in obtaining it. This could result in conflict and weakening of the governance structures.

2.3 Institutional change

REDD+ as a new resource regime implies institutional changes to transform the status quo in the management of forest resources in Tanzania. Hence, understanding the REDD+ regime, requires that we explore theory on institutional change.

Vatn (2005) distinguishes between institutional change as being either designed (i.e deliberately created) or spontaneous[41] (i.e unintentional or not planned). Clearly, REDD+ is in this case a designed institutional change therefore this is what we shall dwell on in the proceeding paragraphs under the theoretical framework.

According to (Vatn 2005), designed institutional change can be driven by efficiency reasons or the need to protect interests and values. In case of the efficiency argument, institutions may be changed to reduce transaction costs or to enable actors to benefit from the potential of technological change. For example the institution of property rights may be necessary to assign certain rights to a resource to some actors and thereby reduce on the costs that would have been incurred in averting conflict over the resource or the costs of protection to exclude it from others. Similarly technological changes such as tree planting and energy efficient cooking stoves require that necessary legislations are in place to encourage adoption by private actors and enable dissemination of knowledge about the technology.

Vatn (*ibid*) further argues that the overarching reason for institutional change is to protect interests and values. The ability of actors to institute changes depends on the power that they have. For example, the state as a power structure may make institutional changes not for efficiency reasons, but to redistribute rights in a way that protects and promotes the interests of some, sometimes to support while at other times at the expense of the wider majority. Similarly, empowering local actors politically, financially or through increasing their knowledge enables them to press for institutional changes (i.e. norms and rules) that better protect their interests.

2.4. Summing up

In the preceding paragraphs we have explored in detail the institutional theory relevant for this paper namely; theory on institutional analysis of environmental or resource regimes, theory on institutional governance, theory on vertical institutional interactions/vertical interplay and the theory on institutional design and change. We have combined these theories to give a diagrammatic illustration of important variables for our analysis as shown in figure 1.

[41] Although changes from local people are often categorized as spontaneous, they may also involve deliberate or intentional action in instances where the people communicate to agree on new norms, conventions or rules.

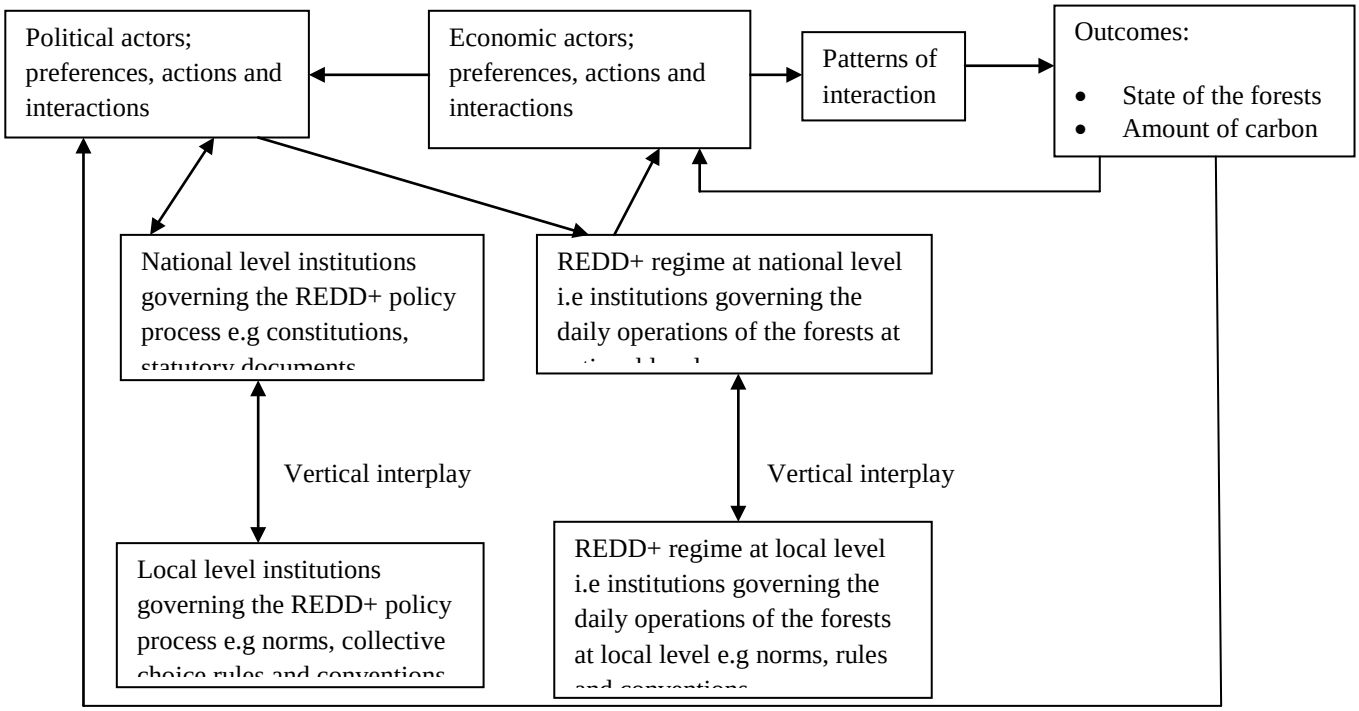

Figure 1: Framework for institutional analysis of the REDD+ resource regime (Source: Drawn from work by Vatn (2011) and Cash *et al.(* 2006).

3. Analysis and discussion

Using the theoretical framework presented in the preceding chapter, we now attempt to answer our research questions in the sections that follow. In this analysis, we will proceed as follows: First we will present and discuss the proposed national governance structures, followed by an examination of the actors and processes that have been involved in formulating them and finally explore the vertical interactions of these structures at the national and local levels. For the analysis of structures at the local level, we will use the REDD+ pilot projects in Kilwa and Kilosa as case studies. These will mainly be discussed in the final section that analyses how the national governance structures '[42]fit' those at local level i.e. the vertical interactions.

3.1 The proposed national REDD+ governance structures

Overall, climate-change related issues in Tanzania are governed through a national climate change strategy which avails the country with opportunities to address adaptation challenges

[42] In this study, the concept of 'fit' is used to mean how well the national and local level structures fit together in the REDD+ regime.

and exploitation of available mitigation opportunities in accordance with national sustainable development priorities (URT, 2012b).

The strategy also stipulates in detail the national institutional arrangement and governance structures for climate change in Tanzania including REDD+.

According to the UNFCCC decision 1/cp 16, each participant and prospecting REDD+ country is free to choose and establish governance structures according the national circumstances (UNFCCC 2010). Most of the national governance structures being proposed by each participating REDD+ country reflect the national position, i.e. whether the country will pursue a market based or fund based approach during the implementation of REDD+ initiative (UNFCCC 2011). According to the National REDD+ strategy, Tanzania has designed a strategic intervention to ensure that the country benefits and makes the right decisions building a fund based system by exploring and analysing existing REDD+ financing options at various levels (URT, 2013). In addition, the strategy promotes activities that lead to financial gains from mechanisms such as the Clean Development Mechanism (CDM), Nationally Appropriate Mitigation Actions (NAMAs), REDD+ and other carbon markets/trading. However, the National REDD+ Strategy identifies the fund based approach as the main source of funding for REDD+ activities.

The Strategy was prepared in a consultative process under the coordination of the national REDD+ Task Force through its Secretariat. Nevertheless, participation of private sectors is not only recognised and encouraged by the National REDD+ strategy, but also by other national development strategies and policies such as National Strategy for Growth and Reduction of Poverty (NSGRP-II), the Tanzania Five Years Development Plan (2011-2016) (URT, 2011), and the National Vision 2025. Therefore, other sources of financing REDD+ activities may be accepted and promoted in implementation of REDD+ initiatives in Tanzania.

Existing governance structures for environmental issues at the National level include several actors. The Director of Environment in the Vice President's Office (VPO) coordinates all issues related to various environment management activities and issues related to articulation and implementation of National Environmental Policy (section c(14-15 of the Environmental Management Act (EMA, 2004) . In addition, the administrative and institutional arrangement for environmental management are vested in the National Environmental advisory committee, the Minister responsible for Environment, the National Environment Management Council, sector ministries, regional secretariat, and local government authorities, of which are charged with different responsibilities. However, according to section 75 (a-e) of the Environmental Management Act all measures on climate change, including adaptation and mitigation strategies at various levels fall under the jurisdiction of the Minister for Environment. At national level, the government has put in place a National Climate Change Steering Committee (NCCSC) and National Climate Change Technical committee (NCCTC) to specifically deal with issues regarding climate change (URT, 2012b; URT, 2013). The NCCSC is a committee of Permanent Secretaries from government ministries which is charged with overseeing and guiding the implementation of climate change activities in the country. These committees provide policy guidance and technical advice to the National Climate Change Focal Point (NCCFP) which ensures coordinated actions and participation within various sectors and institutions (URT, 2012b). In addition, establishment of a National REDD+ Trust Fund and National Carbon Monitoring Centre (NCMC) is currently under way

(URT, 2013). In the proceeding sections, we describe the functions and roles of these existing governance structures in more detail.

3.1.1 National Climate Change Steering Committee (NCCSC)

The role of the NCCSC is to provide policy guidance to the government on all climate change related issues in Tanzania and provide overall guidance and supervision on the implementation of climate change strategy, including the REDD+ initiative (URT, 2012a). This is an inter-ministerial committee which comprises Permanent Secretaries (PS) from sector ministries responsible for Energy, Finance, Industry, Natural Resources and Tourism (Forestry), Justice and Constitutional Affairs, Land, Agriculture, Livestock Development, Foreign Affairs and International Cooperation (URT, 2013). The committee is chaired by VPO. Moreover, the national climate change strategy emphasizes that the implementation of the climate strategy will adhere to the institutional arrangement provided by EMA (URT, 2012b).

3.1.2 The National Climate Change Technical Committee (NCCTC)

The National Climate Change Technical Committee (NCCTC) is made up of Directors of various ministries comprising the NCCSC (URT, 2012b; URT, 2013). Its function is to oversee all technical issues related to the implementation of climate change issues, including the implementation of the National REDD+ Strategy. According to the National Climate change Strategy, NCCTC will provide technical advice to the National Climate Change Focal Point (NCCFP) while the implementation of specific interventions and activities will be done in the respective ministries, department and agencies (MDAs), and local government authorities (LGAs) according to their roles and responsibilities under EMA (URT, 2012b).

3.1.3 The National REDD+ Fund

The National REDD+ Fund is proposed with the prime goal of consolidating and distributing funds to different stakeholders based on their efforts in implementation of REDD+ strategy. The proposed structure will operate at the national level (URT, 2013). The fund will observe issues of transparency and accountability. Also, the performance of past forest revenue management systems, benefit sharing and incentive schemes will be assessed to provide lessons for REDD+. However, according to National Climate Change Strategy resource mobilization, financial accounting and reporting is supposed to be pursuant to the government financial guidelines and systems under the ministry of finance (MOF), even though there is also room for putting in place a special arrangement to enhance the existing mechanism where necessary (URT, 2012b). The National Climate Change strategy considers the National REDD Funds as another source of funds for its implementation (URT, 2012b), but does not clearly point out how the proposed National Climate Change Fund will accommodate the National REDD Fund. Therefore, its establishment or operationalization is likely to face several challenges.

3.1.4 National Carbon Monitoring Centre (NCMC)

At the operational level, a National Carbon Monitoring Centre (NCMC) will provide technical services on measuring, reporting and verification of REDD+ activities across the country. It will be a depository of all data and information concerning REDD, including the National Carbon Account Strategy (NCAS). The center will be semiautonomous, overseen by the ministry responsible for climate change (URT, 2013). Establishment of this center is ongoing. On the other hand, the National Climate Change Strategy does not reflect how both NCMC and NCAS will be linked to its implementation.

3.1.5 National REDD+ Task Force (NRTF) and its Secretariat

The main responsibilities of the NRTF is to guide and coordinate the national REDD+ governance process including preparation of the National REDD+ Strategy and advising the government on issues related to REDD+ initiatives.

The task force exists on interim basis as its responsibilities will be transferred to a permanent structure (technical thematic working groups on REDD+) (URT, 2009). Currently, the task force has 12 members (2 from VPO, 2 from Zanzibar; 1 from the Prime Minister's Office-Regional Administration and Local Governments (PMO RALG), 2 from the Ministry of Natural Resources and Tourism (MNRT), 1 from the Ministry of Energy and Minerals, 1 from the Ministry of Agriculture and Food Security and Cooperatives (MAFC); 1 from the Ministry of Lands and Human Settlements (MLHS); 1 from the Ministry of Justices and Constitutional Affairs and 1 from Civil Society Organisations (CSOs). In undertaking its responsibilities, the Task Force is supported by the National REDD+ Secretariat which is housed at the Institute of Resource Assessment (IRA), University of Dar es Salaam. Furthermore, the task force is assisted by five Technical Working Groups on thematic areas related to Legal, Governance and Safeguards, Financial Mechanisms, REDD+ Fund, MRV, Energy and Agricultural Drivers, which are set to replace task force once it is has accomplished its assignments (URT 2013).

3.1.6 National Climate Change Focal Point (NCCFP)

At the national level, the Vice President's Office- Division of Environment (VPO-DoE) is both the National Climate Change Focal Point (NCCFP) for UNFCCC and the Designated National Authority (DNA) for the Clean Development mechanism under the Kyoto Protocol (URT, 2012). The NCCFP coordinates the overall implementation of the Climate change strategy – including the REDD+ strategy and is thus charged with the preparation of national climate change frameworks, plans, guidelines and other relevant national documents related to climate change (ibid)

3.1.7 Zanzibar Climate Change Focal Point

Since Environment is not a union matter, the Zanzibar Climate Change Focal Point is an entity charged with coordination of climate change issues in Tanzania Zanzibar (URT, 2013)

Finally, according to the National REDD+ Strategy, coordination of REDD+ activities at regional and district levels aligns to the existing local government institutional structure, whereby the Regional Administrative Secretariat in the Prime Minister's Office serves as the link between the Ministries and the District Councils in Tanzania Mainland (URT, 2013). At the district and municipal levels, Environmental Management Committees as established by Environmental Management Act, 2004, are expected to serve as coordinators for REDD+ activities in their respective areas (Figure 2).

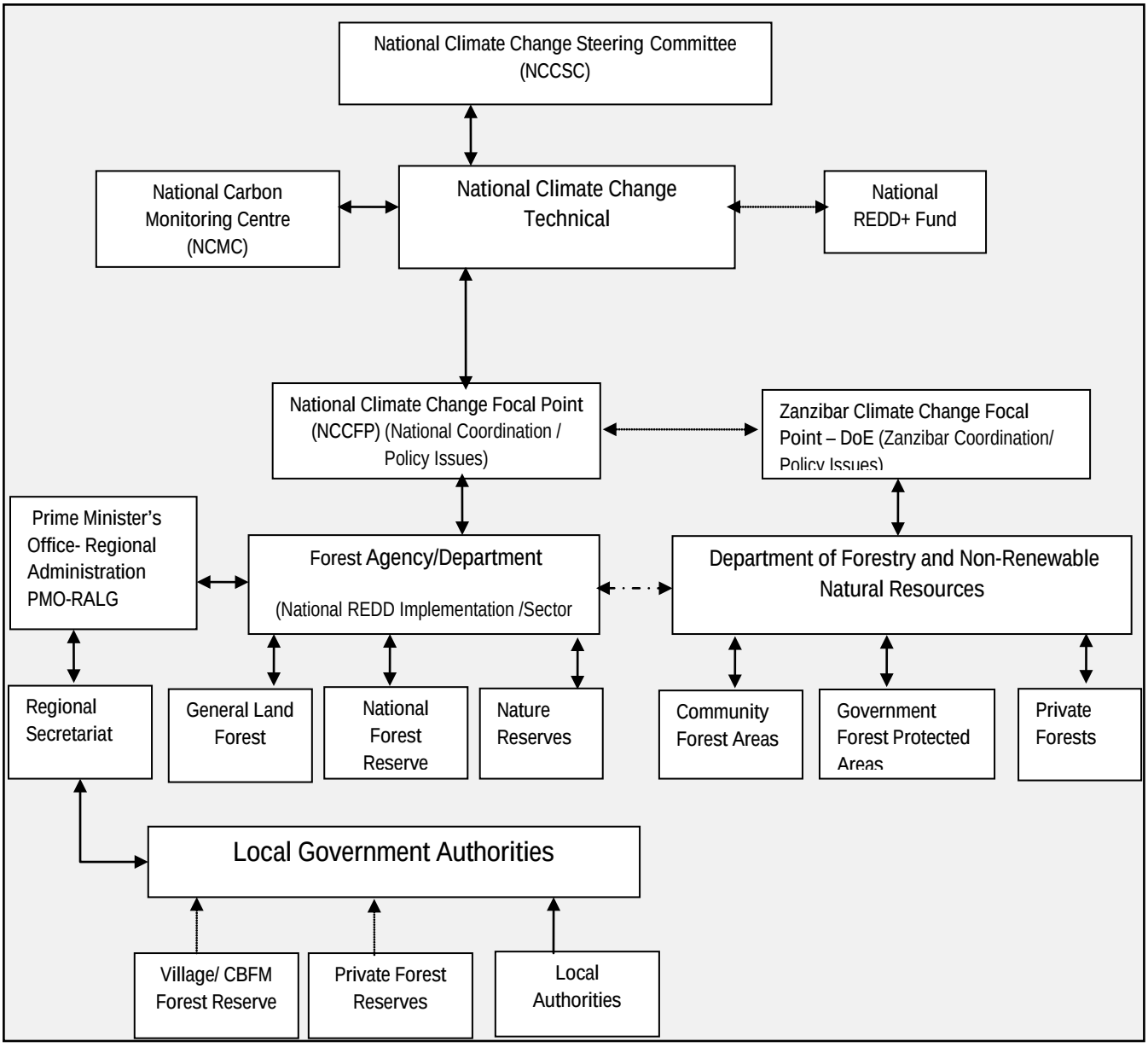

Figure 2: Institutional Structure for REDD+ Implementation and Reporting (Source: URT, 2013).

3.2 Other national level institutions governing the REDD+ policy process

According to the National REDD+ strategy, Tanzania's rationale for considering REDD+ a viable option is the emphasis in REDD+ on the twin goals of sustainable management of forests and woodlands and poverty reduction (URT, 2013). Thus REDD+ has been embedded in an institutional environment that reflects these goals. Although how the actual implementation of its laws and policies remain to be seen, Tanzania has to a large extent tried to integrate REDD+ into its sustainable development agenda. Accordingly, the strategy highlights policies including the National Vision of development 2025 and the National Strategy for Growth and Poverty Reduction (NSGPS) as some of the relevant national level institutional structures governing REDD+. Similarly at the national level, the National

Environmental Policy (1997), the Forest Policy (1998) and the Land Policy (1995) reflect the country's goal of sustainable management of her natural resources (ibid).

3.2.1 National Vision 2025

This policy aims at moving Tanzania from being one of the least developed countries to a middle income country by improving social-economic development, public sector performance and environmental management (URT, 2010b).

3.2.2 National Strategy for Growth and Reduction of Poverty II (NSGPSII)

This is the second National Strategy for Growth and Reduction of Poverty (NSGPSII-) to be implemented between 2010/11 and 2014/15 (URT, 2010b). The strategy is linked to the National vision 2025 aims at poverty reduction through growth and reduction of income poverty, improved quality of life and social wellbeing, good governance and accountability (ibid). Goal 4 of the strategy aims at ensuring food and nutrition security, environmental sustainability and climate change adaptation and mitigation, specifically through facilitating development of market based financing mechanisms for climate change mitigation and adaptation and leveraging private sector resources, increasing carbon sequestration on farms and agro-forests and by providing specific adaptation and mitigation options according to regional conditions (ibid.).

3.2.3 National Environment Policy (1998)

On the whole, this policy aims at encouraging a multi-sectorial approach to environmental management by integrating environmental concerns in sectorial policies, strategies and decisions in a way that meets urgent and short term development needs and long term sustainability benefits (URT, 1997). The policy also promotes sequestration initiatives at various levels.

3.2.4 Forest policy (1998)

This policy aims at enhancing the role of the forests in contributing to Tanzania's sustainable development by meeting it present and future needs. It encourages community and private sector involvement through establishment of Village Land Forest Reserves (VLFRs), individual, group or community forests with full rights of ownership and management and Joint Forest Management with government where communities have user and management rights (URT, 1998). However, this policy is currently under review after which the National Forest program will be amended to accommodate REDD+ issues.

3.2.5 National Land Policy (1995)

This policy aims at providing secure land rights to communities and the private sector to ensure sustainable use of resources (URT, 1995). However, according to this policy all land in Tanzania is held in trust by the president. The commissioner of lands administers the land on behalf of the president. The land tenure types in Tanzania include customary land tenure and 'granted right of occupancy' received from the commissioner of lands as well as public ownership.

Other relevant policies are the Water Policy (2002), the National Energy Policy (2003) and the National Human Settlements Development Policy (2000). Although these policies are not directly related to REDD+, they govern activities that influence implementation of REDD+ objectives and goals.

3.4 Actors in the REDD+ process and their interests

Different institutions foster different interests and values and also influence behavior of actors (Vatn, 2010). Bushley and Katri (2011) urge that the design of the institutional architecture to facilitate implementation of REDD+ is shaped by interactions among diverse actors with varied functions, interests and power at both vertical and horizontal scales. Given that the REDD+ process is nationwide, the actors are many and varied in their roles, responsibilities and interests and as presented in the framework we laid out for analyzing resource regimes, their patterns of their interaction are crucial for the state of the forests in Tanzania. We shall explore later in more detail the interests, roles, responsibilities and patterns of interaction when we analyze the case studies. But for now let us examine in general which actors have been involved and give an outlook of their interests[43] and how these might impact the outcome for the REDD+ regime.

In Tanzania, the political actors involved in the REDD+ process include public sector such as the national task force, government sector ministries and academia, local government authorities as well as members of Parliament and House of Representatives from both Tanzania mainland and Zanzibar. Economic actors include the private businesses, some local forest owners and forest dependent communities, NGOs and international development partners/donor organizations (e.g. UNDP, FAO, UNEP) and the Royal Norwegian Embassy in Tanzania) (URT, 2010; 2011; 2012a; 2013). The national REDD+ Strategy reveals that a range of actors were involved during the REDD+ Strategy consultation process (URT, 2010; 2011; 2012a; 2013). Several zonal workshops and national consultation workshops were undertaken for the purpose of reaching out to a significant number of stakeholders.

According to Forsyth (2009), it is apparent that the actors in REDD+ place different values on REDD+ and on forest and land use in general. Therefore, it is obvious that the types of actors involved, their capacities, interests and specific roles in actual governance structures can influence the outcome (Vatn and Vedeld, 2011). A study on the establishment of the National REDD+ trust fund in Tanzania found that 50% of all stakeholders interviewed were interested in the financial gains from REDD+ implementation. A greater majority of these (60%), were from government departments while 40% were from the private sector and NGOs. 23% of the stakeholders were interested in service provision to forest communities of which 75% were from NGOs and 15% from government agencies. 12% were interested in government revenue from REDD+ and all of these were from government departments (FORCONSULT 2010).

This survey clearly indicates that the actors in REDD+ governance process do not have the same interests even within the same public bodies or CSOs. Moreover preliminary research has shown that there exist overlapping mandates within the existing REDD+ governance structure. For example it is not clear which of the environmental issues are the responsibility of the VPO's department of environment, the MNRT's forest and beekeeping division or the National Environment Management Council (NEMC) as their responsibilities are said to overlap (Dyngeland & Ericksson 2011). These overlapping mandates coupled with the varied interests of the stakeholders pose challenges of conflict and power struggles even within government ministries, departments and agencies.

[43] In analyzing the interests we have used the terms actors and stakeholders interchangeably.

Furthermore the other challenges for REDD+ arising from the interests and motivation of the actors such as corruption, poor accountability and limited law enforcement in the several hierarchies of the governance structure may further complicate this already delicate issue. These problems could easily trickle down to the local forest users resulting in a lack of trust in REDD+ and eventually even more deforestation and degradation.

3.5 The REDD+ governance process

Tanzania initiated its national REDD+ governance process after getting financial support from the government of Norway in 2008 (URT 2009). According to the National REDD+ strategy, the process has generally been participatory in nature involving several stakeholders at various levels and has proceeded in three phases i.e the preliminary analytical phase, the strategic analysis and piloting phase and the consolidation phase (URT 2012). In addition, other REDD+ related governance processes have been taking place in various ministries.

3.5.1 The preliminary analytical phase

This phase involved assessing of the country's potential for REDD+, its capacities for REDD+ implementation and other issues and gaps that needed to be addressed for the successful implementation of the regime. To achieve this, several scoping studies were undertaken to provide information.

Also as part of this phase, in 2009, the process of setting up the national governance structures started with putting in place a national REDD+ framework and national REDD+ task force (URT 2009). The structures were meant to identify goals, give direction to the process and to finally come up with a comprehensive National REDD+ strategy. Furthermore, some ministries such as MNRT have also initiated REDD+ activities in collaboration with other actors.

3.5.2 The strategic analysis and piloting phase

This phase involved consultations with stakeholders at the national, regional, district and local levels. It included consensus building around what an ideal National REDD+ strategy would be to the various actors. In addition, awareness raising workshops were conducted throughout the country at various levels. The phase also included establishment of several REDD+ pilots across the country. The rationale for these pilot projects was to inform the development of the national framework about the implementation of REDD+ at the local level in terms of local governance structures, benefit sharing systems, land tenure issues, baselines for estimating deforestation, participatory methods for monitoring, reporting and verification as well as approaches to address the drivers of deforestation and degradation.

Apart from local communities this phase also involved REDD+ related programmes and projects with actors from the private sector, Civil Society Organisations (CSOs) and the public sector engaged in activities geared to provide experiences as an important input in the development of the Strategy (URT 2012a; URT, 2013).

3.5.3 Consolidation phase

This phase concentrated on sharing the draft strategy with stakeholders to ensure that their concerns are addressed. As the National REDD+ strategy shows, there has been country wide stakeholder consultation in generating the goals and priorities for REDD+ (URT, 2013).

Yet without undermining the fact that there has been stakeholder participation, it is important to note that the level of participation is still insufficient for an effective REDD+ regime as early research on the process shows. Although there was some participation of the local communities and CSOs in the consultations and awareness meetings, the local communities were left out of most of the planning and decision making process. Such weak participation of local communities may result in systems that do not protect the interests all actors throughout the process. This means that for the most part, the power of the 'real forest keepers' to push for their interests has been limited and thus these interests are likely to be excluded from the REDD+ regime. In addition although several government departments have a stake in REDD+ (agriculture, energy, finance etc), the key government players have been the department of environment in the Vice President's Office and the Forest and Beekeeping Division in the ministry of natural resources and Tourism (Dyngeland & Ericksson 2011).

As repeated interactions among actors build awareness, trust and legitimacy of the REDD+ regime, and ultimately reduce conflict, the low level of stakeholder participation in the Tanzania REDD+ process is still a real issue of concern which needs to be addressed if the regime is to succeed. The recent expansion of the national task force and operationalization of the thematic working group which has expanded participation of other stakeholders is an important step in this direction (TNRF 2012).

3.6 Patterns of vertical interplay between actors

As stated before, we now narrow the focus of our analysis to concentrate on two pilot projects as case studies to discuss in more detail the interests, roles and responsibilities of actors and patterns of vertical interplay between the local level actors and their counter parts at national level.

These projects are being implemented in Kilosa and Kilwa districts in Morogoro and Lindi regions, and are being implemented by two NGOs; the Tanzania Forest Conservation Group (TFCG) and the Mpingo Conservation and Development Initiative (MCDI), respectively. Our rationale for the focus of our analysis on these two projects is threefold. First, the approaches of implementation for the two projects are similar – i.e. both projects are implementing REDD+ using PFM. Secondly, both projects aim to sell carbon credits to the international markets, and third both projects seem to have reached an advanced stage of implementation of their activities as compared to other projects which were approved at the same time by the task force (URT 2010).

At the national level, our analysis of the financial governance structures reveals that, the government of Tanzania is targeting both the market and fund based REDD+ payments, but with an emphasis on the latter. The proposal for establishment of a national REDD+ Trust fund by the government reflects its inclination towards a fund based approach for the implementation of REDD+. It is indicated in the national REDD+ strategy 2012 that a National REDD+ Fund will be established to consolidate and distribute funds to the various stakeholders in Tanzania. Thus it is expected that all REDD+ money flowing to Tanzania will have to go through the proposed fund before it reaches any beneficiary of REDD+ activities in Tanzania. However as noted in section 3.1, other sources of money are also encouraged in the National REDD+ strategy. Furthermore, the fund will observe issues of

transparency and accountability and will learn from existing benefit sharing and incentive schemes so as to adopt a beneficial mechanism of operation (URT, 2012b).

On the other hand, some local level governance structures emerging through the NGOs seem to be detached from what has been proposed at national level. That is: the processes at local level seem to focus more on the market based approach in piloting REDD+ initiatives.
Specifically, the two projects being assessed in our case study reflect that the pilot projects envisage selling carbon credits directly to the international market – i.e. the market based approach. The two projects propose establishment of their own local/project level carbon credit marketing strategy, which does not necessarily link with the national REDD+ trust fund proposed at the national level.

For example in Kilosa, TFCG proposes to establish a carbon cooperative through another NGO called MJUMITA, which will be an entity responsible for collection and disbursement of funds to the REDD+ beneficiaries at local level (TFCG 2009).

According to TFCG (2008), MJUMITA will design, develop and establish a carbon marketing and sales cooperative through its national secretariat in order to reduce transaction costs for individual communities wishing to market carbon from their own particular area of forest. This community carbon cooperative by MJUMITA is geared towards channelling the revenue from the international fund/market directly to the community. In examining the TCFG proposal we noted that some partnerships and sources of external support have already been identified (e.g. Forest Trends/Katoomba Group, CARE). However, it is not well stated how the TFCG through MJUMITA is prepared to receive funds from the national REDD+ Trust fund at national level. Therefore while the government approach of REDD+ implementation and financing seem to be a nation-wide, TFCG approach in Kilosa is working towards sub-national/project based approach such that each project can be awarded of REDD+ benefits directly.

Similarly in Kilwa, the Mpingo Community Development Initiative (MCDI) is piloting a project called "Combining REDD, PFM and Forest Stewardship Certification (FSC) in South-Eastern Tanzania". In this project, MCDI is proposing establishment of a group certificate structure to be adopted for the carbon offset market and carbon-based products open to widest possible variety of community-managed forests in the project area. Our analysis shows that MCDI has already entered into contract with a third party called 'Carbon Tanzania', another non-governmental organization based in Arusha Tanzania to sell the carbon credits that will be produced from the Kilwa project. According to the contract, Carbon Tanzania will act as a broker of carbon credits from the project. Thus, Carbon Tanzania will connect local offset producers to global markets for offsets generated from local forest conservation and management projects (MCDI 2009). In view of this arrangement, we argue that the proposed governance structure by the Kilwa project similar to that in Kilosa is contrary to the aim of the national policy emphasizing the REDD+ Trust fund and the Carbon Monitoring Center currently being established by the government.

Nevertheless, the Kilwa project proposed governance structure shows a small difference from the TFCG project approach as it recognizes what is happening at national level, and points out that its structures will be aligned to the national standards to be adopted accordingly as the process evolves. However, such flexibility embedded in the MCDI project design has been wiped out since MCDI has already entered into contract with Carbon Tanzania which does

not have such provisions in its mission and objectives. Carbon Tanzania seemingly aiming at using market approaches does not recognize or reflect the existence of any national governance process including National REDD+ trust fund and NCMC. This is reflected in its mission statement which states as follows: "*to effectively produce and sell carbon offsets that fulfil the above criteria, Carbon Tanzania has developed three basic models. Project development, partnerships and brokerage opportunities*" (MCDI 2009: page). Moreover, the kind of partnership and brokerage opportunities being referred to in the proposal by Carbon Tanzania is also not recognized in the concept of the National REDD+ Trust fund and NCMC.

However, more recently in a bid to legitimize their proposals, the two NGOs influenced other piloting NGOs to push together for the inclusion of their proposed direct approach into the national REDD+ strategy (TNRF 2012). This may partly explain why the national REDD+ strategy (2013) also opens up for other source of funding such as market financing.

3.7 Legitimacy and interaction of actors

The legitimacy of processes and actors in the REDD+ process at both local and national levels is of great importance for the establishment of successful REDD+ governance structures. Regarding our cases we analyse the legitimacy of the contracts and proposed governance structures at national and local levels.

Drawing on the UNFCCC decision and the national policies and legislation in Tanzania, we argue that the proposal by the government of Tanzania to establish national REDD+ trust fund and NCMC are 'formally' legitimate processes. This is because COP 16 urges each Contracting Party to develop governance structures, including selection of which approaches to be adopted according to national circumstances. In addition, EMA (2004) mandates the ministry responsible for environment and climate change to formulate appropriate legislations to address environmental issues.

The process of establishing national REDD+ governance structures was approved and started by the government of Tanzania after signing a letter of intent with the government of Royal Kingdom of Norway. The national process brought on board political, public, private and nongovernmental actors. In addition, a number of stakeholder consultations were undertaken during the preparation of the national REDD+ strategy. Nevertheless, given the low level of participation in the strategy development process especially by local level actors, and some of the relevant government departments, the legitimacy of the process could be undermined. Expanding stakeholder participation like has been done with the recent expansion of the national task force and operationalization of the thematic working group seems key to a more legitimate process.

Non-governmental actors were given specific roles to pilot projects to support the national governance process. However, our analysis reveals that as the process evolves, the emerging local REDD+ governance processes through the NGOs seem to detach themselves from the national governance process. This discrepancy may be partly explained by the fact that from the onset of the support for the REDD+ initiative in Tanzania, the Norwegian Ministry of Foreign Affairs provided funds to NGOs to begin implementing pilots before any national structure was in place. The NGOs therefore began establishing local level structures independently of the national process. On the other hand, the detachment could be a deliberate

move by the NGOs to maintain their autonomy in the REDD+ process and the subsequent implementation. Even though piloting NGOs were approved by the task force, the diverging nature of the local governance structures is likely to trigger legitimacy concerns if local level structures are not acceptable to all actors or reflected in the national governance structures.

For example, the partnership between MCDI and Carbon Tanzania as well that of TFCG and the proposed MJUMITA carbon cooperative arrangement is not reflected in the proposed national governance structures. Therefore, the detachment from the national governance process by the local governance processes may lead to legitimacy issues from other stakeholders. For instance, it is not clear whether the local community, on whose behalf MCDI and TFCG seem to act, will consent to the contract and financial arrangement in the project, particularly when the flow of REDD+ funds to the project beneficiaries starts.

Even though MCDI indicates that they consulted the district council during the development of the project, there is no clear evidence whether the district government, the village government and the local communities implementing the project in Kilwa knowingly endorsed the partnership between MCDI and Carbon Tanzania as the broker. Similarly, despite the fact that MJUMITA is reported to have been working with local communities for a long time through PFM initiatives, the carbon cooperative under REDD+ is a new concept to both MJUMITA and the local communities. Thus, as much as it is indicated that the cooperative will provide a cost-effective, transparent and equitable forum for benefits from the carbon market to flow to communities, we argue that such mere statements may not be a guarantee for a transparent and accountable procedure in the full implementation phase. It is stated in the MJUMITA proposal that, “a small share of the carbon sales” will be retained by the MJUMITA secretariat with which to support the organisation to continue to serve its network (TFCG, 2009:14). However, the percentage to be retained is not explicitly stated which may give the secretariat some flexibility and room to manoeuvre the retention.

It seems that TFCG and MJUMITA have assumed linearity of the smooth and cordial relationship that existed in piloting PFM. However under REDD+, the incentives of all actors might change since REDD+ has been perceived by many actors to provide additional financial flows and this can be a source of conflicts. We argue that while TCFG and MJUMITA are legitimate actors under PFM, their engagement in REDD+ has transformed them into economic actors in the process and this renders them interested parties (with economic interests) in the piloting activities. Also regarding the proposed financial arrangement, our analysis did not find any endorsement from the local community allowing MJUMITA to act on their behalf. Thus the local community may eventually perceive them as illegitimate actors making the financial arrangement adopted in TFCG project design that mandates MJUMITA as national secretariat illegitimate to the local communities at a later stage.

Turning to the technical governance structures, as already mentioned, at national level the government of Tanzania is proposing establishment of National Carbon Monitoring Centre (NCMC) and it is anticipated that NCMC will provide technical services on measuring, reporting and verification of REDD+ activities across the country. According to the second draft of the National REDD+ Strategy, individual projects need to report on the carbon data to the national REDD+ scheme for funding (URT 2012a). In contrast, some local projects are aiming at using their own assessment and reporting mechanism in the implementation of REDD+ in Tanzania. For example, TFCG is proposing a self-financing carbon co-operative

and plans to use Voluntary Carbon Standards (VCS) and the Climate, Community and Biodiversity Alliance (CCBA) standards as the means for benchmarking and verifying adherence to emission reduction standards, as well as social and wider environmental considerations. On the other hand, we find that the MCDI approach may more easily fit in the proposed national MRV system since it recognises existence and development of such structures at national level.

From the analysis of the project documents, both TFCG and MJUMITA in Kilosa and MCDI and Carbon Tanzania have positioned themselves as economic actors. This is due to the fact they will be responsible for selling carbon to the international market in the pretext of helping the local communities in selling carbon.

Seemingly, both Kilosa and Kilwa REDD+ projects are likely to face problems related to process legitimacy as they seem to disconnect themselves from what is being proposed at the national level. Although it is possible for the National REDD+ Trust fund and NCMC to fit in both the fund based approach and market based approach, using the market based approach – as the NGOs are trying to do – may lead into conflict after the payments start. This is so because the legitimacy of this arrangement would be questionable not only by public actors as it is not accommodated in the national REDD+ strategy, but also by local communities or participants of the projects who might have been excluded from the process of choosing the market approach.

It is clear from our analysis that local level actors are forming governance structures that try to bypass those proposed at the national level. This may point to a general lack of trust of the local level actors in the process at the national level, lack of consensus building about what the operation of REDD+ should be or conflicting interests at these levels. Therefore in their pattern of interactions, the local level actors are using their power as the actual custodians of the forests to separate themselves as much as possible from the process at national level.

Another reason why some projects seem to disconnect themselves from what is being proposed at national level are their experiences of project failure and bureaucracy of government with regard to use and disbursement of funds from the national to local levels. Experience has shown that most conflicts related to PFM emerged as the result of failure to agree on benefit sharing arrangement and the slow approval process by the central government (TFCG 2009).

While we tend to agree with TFCG that many cooperatives failed because of government, avoiding the national governance structures in the implementation of REDD+ may not work due to the interconnection between REDD+ implementation, the need to avoid leakage and reporting requirement in the context of implementation of UNFCCC. And as much as channelling of revenue from the market may seem appealing to the NGOs, this may bring complications particularly with the issues of addressing leakage and carbon accounting. Vatn and Vedeld (2011) argue that a national level approach will help to reduce leakage and reduce land grabbing.

Our analysis shows that activities and processes at local and national levels are delinked in terms of the source of funds and how the accounting will be undertaken in the full implementation phase. This may lead to frustration of some actors particularly at local level where some local communities seem to be enthusiastic and eagerly waiting to benefit from REDD+. Such

frustration can lead to further deforestation and forest degradation if the local people who are engaged in the process lose hope in REDD+ implementation. In order for the approaches being proposed at project level to be able to achieve their goal, they will need to be aligned with what is being proposed at national level to avoid any future conflict with the proposals and decisions made at national level. Therefore, the national REDD+ Task force should rectify the situation by ensuring that there is sufficient interaction of stakeholders to ensure consistence between what is happening at local and national levels.

4. Conclusion

The proposed REDD+ governance structures at national and local levels reflect both the financial and technical governance structures which are important for implementation of REDD+ activities in any REDD+ prospecting country.

The current governance structure setting process on-going in Tanzania involve public actors, private actors, academia, civil society and individual stakeholders whose interests can be broadly classified as economic and political. While the public/central government actors are proposing establishment of the national REDD+ Trust fund, which seemingly aims at solidifying both political and economic power over the envisaged REDD+ fund flow from the international sources, the emerging REDD+ governance structures emanating from piloting projects are strategically posed to receive funds directly from the international markets/sources through the proposed private entities such as carbon cooperatives and brokers.

In the same vein, there are two types of technical governance systems being proposed for monitoring, reporting and verification in Tanzania. Although the National Carbon Monitoring Center (NCMC) to monitor, report and verify REDD+ activities is being proposed at national level, the local actors are proposing a sub-national carbon monitoring, reporting and verification system which will allow them to receive funds and other benefits directly from the international and other private sources.

While we can conclude that the governance structures being proposed at both national and project/local level fit in the Tanzanian policy and legal framework, our analysis of the current situation drives us to the conclusion that any failure to align the two REDD+ governance parallel processes can lead to legitimacy concerns that may be result into failure of the REDD+ regime. Successful implementation of the REDD+ scheme will require a clear institutional structure as well as a legitimate process hinged on mutually supportive and cooperative relationships among actors. Therefore, we recommend that the national REDD+ task force, which is the custodian of the overall national governance structures, should rectify the situation by ensuring that there is sufficient integration and alignment of all initiatives at various levels so as to ensure consistence and coherence between what is happening at local and national level.

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Debate over Renewable Energy in Rio+20 —The Role of the Energy Sector in UN Negotiations on Sustainable Development

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Abstract
This paper looks at the development of power structures in the United Nations (UN) sustainable development negotiations with the focus on Rio+20 and the energy sector. We analyze the development of the institutions framing the preparation and the actual negotiations. Our main data consists of official policy documents by the UN and different business actors operating around Rio+20. In addition, for contextualizing Rio+20 to its historical development, we briefly look at the development in negotiation discourses from the original Rio Summit in 1992 and Johannesburg 2002.Our focused empirical interest lies in the debate that energy questions raise in the sustainable development negotiations. Our paper contributes to the understanding of the UN negotiations as an institutionalized forum for business corporations to influence global environmental governance.

1 Introduction

1.1 Problem statement

In this paper we look at the shift in power structures in the United Nations (UN) Sustainable Development (SD) negotiations towards a more influential position of business and industry agents. Initially, we draw from historical development of the UN SD negotiation process (i.e. Rio 1992 and Johannesburg 2002 summits) to track the historical background of the current role of business actors and study the evolution of industry negotiation groups within this process. Soon after the establishment of the SD negotiation forums – the need for stronger involvement of stakeholders (private sector and civil society) on all levels was discovered and the respective requirement was officially proclaimed in the Rio 1992 final document – Agenda 21. The Agenda refers to nine 'major interest groups', business and industry as one of them. The corporate sector is mainly represented by trade and industry organizations (sometimes referred to as 'BINGOs', i.e. business and industry non-governmental organizations (NGOs), such as International Chamber of Commerce (ICC), World Trade Organization (WTO), and various others of which many are today specialized in sustainability and responsible business issues.

In order to trace the implied increasing role of business agents, we focus on a certain problem which provides empirical evidence of the business sector's impact and offers basis for analysis of a power shift. Theoretically we draw from the literature on global environmental governance and, as a supporting literature, corporate social responsibility (CSR) related sources that have discussed the changing relationship of business and society due to

globalization development (e.g. Mäkinen & Kourula 2012; Banerjee 2008; Clapp 2005; Levy & Prakash 2003).

Firstly, our study concentrates on the recent Rio+20 Summit. It provides contemporary data on the current power constellations in the UN SD negotiations (Kentala-Lehtonen 2009; Greenpeace 2012) and the instruments of this power execution (Levy & Newell 2002). Secondly, notwithstanding that the business and industry negotiating groups are multifaceted and representing a variety of companies according to their scale, fields of business and geographical locations, we have for the purpose of this paper chosen to focus at the energy sector as one of the strongest within the negotiation group. Its power lies at the cross-point of two trends since (1) the global oil and gas industry sector is represented mainly by large-scale companies dominating the world ratings of top largest corporations and (2) the activity of oil and gas industry is associated with the high environmental impact and risks accompanied with the growing pressure from the society (cf. Breeze 2012; Littlefield 2013).

Finally, energy is considered one of the crucial elements in achieving goals of sustainable development. Key energy sector players shape the world policy regarding resource extraction, refining and sale. All this combined with the problem of resource depletion raise the issue of looking for alternatives for potential business restructuring in the future and switching to new energy sources. Renewable energy is seen as a solution to reducing CO2 emissions in order to fight climate change. In long term, policies supporting renewable energy technologies development are expected to reduce the significance of oil and gas industries worldwide. Based on this, the debate over renewable and low carbon energy solutions is strong, where the oil and gas industrial group argues intensely for new technologies of fossil fuels usage.

By drawing on sources that analyse corporate roles in governance – on national and international levels – we aim to shed new light on the formation of power relations in the UN institution. We intend to contribute to the literature on global environmental governance and to the understanding of complicated relationship between governance and global formation of sustainability policies.

1.2 Research goals and research questions

The goal of this paper is to study the process and outcome of promoting the interests of the key oil and gas sector players in international negotiations. We concentrate on how issues that are relevant to the energy sector were argued in the official Rio+20 and other public documents related to the UN SD summits and how the development of the governance institution over time has affected these arguments.

Our interest is in the prevailing position and influence of the oil and gas business in UN SD negotiations with special focus on the renewable energy issue. We approach this by answering the following questions:

(1) What is the current position of multinational corporations (further referred as MNCs) within the power structures at the UN SD negotiations? We aim to answer this question by studying historically and in parallel the processes the UN SD negotiation development and escalating movement of business representation groups within this specialized UN forum.

(2) Which channels were available for the leading oil and gas companies at the Rio+20 conference to communicate their ideas on renewable energy agenda (e.g. via domestic government reports, via industry organizations, directly)? To study this, we focus on how corporations argued their positions and analyse the forms and effects of their argumentation (e.g. to SD, policy formation, renewable energy businesses).
(3) How and to what extent were these main ideas reflected implicitly or explicitly in the final documents presented on Rio+20? By tackling this issue we look at how the appearance ofMNCs' argumentation in the Rio+20 official documents points towards claimed corporate hegemony in UN negotiations.

2 Studying the UN negotiations as an international governance forum

Our core theoretical basis is found in the literature discussing institutional power structures and the shift in those structures (Barnett & Duvall 2005; Bernstein & Ivanova 2007; Ruggie 2007; Avelino & Rotmans 2009). Channels of business influence on international negotiations on environmental issues and previous studies on this subject create a wider framework for studying the case (Biermann 2012; Newell 2008; Barnett & Duvall 2005: 16-17; Clapp 2003, 2005; Orsini 2011; Vormedal 2011). Research studying the influence and role of business in environmental governance in general, and the UN negotiations in particular, started to appear mainly after the World Summit on Sustainable Development (WSSD) in Johannesburg (2002) where the business and industry business group was represented in abundance, especially in comparison with previous events of that type (Clapp 2002; Levy & Prakash 2003; Vormedal 2008). Supporting literature discussing the role of businesses in society and politics is utilized as, for example, the literature on corporate social responsibility (CSR) has been focused more strongly especially during the last decade on the dimension of politics, power and ideology that draw partly from similar backgrounds as politics and governance studies (Banerjee 2008; Levy & Newell 2002).

2.1 Institutional power structures

The UN driven international negotiation forums are the institutionalized governance form of combining actors to work together for sustainable development. The idea is based on the belief that there needs to be such a forum for negotiating economic, environmental, security and political questions in the age of globalization where national borders have blurred. The best known of these negotiations are the UN conferences on SD and the UN climate change conferences. These structures are based on the concept of development as the basis for solving challenges of sustainability. However, as the understanding of 'development' alters between nation states and cultures, the negotiation system also acts as an arena for debate and confrontation (Fuchs 2007; Fuchs & Vogelmann 2008). Due to this and the practical problems and even failures of the system, a large variety of literatures has been involved in discussing the use of power in these structures. Power in this context can be understood as the ability to affect others. It has been claimed that, due to the strengthened power of economic actors and general belief in market ideology in the world, the background ideology of neo-liberalism has gained strong foothold also in negotiations not directly discussing economic issues as such, like in this case, the more general challenge of sustainable development. A variety of criticisms of the distortions has been presented especially in the UN institutions. These alleged distortions are, for example, the division between (rich) North and (poor) South, the

NGO field that represents only a set of voices and thus leaving out the most vulnerable and least powerful interest groups, and finally the corporate representation in the UN negotiations as an example of 'marketization' of global environmental and social questions.(Barnett & Duvall 2005; Avelino & Rotmans 2009; Banerjee 2008; Sagafi-nejad & Dunning 2008; Chatterjee & Finger 1995; cf. Wapner 2003; see also Vatn 2005: 303-304).

As the negotiations are based on oral and written communication, it can be said that a significant amount of power is related to the questions of who is able to speak and how often, how seriously the message is taken, and finally, how it is explicitly forwarded to the policies that the negotiations produce. The UN system is meant to work as a platform for collective action with the aim to create consensus. However, as the inability of Rio+20 negotiations to forward twenty-year-old common goals to any credible concrete outcomes shows, it raises the question of the conflicting nature of the negotiations. The failure of SD negotiations and, more generally, problems of international environmental governance, has been traced largely to the fact that sustainable development or environmental issues do not have any certain institutionalized bodies as global economic questions have, like the WTO, the World Bank, the International Monetary Fund and G20. (Avelino & Rotmans 2009; Biermann 2012; Bernstein & Ivanova 2007.) This lack of power of governance leads to situations where participants of the negotiations do not have any common guiding principles that would be taken care of by one governing body.

The strength of international economic actors has been seen coming to the arenas of environmental and social questions as well as more generally in world politics. Thus, in this paper, the 'economization' (in literature also referred as 'marketization') of issues that are economy-related, but not by nature governed by economic actors, is considered. The UN system was originally developed as forum for nation states (Vormedal 2011). However, as nation states have also become more and more dependent on economic actions, a variety of developments towards economically driven neo-liberal ideals must be understood also in the nation state context. In general, the blurring of public and private can be seen at all levels of business-society relationships, but especially in our chosen context, global environmental governance (Newell 2008; Ruggie 2007; see also Mäkinen & Kourula 2012). This complex context of variety of different levels of actors, from micro structures (e.g. corporations) all the way to global institutions (e.g. UN, SD negotiations), challenges the way of understanding the power structures and their relations.

2.2 Business in international negotiations

The multinational business corporations (MNCs) have grown remarkably in number and size during last three to four decades and can thus be considered important global actors. These actors also have a significant impact on the environment as economic activity can be considered a direct environmental impact due to e.g. global material flow and resource use (e.g. Banerjee 2008.) The environmental impact of MNCs is not regulated in any specific way globally. The governance is a set of different agreements and voluntary codes of conduct – the former often nation state dependently negotiated while the latter draws more directly from industrial NGO activities. For example, the UN Global Compact has had the major aim to govern MNCs from outside and is strongly based on corporate responsibility thinking (Rasche et al. 2013). The Global Compact has its effect mainly on how corporations communicate their own goals on sustainable development in their actions. However, it is focused on

corporate activity in corporate world and is mainly unable to define corporate activities in, for example, the UN SD negotiations where the agenda includes a variety of other questions of which many are not, by nature, economic (Clapp 2005, 2003; Sagafi-nejad & Dunning 2008).

Levy and Prakash (2003) have approached the power of the MNCs by looking at how their goals differ in distinct topics negotiated in the international forums. Common to most negotiations is that the MNCs prefer voluntary, market based approaches in international forums while being more tolerant towards binding regulations over environmental and social issues at national levels. That is to say, if binding regulation exists, it should be kept on national level and not at inter-state levels where voluntary agreements are more preferable. One of the possible reasons presented for this is that international forum is not a market-driven bargaining space based on its structure and multiplicity and diversity of actors involved.

For example, Vormedal (2008) analysed the role of the business and industry NGOs (BINGOs) in the operationalization process of Kyoto mechanism. She discovered that the strength of BINGOs is that they have a variety of possibilities to communicate through their networks, but also to put pressure on decision-makers. As these BINGOs often represent the biggest and most influential MNCs, the question of power imbalances emerges quickly when the role of businesses in environmental governance is discussed. The interests of the MNCs are not necessarily the same as those of the smaller and/or local actors. These smaller actors are also often in a special relationship with bigger actors through supply chains and other economic relations. This issue of internal power imbalances is a little researched topic in governance literature concentrating on relations in such forums as the UN SD negotiations.

2.3 CSR – the corporate understanding of sustainable development

The ideals and counter arguments of corporate social responsibility (CSR) draw on historical disagreements on how we should understand business corporations as societal actors. The same neo-liberal views that are behind the corporate objection towards binding regulations are also an important part of the CSR debate development. The ideology is based on the idea of freedom, specifically to succeed economically. In this setting environmental and societal impacts are traditionally understood as externalities that do not fit into the financial calculations. This has been one of the main foci of CSR and its various confronting understandings. Often CSR is understood as corporate approach and even ‘toolbox’ to sustainable development challenge (Friedman 1970; Garriga & Melé 2004; Dahlsrud 2006).

The relevant critique over CSR for this paper is the claim that CSR has turned sustainable development into a profit making tool – known as instrumental CSR – instead of true commitment to the targets of reducing environmental degradation and social inequalities through actually changing their businesses towards more sustainable goals. In addition, it is claimed that the ‘CSR hype’ has created a possibility for corporations to even strengthen their power in national and global arenas where solutions to questions of economy, environment and social issues are sought. The UN Global Compact (global principles for responsible business) has, for example, been criticized for being a process of institutionalizing the freedom of corporations and concession to the ideology that drives voluntary actions and market based solutions, and resists binding regulations even in the most crucial challenges of sustainability. The strengthening of these kinds of solutions has been seen as one of the

sources of undermining democratic structures and the voices of the least powerful especially in the global political and governance arenas. (Banerjee 2008; Fougère & Solitander 2009a; 2009b; Vatn 2005: 424; Hahnel 2007.)

Considering the relevance and the multiple dimensions of responsibility of corporations in analysis of corporate power in the UN SD negotiations, it must be noticed that responsibility of corporations can be understood as not limited to actual business operations. For example, lobbying domestic governments before entering the negotiations can be seen as directly aimed at promoting certain values. This contradicts with the idea of common negotiations between all relevant parties. It must, of course, be noted that business corporations are not the only ones to lobby, but due to the strong dependence of nation states on economy, businesses are often in relatively good position when raising questions and promoting goals. (Clapp 2003; Sagafi-nejad & Dunning 2008.) Finally, understanding this corporate notion of SD helps to understand the macro level confrontations of goals of global environmental governance and economic actors.

3 Background of the case and methodology

Renewable energy options have been proposed as critical to develop to achieve commonly understood sustainability goals. It was part of the Rio+20 core agenda and is considered as an urgent issue (ICC 2012; UN General Assembly 2012). Our interest lies in the key players of the energy sector which, in addition, according to Forbes Global 2000 list, hold the leading position in world business in general as well.

Our empirical data consists of the official UN conference agendas and documents and those of the representatives of business and industry in Rio. In addition, we look at the energy related documents of the UN. Considering the relevant documentation from previous SD conferences, we use mainly secondary data, i.e. literature on them. We analyze the argumentation, implicit and explicit change of agendas of different actors, and the overall structures of industry representation. Our data also includes direct company documentation concentrating on their public sustainability and responsibility statements concerning the UN processes. We have chosen to look at the world's largest oil and gas companies from Forbes Global 2000 list, namely ExxonMobil, Royal Dutch Shell, BP, PetroChina, Gazprom, Petrobras-Petróleo Brasil, Total, Chevron, ENI, ConocoPhillips, Sinopec-China Petroleum, Statoil, Lukoil, and Rosneft (see appendix).

To understand the ideas promoted by key energy sector MNCs at Rio+20, we captured the position of the chosen companies on renewable energy issue by studying their websites and sustainability reports. Using summative content analysis (Hsieh & Shannon 2005), we trace the above position via revealing, summarizing and describing the approaches of the companies to (a) the challenges of renewable energy exploration in a long-term perspective, (b) the perception of the renewable energy in the context of other energy sources being developed by the company and (c) the current investments in the research and development (R&D) or production projects on renewable energy.

We analyze the change in institutional power structures and modes of argumentation using content analysis and discourse analysis, and reflecting the historical context (i.e. historical development of the UN negotiations described in the literature) (Breeze 2012). In order to

reveal and analyse the institutional structures and changes, our approach to discourse analysis derives from the tradition of critical discourse analysis, but we approach the data also from the perspective of qualitative content analysis (Fairclough 1995, 2001, 2004).

In this paper, discourse is understood as the way of representing the material and mental world and different discourses thus, different perspectives on this world (Milliken 1999). These perspectives are affected by different positions and social relations. They can be understood as representations of different actors thinking and thus are not objective (Szarka 2004). Critical language analysis aims at revealing the underlying power structures, maintenance and change of social relations. Language use itself is understood as producing the structures and social reality. Language use here is understood as a link between valuations and institutional structures. (Fairclough, 2001: 1-2, 9-10; Fairclough, 2004: 2, 124.)

We focus on the conceptions of sustainable development of different actors by looking at their argumentation in the debate concentrating on energy questions. The UN negotiations frame this debate by offering an institutionalized policy forum for sustainable development. In these debates the actors contribute to the common work on sustainability challenges. Their perspectives are built on expectations and claims based on which actors and goals they are representing. Traditionally, these representations are coloured by contradictions as the conceptions of not only means, but also ends needed for sustainable development differ (e.g. Fougère & Solitander 2009; Greenpeace 2012; Fairclough 2001). Energy questions have long been critical in sustainability issues and the energy sector as actor is at the core of it. However, the energy sector is not a homogeneous group of actors and cannot be analysed as such in this case. Thus, we concentrate on tracing the influence of hegemonic economic discourse by looking at the actors relations communicated at the international forums (cf. Kolk et al. 2008).

4 Analysis

Since the end of the 1980s and throughout the 1990s, big industry corporations have formed a variety of NGOs to represent them in different international forums on economy and related issues such as trade regulations, but also on sustainable development. Due to the powerful statement of the Brundtland Commission on sustainable development in 1987, these organizations quickly and tightly also entered the arenas where the most crucial problems of global environmental and social problems were discussed. By 2012 industry organizations had gained a strong foothold in the UN sustainable development processes.

In general, two differing interpretations of the situation can be identified. The positive one looks at the participation as a sign of the willingness of business to contribute to sustainable development. They are willing to discuss the topic and offer their activities as the pathways to sustainable world. From theoretical perspective this interpretation can be situated in the mainstream CSR discourse (Carroll 1999).

The negative interpretation takes another approach and is based on critical approaches to CSR. This approaches draw from the literature of world politics, ethics, sociology and such fields much utilized by business sciences. The negative interpretation sees the corporate involvement, and more importantly their use of power, as institutionalized unequal power structures at the international forums such as the UN negotiations. At macro level, the whole

discourse of sustainable development and its business interpretation of CSR can be seen as 'high jacking problems' to business purposes (Fougère & Solitander 2009; cf. Mäkinen & Kourula 2012). When considering the UN negotiations, the critical voices raise the question of participation – who can and is able to participate in these forums.

4.1 Development of the UN SD negotiation process and business advocacy groups

When the initial international forum was established to handle global SD negotiations – the Stockholm Conference on the Human Environment in 1972 – both developing and developed countries (133 in total) met for the first time to discuss environmental problems at the global level. At that time the agenda mainly covered regional pollution problems and little intervention of business was documented (UNEP 1972; Clapp 2003). The conference outcome was the recognized need for a common platform and principles for all the nations to be guided through the challenging global issues toward the goal of better environment. To serve this purpose, the United Nations Environment Programme (UNEP) was established and it started the era of a more institutionalized global environmental governance.

In parallel with the advancement of the UN SD negotiation process in general the business involvement into it also developed and took more elaborate forms. Thus, following the decision of the UN to hold the conference in Rio in 1992 which was proclaimed in December 1989, the MNCs united into the representative group, the Business Council for Sustainable Development (BCSD), which was the step to initiate the intensive business lobbying activity at the UN sustainability forums. Business and industry agents at the Rio 92 conference succeeded in promoting its interests and the requirement for strong further involvement of corporations into the global sustainability process was proclaimed in the main outcome document of the conference – Agenda 21 (Agenda 21, section III: 30). The World Industry Council for Environment (WICE), established in 1992, took the baton from BCSD and focused on the coordination of business involvement into the Earth Summit follow-up processes. Three years later, in 1995, these organizations merged in order to form the World Business Council for Sustainable Development (WBCSD) which combined the efforts of member organizations to shape the general approach of business to sustainability and promote it on the international arenas.

In addition to the SD specific business forums, a variety of commissions and departments focusing at environment and sustainable development issues were created within the organizations dealing with general economic and trade coordination of business, e.g. the 'corporate-based' Environment and Energy Commission within the International Chamber of Commerce (ICC) and 'government-based' World Trade Organization (WTO) Trade and Environment Committee. The mentioned organizations aim at considering sustainable development issues in the context of liberal trading and, as a result of the above, concentrate mainly on market-based instruments preferring them to any regulatory measures and legally binding commitments.

Considering the international SD negotiation in application to the oil and gas sector, we could also name the industry specific organization established back in 1974 – International Petroleum Industry Environmental Conservation Association (IPIECA) – which proclaims itself to be the industry's principal channel of communication with the UN in respect of environmental and social issues.

The described complex system of entities united under a common goal to promote the business interests in sustainable development issues, but with multiple foci and communication channels required a single body to accumulate the messages of business actor and effectively communicated them at SD summits. This role was delegated to the Business Action for Sustainable Development (BASD) formed by joining the efforts of the key BINGOs (including named WBCSD, ICC and IPIECA) and empowered by them to coordinate the voice of business at the UN SD negotiations. The BASD was initially performing at Johannesburg Summit in 2002 and ten years later, at Rio+20 forum where a separate day was dedicated to BASD events.

Today, the presence of corporate actors in the UN SD negotiations is seen as natural, but their characteristics as contributors have changed over time especially towards closer collaboration with governmental actors. This is based on the idea that corporations have a lot to contribute to the achievement of sustainable development goals on national and international levels. The representation is organized and institutionalized, in addition to official Agenda 21 'major groups', to a variety of international business and industry lobby groups with their main task on discussing and creating corporate policies and representing businesses as responsible and sustainable actors. Among the aforementioned presently active organizations, the most significant are WBSD, ICC, and BASD.

Another relevant issue raised by Agenda 21 is the significance of changing priorities in energy production and consumption patterns (Agenda 21, section II: 9). Preceding Rio+20 global SD event – the Johannesburg Summit – was seen as the meeting where power structures materialized and lack of common political will became apparent. One of the common explicit goals, however, was delinking economic growth and environmental degradation. Still, demands for corporate responsibility in sustainable development questions came out as controversial achievements and no concrete or binding new commitments were set. Another relevant failure – relevant for the focus of this paper – was the inability of the Johannesburg meeting to set any exact goals for renewable energy. The urgent nature of the issues and the need for new technologies were mentioned, but as seen below, both of these statements can be interpreted in a variety of ways on national level by different corporations. Reasons for the failures are possibly found already in the structures of the negotiations. Different actors and especially the NGOs failed to speak to each other to proceed with common goals. The conclusion could have been that, while many actors seem to care about the environment, the care does not translate into actions through concrete, measurable, systematic steps undertaken in international collaboration. (La Vina et al. 2003; Wapner 2003). This leads the way to understand the fragmented field of corporate actors and the hegemonic discourse that stays in sight in the certain kinds of institutions that global environmental governance is built on.

4.2 Mapping the channels of communicating corporate interest in the Rio+20

Both the increasing presence and input of the business actors in the global environmental negotiation process could be traced through a variety of overlapping channels (Orsini 2011; Clapp 2003; Fuchs 2007, Kentala-Lehtonen 2009, Vormedal 2008).We illustrate them in Figure 1 below. It is difficult to establish a certain hierarchy of channels. However, the central position is given to the structural power of corporations that is executed in numerous spheres

from socio-economic to cultural and ideological (such as allocation of financial and labour resources, technology transfer, clients' loyalty, etc.). The dominant position of certain business agents in state, regional or global economy could be strong incentives for promoting and adopting policies most suitable for these agents. Moreover, the structural power of corporations could be seen as an instrument enabling them to utilize opportunities provided by channels 2 and 3. Direct lobbying is the most straightforward instrument which corporations could use to pursue their interests in global SD negotiations. However, in turn the lobbying could also take different forms and be executed either directly or via linked organizational structures and advocacy groups such as local governments, governmental institutions and the BINGOs. One more way of business influence spread in the SD process is the active participation of companies in creating the standards covering the common approach of business and industry group toward SD practices. Recent trends in SD negotiations, and in the Rio+20 case in particular, show that corporations and their advocacy groups take advantage of the long-lasting inability of governments to come to any legally binding agreements and cover the multiple gaps in business-environment interaction field with voluntary commitments and industry standards. These documents are used as a platform to set up the general language and specific approaches of business actors to deal with SD issues that could be interpreted in a way most appropriate to the business structures themselves. Further, if any strong need for legally binding documents is realized, the corporations could appear in the lobbying process with already accepted voluntary commitments and suggest these to be a good starting point for discussion. The discursive power channel (3) is less traceable and comprehensive for observation and evaluation. It comprises the shaping of ideas on certain issues and promotion of their popularity among various agents and society in general with the aim to turn such ideas into the predominant ideology. Finally, in practice the discussed channels are not explicitly utilized separately, but all the MNCs actions targeted at power execution could be decomposed to a number of channels forming the complex system in their interaction.

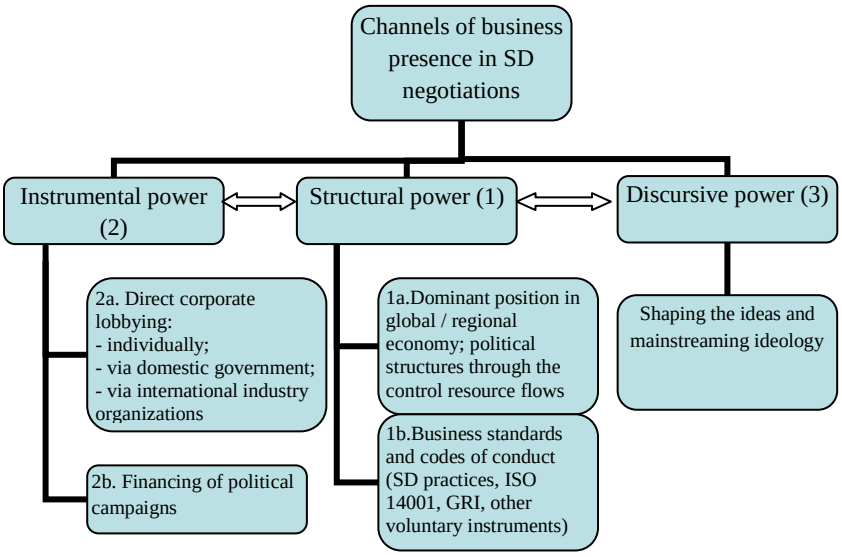

Figure 1.Channels of business presence in SD negotiations.

Looking precisely at the discussion over renewable energy at the Rio+20 international forum, we could conclude that business actors actively utilized all of the above channels to achieve

the most suitable outcome. Implying that the issue of renewable energy is a sensitive one to oil and gas companies, for the analysis of power channels we have chosen the key energy sector players from the top 100 MNCs on Forbes Global 2000 list (Forbes 2011; see also Appendix). The figures standing for key financial indicators of chosen companies could be seen as a proof of their significant structural power potential.

The study of discursive power execution channel appears in our research when we capture the general perception of renewable energy supported by the key energy sector business players. The results of our analysis presented in the Appendix show that the renewable energy research and development activities are rarely mentioned explicitly in the list of corporate initiatives toward sustainable energy development. Thus, in the prevailing majority of cases, they are listed within a group of a variety of low-carbon energy projects together with such conventional energy sources as natural gas and nuclear energy or even are not mentioned at all.

For example, the perception of natural gas as being 'the clean and sustainable fossil fuel' is strongly promoted by Russian gas company Gazprom. Since the company is in the leading position in the Russian economy and has strong link to the Russian government, it succeeded in utilizing instrumental power via lobbying its interests through the official report of the Russian Federation at Rio+20 conference stating:

> *Financial assistance should be provided to the developing countries to promote the low-carbon energy, such as power generation on the basis of natural gas and renewable sources of energy, since it is known that, for example, the shift from coal to natural gas reduces CO2 emissions twice* (Russian Federation 2012: 11, authors' translation).

Furthermore, our analysis reveals use of the instrumental power channel, namely the lobbying of corporate interest via membership in BINGOs. To support this with figures, 13 of the 14 largest oil and gas MNCs are members of one or more business organizations (ICC, energy specific IPIECA, UN Global Compact) that participated in a temporary initiative to promote the interests of business communities in SD negotiations on international level – BASD (Business Action for Sustainable Development 2012).

BASD was actively involved in the Rio+20 negotiation process by acquiring a strong position in business and industry representations. In particular, BASD presented its comments to the zero draft Rio+20 outcome document (UN 2012) on behalf of the business/industry sector. The published version of the comments enable us to trace the amendments suggested by the BASD among which the changing of the term 'renewable' with the term 'low-carbon' energy which leaves room for broader variety of interpretations. In addition, the business and energy group spoke against setting a precise goal for the share of low carbon energy in the total energy production by 2030. The following comments of the BASD to an initial draft support the discussed business position on renewable energy development goals:

> *The target is to reduce (or eliminate) carbon emissions from energy and so we shouldn't limit the target to renewables only as that would exclude a number of other sustainable options, such as carbon capture and storage (CCS), hence we think the reference should be to low carbon. The aim of doubling low carbon energy is fine and makes sense. We also have concern about 'basic minimum level' when it comes to energy services. That is not a*

very ambitious target and would do very little to genuinely improve livelihoods. (BASD 2012c: 6.)

The above example of the BASD input into the ideas circulating at Rio+20 summit illustrates the interaction of instrumental and discursive power channels utilized by oil & gas MNCs. In our further analysis studying the transformation of the ideas generated by business into the provisions of Rio+20 official documents we concentrate mainly on the discursive power channel by business representative organizations.

4.3 Discursive struggles over sustainable energy

The main discourse of the major business and industry group from the SD perspective and negotiations aiming at binding agreements is the discourse of voluntary actions that can be considered argumentation against binding regulations of business activities. At first glance, the discourse seems purely negative, but also includes the fact that plenty of good work has been done in different industries and business to make them more sustainable. However, the critique raises the question of true willingness to commit to any set goals as they might have negative economic impacts. Thus, the corporate discourse – naturally – always sets the economic dimension of sustainable development higher than the environmental and social dimensions. (Greenpeace 2012; see also Clapp 2003; Sagafi-nejad & Dunning 2008.)

The business discourse of sustainable development in the international – but also on many national – forums is called 'green economy' – framed and named by business and industry actors themselves (e.g. ICC 2012). This is based on the idea of economic growth being something compulsory (e.g. BASD 2012b). The reasons behind this are not argued in any specific way except for referring to global wellbeing through increasing productivity and competitiveness. No direct links between them are presented. The same indefinite argumentation extends over all public documents of business lobby groups, but also in the general UN SD discourse which has been claimed to be one of the major problems of the whole Rio+20 outcome document. For example, statements of guaranteeing the responsibility for the whole supply chain and other more concrete actions are lacking while ambiguous references to investments in sustainable energy production forms and other cursory promises prevail from document to document (Kolk et al. 2008; Levy & Newell 2002). The following two quotes, chosen from numerous correction notes by business representative group, are examples of how business and industry actors wished 'The Future We Want' zero draft to be altered towards more flexible and voluntary based form, closer collaboration and voluntary based engagement:

A key enabler for business to contribute to Green Growth is the establishment of and support to clear and flexible regulatory and voluntary policy frameworks by governments (BASD 2012c: 1).

We acknowledge the important role of the private sector in moving towards sustainable development. We strongly encourage business and industry to show leadership in advancing a green economy in the context of sustainable development and poverty eradication. ADD: We recognize the important role of Major groups in moving the sustainable development agenda forward. We also acknowledge the critical role of the private sector to make practical and substantial contributions to sustainable development and

> *multilateral processes. In this regard, we welcome a more meaningful engagement of the private sector in these processes and call for the development of a roadmap (with timeline) that would define the enhanced role of the private sector* (BASD 2012c: 2).

For example, the 'ICC Green Economy Roadmap' discusses neither renewable nor other low-carbon energy solutions at all although energy is recognized as one of the crucial areas in the official UN SD agenda and in Rio+20 (ICC 2012; UN General Assembly 2012). It frames environmental issues under the title of 'Environmental innovation' and states, for example:

> *Greening the world economies is a long term effort that calls for a holistic life cycle view across all countries and elements of economy. This involves further minimizing the environmental footprint of all economic activity by enhancing the efficient use of natural resources* (ICC 2012: 24).

This so-called 'state of play' in the very beginning indicates that some concrete solutions would follow. However, the proposals stay on the same superficial level by discussing life-cycle thinking, incentives, innovations, further planning and such. The 'jargon' is familiar to all those that have come across with the idea of CSR. As such, there is nothing negative in the discourse as such, but staying on this level shows also the unwillingness of business actors to set even voluntary, but still exact targets for proceeding in their sustainability goals (cf. Fougère & Solitander 2009).

The United Nations negotiations on sustainable development were meant as an arena for commonly agreeing on how to proceed in the age of growing environmental degradation and socio-economic challenges. Business corporations represent private economic interests and are thus, by nature at least partly disconnected from overall national and international interest. The representation of these economic actors has hence been questioned as they are representing only one aspect of sustainable development, but hold significant role in the decision making.

When looking at the argumentation of the BINGOs in Rio+20, the business logic can be clearly seen. Sustainable development is seen as a business opportunity or as something to which corporations can contribute to if they are allowed to do it according to their own logic. This logic is communicated via different channels to nation state representatives who often see businesses as an important interest group that needs to be listened to due to their significant economic power (Breeze 2012; Levy & Newell 2002). Of course, it is clear without saying that businesses are important actors in national economies and need to be able to act in order to fulfil their task. Thus, the message of business and industry is communicated not only via the BINGOs, but also official national representatives. Systematic opposition to binding regulations and the actual outcome of Rio+20 appear the same – there is an inability to commit to concrete and binding agreements on how to meet the challenges that all actors agree on. This can be considered as one of the main reasons why the credibility of the UN SD negotiations institutions and the prospects of efficient global environmental governance have been questioned (cf. Biermann 2012).

5 Conclusions

As a key goal of the international community, the transition towards supporting renewable energy as the main solution for sustainable energy production can be seen as negative path development for oil and gas industry (O'Brien et al. 2010; see also Apajalahti & Lovio 2012). The contradictory positions of the actors become evident in the negotiations over suitable energy solutions for sustainable development. Path dependency on energy solutions not only impedes the overall goals of sustainable development, but also businesses acting in the areas of renewable energy and energy conservation solutions. This development can also be seen as a shift in structures of the UN negotiations where large multinational companies are increasingly represented and more actively participating in pushing through policies supporting goals of powerful industries. The oil and gas sector belongs to these major actors while the renewable energy companies are often smaller actors without equally strong industry networks and established organizations. In this paper we have identified a discourse that points towards the unwillingness of key actors of the oil and gas industry group to undertake any serious steps towards renewable energy development. This unwillingness is reflected in the communication of the industry during the UN processes.

This paper contributes empirically to the claimed hegemonies in power structures in the UN negotiations (Hansen et al. 2012; Levy & Newell 2002; Levy & Prakash 2003). Based on the analysis of the argumentation of corporate representatives we claim that the large corporate actors aim to hold major power over minor corporate and other actors concerning future development of energy issues. While renewable energy solutions are mainly in the hands of minor actors, major energy actors hold the position of shaping the agendas and commitments made in the negotiations. Theoretically, the paper contributes to the understanding of international institutions, their internal power structures, and the relation to economic structures and more general hegemonies in the world. The results support the claim of changes towards 'economization' of institutions of sustainable development forums. We have shown that both the more general neo-liberal change in the world politics and the very specific goals of certain industries form a background for these changes (e.g. Mäkinen & Kourula 2012; Hansen et al. 2012). Considering the context of UN negotiations, we can see the shift from nation-state driven process toward economic interest driven processes.

This paper has limitations and we therefore suggest some ideas for further research. This study is limited by data from official policy documents of a limited amount of actors in a certain time frame and is therefore unable to give a full picture of the energy questions in the UN SD negotiations. To study the development of negotiations over any issue including renewables, the positioning and argumentation of all the parties involved should be studied. In this paper we concentrated on business and energy actors. Studying other parties' – governments, other NGOs, small renewable concentrated companies – involvement in the negotiation process would broaden the picture and clarify the position of MNCs in comparison with the role of the other actors and would give a wider picture of the discourse discussed in this paper.

We have traced the main channels of corporate influence on different levels. However, for a deeper understanding of the problems related to the global environmental governance, there is a need for further research on how formalizing corporate power in the environmental governance will gradually lessen the possibilities of the weakest and the poorest – who suffer the most from the environmental degradation and whose benefit the system was originally

built for – to be heard. As the economized CSR discourse is also coming to the field of governance, we are in a critical need of understanding of governance gaps it leaves unanswered when values confront in negotiations.

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Appendix: Positions of major oil and gas actors towards sustainable development and renewable energy.

Rank In Forbes Global 2000	Company	Country of incorporation	Key Financial Indicators				Membership in international business organizations	Position on sustainable energy development (as presented in corporate websites)		
			Sales	Profits	Assets	Market Value		Strategy of sustainable energy development (key activities)	Perception of renewable energy	Participation in renewable energy projects (REPs)
1	Exxon Mobil	United States	$433.5 B	$41.1 B	$331.1 B	$407.4 B	ICC, IPIECA	(1) improvement of energy efficiency (incl. in operations of recipients and consumers of energy), (2) studying of climate change process for better understanding of the problem and adoption of better solution , (3) R&D and deployment of existing low-emission technologies.	Renewable energy option is mentioned within low-carbon fuels development scenario in one line with natural gas and nuclear energy	The company claims to be involved in REPs via providing its products (lubricates, etc) to be used in operating of wind turbines, geothermal and cogeneration plants, hydroelectric installations, and nuclear facilities.
4	Royal Dutch Shell	Netherlands	$470.2 B	$30.9 B	$340.5 B	$227.6 B	IPIECA	(1) use of natural gas, (2) biofuels development; (3) capture & storage of CO2, (4) improvement of energy efficiency of own operations and operations of customers.	Biofuels are stated separately from other sources as a single low-carbon project.	REPs are represented by biofules initiatives: (1) joint venture with Brazil entity re ethanol development (Raizen), (2) joint ventures in USA / Canada re biofuels from crop & plant waste
7	PetroChina	China	$310.1 B	$20.6 B	$304.7 B	$294.7 B	UN Global Compact	(1) improvement of energy efficiency; (2) development of environmentally friendly products (natural gas, biofuels); (3) upgrade of infrastructure (storage & transportation facilities).	Among alternative energy sources are mentioned coal-bed methane (CBM), shale and tight gas.	Investment in R&D of biokerasine for aviation
10	Petrobras-Petróleo Brasil	Brazil	$145.9 B	$20.1 B	$319.4 B	$180 B	IPIECA, UN Global Compact	(1) diversification of energy sources portfolio; (2) energy efficiency improvement; (3) investment in R&D	Renewable energy is stated in line with natural gas as an developing alternatives for conventional oil extraction and refinery. However, natural gas is perceived as "the cleanest of all fossil fuels"	(1) biofuels production (wholly owned subsidiary Petrobras Biocombustível); (2) investments into wind, solar and water alternative energy souses as well as performance of research with hydrogen fuel.
11	BP	United Kingdom	$375.5 B	$25.7 B	$292.5 B	$147.4 B	ICC, IPIECA, UN Global Compact	(1) energy efficiency improvement; (2) diversification of energy sources portfolio; (3) development of renewable (incl commercialization of renewable technologies); (4) development of new technologies and approaches to conventional fuel exploration (e.g. Canadian oil sands, etc.)	The discussion about alternative energy sources is separated in a single website and covers biofuels, wind and solar initiatives	(1) Biofuels (joint vebtures in Brazil — sugar cane, ethanol, UK — biobuthanol, US - grass); (2) Wind (wind farms in US), (3) Solar energy commitments are now winding down due to the decision to concentrate on most profitable initiatives above
12	Chevron	United States	$236.3 B	$26.9 B	$209.5 B	$218 B	ICC, IPIECA, UN Global Compact	(1) improvement of energy efficiency; (2) reduction in flaring; (3) carbon sequestation; (4) investment in new technology ventures	Renewable energy is put as a sources that will play a role in meeting future energy demand. Based on that the company takes pragmatic approach to renewable energy by working toward development of commercial -scale renewable projects.	(1) large-scale commercial production and distribution of non-food biofuels in the US; (2) world's largest producer of geothermal industry; (3) solar energy projects
15	Gazprom	Russia	$117.6 B	$31.7 B	$302.6 B	$159.8 B	*strong direct governmental influence	(1) further development of natural gas (positive effect of substitution of oil&coal by natural gas is emphasized), (2) improvement of energy-efficiency of production process.	Not mentioned	No information
18	Total	France	$216.2 B	$15.9 B	$213 B	$132.4 B	ICC, IPIECA, UN Global Compact	(1) reduction of flaring gas, (2) improving energy efficiency, (3) carbon capture & storage, (4) developing of low-carbon fuels (both renewable energy + nuclear power)	Renewable energy optioned is mentioned within low-carbon fuels development scenario in one line with nuclear energy	1) solar energy development (partnership with US company), 2) bioethanol production.
24	Sinopec-China Petroleum	China	$391.4 B	$11.6 B	$179.8 B	$104.2 B	UN Global Compact	(1) more efficient energy use; (2) development of low-carbon energy and optimizing energy structure;	Renewable energy is mentioned as a minor part in a range of low-carbon initiatives which include natural gas production and developing coal-bed methane.	(1) bioethanol production; (2) geothermal energy development (15% of total in China)
27	ConocoPhillips	United States	$230.9 B	$12.4 B	$153.2 B	$98.8 B	IPIECA	(1) energy efficiency; (2) development of low-carbon energy projects (both investment into conventional low-carbon fuels (natural gas, nuclear energy) and development of new sources; (3) CO2 capture and storage	Renewable energy is listed in a group of low carbon energy sources (natural gas, liquefied natural gas, methane hydrates)	The Company is involved in a number of initiative via Energy Technology Ventures (ETV) entity including biofuels. It also evaluates investment opportunities in various forms of renewable power projects and companies, including those focused on solar power, wind power and geothermal energy.
29	ENI	Italy	$143.2 B	$8.9 B	$178.7 B	$97.6 B	ICC, IPIECA, UN Global Compact	(1) energy efficiency improvement (of own operations and through educational programs for customers); (2) reduction of carbon and gas flaring intensity of production process; (3) use of associated gas; (4) development of renewable	Renewable energy is perceived separately from the other low-carbon energy souses	(1) collaboration with universities on R&D projects; (3) expected construction of the Research Centre for Green Chemistry and bio-refinery (to develop production of bio intermediate and finished products with the plant-based raw materials) (2) development of solar energy (a number of photovoltaic systems projects, creation of large photovoltaic plants)
41	Statoil	Norway	$111.6 B	$13.1 B	$127.8 B	$89 B	IPIECA, UN Global Compact	(1) renewable energy; (2) energy efficiency, (3) carbon management and hydrogen as future energy carriers.	Renewable and alternative initiatives are stated separately from conventional energy sourses	(1) Statoil is focusing on initiatives in wind power, tidal power, wave power, methane gas from landfill sites and biomass, as well as combined heat and power (CHP) production. (2) Studies of other forms of power production from renewable sources are being done in parallel.
68	Lukoil	Russia	$111.4 B	$10.4 B	$90.6 B	$55.3 B	UN Global Compact	(1) increase the efficient use of flaring and shale gas; (2) upgrage of refinaly technologies to european standards.	The renewable energy initiatives are separated from the conventional activity of the company into a separate legal entity and include conventional hydropower stations operations and solar energy development	Investment into joint venture of solar energy development in Bulgaria
71	Rosneft	Russia	$59.2 B	$11.3 B	$106 B	$79.6 B	UN Global Compact	(1) deeper refining process, (2) reduction of fuel loss, (3) energy efficiency,	Not mentioned	No information

Analysis of Strategic Activities in the Implementation of Clean Development Mechanism (CDM) Projects in China and India

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Abstract

The Kyoto Protocol is the first international agreement developed to reduce greenhouse gas emissions through project-based exchanges between developed and developing nations. Among all the mechanisms under the Kyoto Protocol, clean development mechanism is widely used. The mechanism is exposed and criticized for its efficiency and function to reach the fundamental goals of sustainable development and technology transfer. Two biggest host nations China and India are also implementing the HFC-23 and N_2O (industrial gas reduction projects) and generating CERs to trade in international markets. These projects have been criticized for not contributing to reach the goals of Kyoto Protocol. The present paper analyses the institutional arrangements in China and India to identify the strategic behaviour behind accepting the industrial gas reduction projects, despite of the doubts rose over the impact of these projects on sustainable development. We used secondary data sources from CDM web sites, NGO reports and scientific publications and performed qualitative analysis. China and India followed similar strategies to implement the CDM projects under different political settings. The high economic outcome of HFC-23 and N_2O projects in terms of the high volume of CERs generated with limited investment provides a strong incentive to the project proponents in both countries. One of the differences between both nations, is the civil society participation, which plays an important role in India, while is deficient in China. The civil society is contributing to generate on ground information and it is also demanding efficient monitoring to check the emission reductions. However, there is an urgent need to perform case specific analysis to understand the influence of civil society participation in the outcome of the CDM implementation.

1. Research Problem and Objectives

The much-awaited Rio +20 conference did not come up with a successor agreement to the Kyoto Protocol, which was designed to terminate at the end of 2012. The clean development mechanism (CDM) is a project-based mechanism created as one of the three designed "flexible mechanisms" under the Kyoto Protocol (UNFCCC, 1997). The overall objective of the CDM is to achieve the sustainable development (SD) goals in non-annex nations (developing) and to reach emission reduction targets in Annex-1 nations (developed) in a cost efficient manner (UNFCCC, 1997). The Kyoto Protocol emphasizes the role of developing nations in reducing the greenhouse gases (GHGs) to lower the impact of climate change (CC). In addition to the size, population and economic growth, the world's two largest nations China and India have emerged as the top two CDM host nations. Both nations' dependency on fossil fuels for energy (i.e., 70% in China and 63% in India) has given a large scope for the

improvements in technology and also emission reductions (Institute for Global Environmental Strategies, 2005a; 2005b).
The CDM under the Kyoto Protocol has already huge money transactions and, hence the criticism on its efficiency, ever since its enforcement in 2004 (Paulsson, 2009). The CDM enables the developed nations to offset domestically generated emissions in order to meet their obligatory targets agreed in the Kyoto Protocol by implementing emission reduction projects in developing nations (Paulsson, 2009). The main expected co-benefits of participation in CDM are the transfer of technology, flow of capital and funds from developed nations to developing nations (Pachauri, 2003).

The Carbon emission reductions (CERs, 1 CER is equal to reduction in 1 ton of CO_2) generated through CDM projects are traded in the Carbon market and much cheaper than the domestic reduction projects for the developed nations (Brechet and Lussis, 2006). Rapid changes have occurred in the CDM project selections with the number of projects in the pipeline multiplied from 91 projects in April 2005 to 8871 in August 2012 (UNEP). In 2007, the CDM accounted for 91% of the value in the World Carbon market, with primary transactions worth $7.4 billion (Capoor and Ambrosi, 2008).

The CDM projects in the pipeline are expected to reduce GHGs emissions by 973.93million CERs until the end of 2012 (UNEP). The Montreal Protocol has included Trifloromethane, better known as HFC-22 in their list of Ozone depleting substances very late in 2005. The HFC-22 is widely used as a coolant gas and by-produces HFC-23, which has a global warming potential of 11,700 of Carbon Dioxide (IPCC). Thus, there is an emergence to capture or destroy the HFC-23 before released into the environment or to arrest the use of HFC-22. Even after the availability of technology and inclusion of HFC-23 projects in CDM, the emissions of HFC-23 are measured at around 127 million tons CO_2 equivalent per year (www.eia-international.org). The alarming and increasing level of HFC-23 in atmosphere indicates, the venting of HFC-23 into environment has not stopped in many places in contrasting to the booming of CERS claimed in CDM projects.

Nitrous Oxide (N_2O) is one of the potential GHGs with a global warming potential of 310 of CO_2 equivalent and atmospheric lifetime of 114 years (Schneider, 2010). Although, the major source of N_2O is in agricultural processes, the Adipic Acid and Nitric Acid production processes also generate N_2O as a by-product. The Adipic Acid is used in Nylon production, which is widely used in Europe and the United States of America. Nylon is mostly produced in China. The N_2O projects contribute to only 3% of the total projects, but generate 25 % of the total CERs issued until 2010 (Schneider et al. 2010). A technological adaptation in the production of Nylon is required to reduce the N_2O emissions from Adipic acid. The change of technology is also not very expensive comparative to other N_2O reduction methods (Schneider et al. 2010).

The rapid growth of global Carbon market is however creating incentives to various actors in the CDM market to promote the cost efficient emission reduction projects by ignoring realistic SD goals (Olsen and Fenhann, 2008; Zhang and Wang, 2011). The CERs generated from HFC-23 and N_2O CDM projects (here after called as industrial gas projects) accounts 65% of the total CERs issued until the end of 2012 (UNEP data). Majority of the industrial based emission reduction projects are criticized for not reducing the additional CO_2 emissions and also for not promoting the national SD goals (Schneider, 2010; Paulsson, 2009). The large proportion of the CERs originating from the industrial gas projects accused to have lowest

SD contribution, conveys an alarming message about the efficiency of CDM in achieving its fundamental goals (Schneider, 2010;2011; Paulsson, 2009). Due to the exposure of manipulation of CERs generation from HFC-23 projects, the trading of these CERs has been banned from European Emission Trading System (ETS), Canada, New Zealand, Australia Carbon markets (www.eia-international.org). The present paper focuses on industrial gas projects' implementation scenarios in India and China. Among the entire CDM projects in pipeline, the industrial gas projects accounted for 37.6% and 35% of total estimated CO_2 reductions in China and India (UNEP, 2012). Actors who are not genuinely interested in reducing the impact of climate change, but instead looking for opportunities to gain economic profits are actually rewarded through strategic activities (Ostrom, 2012).

The institutions involved in the governance of CDM at the national level are very important in promoting mitigation policies, to develop procedures, approval of the projects, monitoring of the implementation and to issue credits (Sukumar and Liu, 2008). The objectives of the present study, therefore, are to understand the institutions involved at national level, specifically China and India, and to explore the reasons in implementing the industrial gas reduction projects. The paper examines the institutions related to the implementation of CDM projects at various levels in order to answer, "*What are the reasons for strategic behaviour in implementing industrial gas reduction CDM projects*"? We are focusing on the institutions and characteristics of actors involved in adopting industrial gas projects in spite of the criticism against their capacity to reach SD goals in China and India.

2. Analytical Approach

The present paper uses secondary sources of information including scientific literature, data and reports from UNEP, UNFCCC websites, CDM national websites of China and India, and reports of NGOs. The 'regime analytical framework' developed by Underdal (2012) is used to facilitate the present analysis (Figure 2). The regime effectiveness can be measured in terms of the performance of a set of actions (desired) to solve the problem that is motivated the establishment of regime (Underdal, 2012). The participants of the regime and their power, resources also play important role in the 'output' to influence the 'outcome'. The functioning of the regime and both 'output', 'outcome' can influence the 'impact' of the regime by forming feedback loops. There are two "Outputs" in the present research area: Output 1 is the rules of the CDM driven by international level actors and carbon market which explains the base for regulations at international level underlying industrial gas projects. Output 2 is the governance structure at national level in China and India, which is the focus of the present research. We assume that, at the international level, the Executive Board (EB) is in a position to take decisions supporting the achievement of Kyoto Protocol goals. In the present research, we mainly focus on the national level implementation strategies of both nations, and aims to compare different sets of rules such as selection and validation procedures that have been designed and implemented. The administrative structures of nations, and the actor's resources and power relations will be examined as they are expected to influence the implementation of CDM projects. The feedback routine of CDM projects to national legitimacy or international CDM regulation is included into analysis as well.

The "outcome", namely the CDM projects implementation at national level, includes project approval and monitoring in both countries. The "Impact" is concerning the question, "to what

extent do CDM projects fulfil the goals of the Kyoto Protocol in terms of the reduction of carbon emission and promotion of sustainable development?"

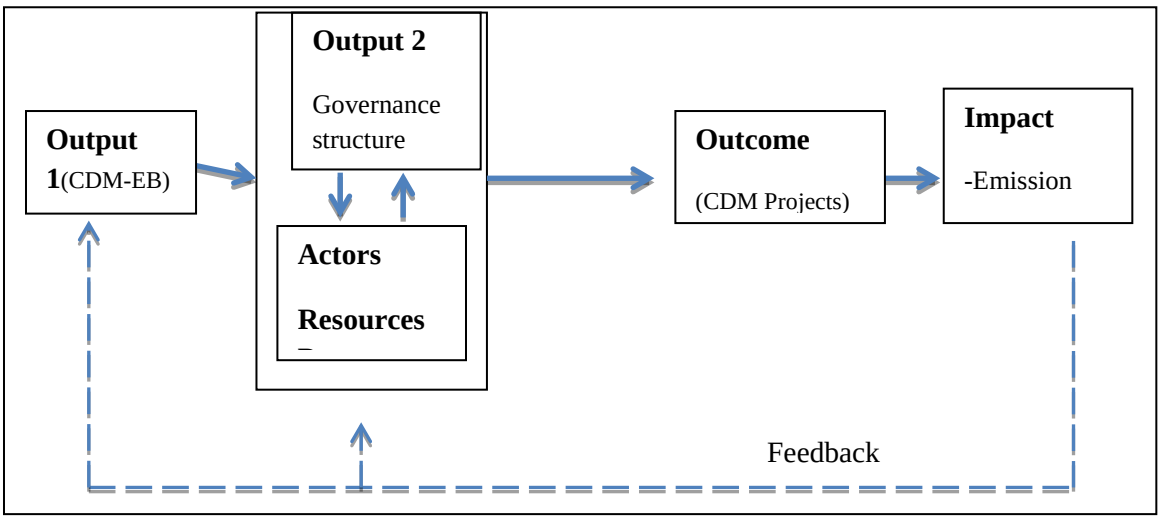

Figure 1: The Regime Analytical framework (Adopted from Underdal, 2012)

3. Overview of the CDM regime

The Kyoto Protocol was the first international level commitment program developed in 1997 under the UN Framework Conventions on Climate Change (UNFCCC) to reduce the anthropogenic GHG emissions (UNFCCC, 2001). The fundamental of establishing CDM is rooted in the Kyoto Protocol under Article 12. "The CDM shall be to assist nations not included in Annex-1 to achieve sustainable development and to contribute to the ultimate objective of the convention. And also to assist the nations included in Annex-1 to achieve compliance with emission limitation and reduction commitments" (UNFCCC, 1997).

3.1 Output 1: International level Functioning of CDM

The CDM regime functions under the leadership of Conference of Parties or Meeting of Parties (COP/MOP). A specific Executive Board (EB) at international level is created to deal with the daily business. The verification process is more decentralized to the Designated Operation Entities (DOEs) to check the validation, verification and certification of the CDM projects after the Marakkash negotiations (UNFCCC, 2001). Although, the UNFCCC has confirmed the Kyoto Protocol in 1997, the rules and procedures were further elaborated in 2001 and the first CDM project was registered in 2004. Until August 2012, the approved CDM projects in China are 4286 and in India are 2232 (GIZ, 2012).

3.2 Output 2: National level-Governance structure

The Designated National Authority (DNA) in each hosting country is a national agency responsible for approving CDM projects. They are responsible for approving projects, checking the compliance with the internal laws, policies, international CDM regulation, meeting domestic sustainable development priorities, and attracting funds and technology transfer from developed nations. They play main role in the implementation of CDM related policies, establishment of procedures regarding project application and approvals, monitoring emission, and enabling transactions in the CDM markets (Sukumar and Liu, 2008).

A total of 163 national DNAs formed in Annex and non-Annex nations until August 2012 with powers to approve and validate the CDM projects (GIZ, 2012). Among 163 DNAs, 131 are from host nations and 32 are from buyer nations. Each CDM project has to get the approval from respective DNA before applying to the EB for validation. The important stages and actors involved in the CDM projects are indicated in the following table 1.

Table 1: Important stages and actors involved in the CDM

Stage	Actors	Required document
Project Development	Project owner/developer	Project Design Document (PDD)
Approval	Host Country DNA	Letter of approval
Validation	DOE	Validation report
Registration	Executive Board	EB decision
Monitoring	Project Owner	Monitoring report
Verification	DOE	Verification report
Certification	DOE	Certification report
Insurance of CERs	EB, CDM registry	

Source: Adopted and modified from Paulsson (2009)

The process of the CDM project begins with bottom up initiation by the project proponents (PP) to formulate the project design document (PDD) with the help of in-house or private consultants. The PDD is submitted to DNA, which should contain the information on the steps taken to reduce the emissions, verification procedures and how this particular project contributes to the national SD goals. The DNA of the participant nation and any involved Annex-1 nation DNA approves the project if the proposal is matching with the host nations' SD goals. The proponent has to send the PDD along with the letter of approval from DNA to DOE for validation of the project. If the project gets a validation from DOE, the DOE sends a formal application to EB to register this particular project to issue CERs. Once the project is registered, the responsibility of monitoring the compliance with respect to emissions reduction, and steps mentioned in PDD and sending a monitoring report rests with the project owner. The DOE is responsible for verifying the reports from time to time. The DOE has the right to make on-site inspections to check for the implementation of the proposed project activities. Based on the verification report from DOE, the EB decides to issue CERs on the name of this particular project, which can be marketed. From each project, 2% of the CERs are used for the adaptation fund (UNFCCC, 2001). The trading of the CERs can be made possible in two ways. The developed country, which was involved in the project, can show these CERs as their own reduction or can trade the CERs in the regulated Carbon market or on the voluntary offset market (Paulsson, 2009).

China and India are two top nations with highest population, and having relatively low per capita income, in spite of rapid economic growth in the last a few decades. In general, China is a unitary state, with the direct authority of central government on the provinces. India is a federal state, with a national government and state governments. The commonalties and differences between China and India are discussed by focusing on administrative structure of DNA, types of rules regulating CDM projects implementation (e.g., priority areas, taxation), and actors involved.

The China's DNA is located in the National Development and Reform Commission (NDRC), a powerful central agency under the State council for National Economic and Social Development. The DNA represents China at the UNFCCC and approves the projects from China after their revision by the National CDM board. The Board is co-chaired by NDRC and the Ministry of Science and Technology (MoST) and vice-chaired by the Ministry of Foreign Affairs (MFA). The CDM board comprises members from five ministries including the Ministry of Finance, Ministry of Agriculture, Ministry of Environmental Protection, and China Meteorological Administration. NDRC will invite independent experts to provide comments on the applied project (Table 2). These experts' comments are submitted to the National CDM board, which makes the final decision in cooperation with other ministerial agencies. In general, NDRC serves as China's DNA, and supervises the specific CDM administration activities (GIZ report). In June 2004, the "interim regulations for CDM projects (draft)" was released by the National Coordination Committee on Climate Change (NCCCC), which was established to facilitate affairs on climate change and hosted by NDRC, for the implementation of the CDM in China. On the same date, "measurement for operation and management of CDM project" (later modified in 2005) were issued by National CDM Board. It provides a legal framework for the CDM regarding general rules, project procedures, requirement, and administrative structures.

Table 2: Roles of authorities in CDM in China

Authorities	**Members**	**Functions**
National Coordination Committee on Climate Change (NCCC)	Chaired by the NDRC and vice chaired by the MFA, MoST, SEPA and CMA, and consisting of other related government agencies	Policymaking and coordinating CDM-related issues
Office of the NCCC	Hosted by the NDRC	Secretary of the NCCC and NCB; organizes the review of CDM application documents
The National CDM Board (NCB)	Co-chaired by NDRC and MOST and vice chaired by the MFA and are composed of MOF, MOA, SEPA and CMA	Review and evaluation of CDM projects
National Development and Reform Commission(NDRC)	Hosts the NCCC office; serves as China's DNA	Receives CDM applications from project owners, issues a "no objection letter" to the buyer, if needed, and issues the approval letter for the application
Ministry of Science and Technology	Co-chair of the NCB	Circulates CDM approval documents
Ministry of Foreign Affairs	Vice chair of the NCB	Circulates CDM approval documents

SEPA: State Environmental Protection Administration; CMA: China Meteorological Administration; MOA: Ministry of Agriculture. Source: (NCCCC: http://cdm.ccchina.gov.cn/UpFile/File626.PDF), Jiaoyi, X (2003)

In India, the National CDM Authority (NCDMA) is located in the Ministry of Environment and Forest (MoEF). The members of CDM authority include a chairperson from the secretary of the MoEF and representatives from Ministry of External Affairs, Ministry of Finance, Department of Industrial Policy and Promotion, Ministry of New and Renewable Energy, Ministry of Power, Planning Commission, Ministry of Commerce and Industry, Department of Science and Technology, Joint Secretary Climate change (MoEF), Director of Climate Change (MoEF). The DNA of India develops the policies with guidelines based on the local conditions in addition to the EB rules. The roles of NCDMA includes to evaluate the CDM projects in order to match with the country sustainable development goals, to assess the successful implementation of the projects, to prioritize projects in accordance with national priorities, to recommend additional requirements to meet the legal framework and sustainable development goals, to consult with local stakeholders before implementing the projects, to carry out financial review of on-going projects, to ensure the validation of CERs, to disseminate the information among project developers, and to create a database on various stages of CDM projects. There is a possibility to form sub groups, constituting committees to coordinate and examine the specific projects. The main powers of the NCDMA are to invite the officials from any departments of the Government and experts from consultancy organization, Non-Government Organizations, Civil society, legal profession, industry to take advice on the technical matters.

3.3 Main Actors in the CDM regime

The important actors involved in the CDM project are as follows, project owner and project developer, PDD consultant (in house or private), validators (DOEs), NCDMA, CDM-EB, CDM methodology panel, other consultants, NGOs and interested communities, CDM Credit buyers. NDRC is a powerful agency that formulates the national five-year plans of China, thus being able to promote CDM projects conforming to the broader goals of the plan on climate change mitigation and sustainable development (Sukumar and Liu, 2008). The CDM implementation in China has benefitted from its national authority NDRC for its political and economic power. However, the same is also decreases the political space for other entities, such as NGOs in the CDM process (Sukumar and Liu, 2008). The participation of enterprises is also strictly regulated in China's CDM process. According to the "Measures for Operation and Management of CDM in China" (2005), only Chinese and Chinese owned companies (at least 51 percent of the equity is owned by Chinese parties) are eligible to implement CDM projects. This widely excludes the participation of foreign companies at the project development stage. It has been criticized as obstacle to attract international investment and technology transfer. It is estimated that 65-70% of the Chinese CDM projects are owned by municipal enterprises and investment groups, 25-30% by large-scale state-owned enterprises, leaving less than 10% owned by private entities.

Comparatively, NCDMA of India is not as powerful as that NDRC in China. In India, the participation from different government departments in NCDMA has given a better chance for the project proponents to come up with innovative projects. The knowledge from various departments is pooled together to design the methodologies for the verification, to approve the projects in timely manner, and to enhance the efficiency of the projects for better implementation. At the same time, the representatives from the Department of Industrial Promotion and Policy have a strong voice to support the CDM projects (Paryavaranamitra, 2012). In addition, NGOs play an important role in CDM implementation in India, the private

industries are more active in CDM applications and there is an emerging trend to involve the civil societies in communication and knowledge generation. The CDM rules in India indicate that, the PDD should be consulted with the local communities before sending it to approval for the EB. But there are some institutional drawbacks such as the rules for the consultation process is not clearly developed and there is uncertainty about whom and how should one consult about the CDM projects (Paryavarnamitra 2012). As per the Indian environmental legislation many of the big projects must obtain the environmental clearance from the government and this process also involves the public consultation (MoEF, EIA notification 2006). Most of the CDM projects also must undergo this process. Hence, there is a great opportunity for the local community and NGOs to participate to highlight the facts about the project (Paryavarnamitra 2012). The CDM watch argues that in most of the CDM projects in India, community around the projects are not aware of the project and are not claiming the benefits (CDM watch 2012). The NGOs and civil society has an important role to give important feed back to the EB and can expose the information to the media or other important actors involved in CDM. It was also very clear from the latest media and NGO reports that, NGOs and civil society have a strong role in generating information about the CDM projects at ground level. At some point, EB or any other validation agency may consider these reports (Paryavaranmitra 2012). For example, the first Carbon credit from India was claimed by the Gujarat Floro chemical company and later it was given closure notices by Gujarat Pollution Control Board due to gas leakages. In- spite of that, the company claimed further credits from EB. When this matter was taken to EB by a local NGO, it was mentioned that the EB is only responsible to issue the CERs and the monitoring mechanisms were developed very late and solely held with DNA of the host country and DOEs (Paryavaranmitra 2012).

3.4 Outcome and Impacts

In the beginning of CDM projects execution, India was aggressive than China for preparing and accepting all kind of projects (UNEP). In contrast, China was more diplomatic in planning and developing own priority areas for the CDM projects. Until 2008, India has more registered projects (333) than China (202), while due to various reasons now China overtook India (UNEP 2012). The differences in political settings, approaches, economic development policies, less involvement of NGOs, transaction costs involved in the projects, power of the DNAs all together contributed to the rapid growth of CDM projects in China than in India. Until May 2012, China and India contributed 59.81% and 14.89% of the already issued CERs respectively (Figure 2).

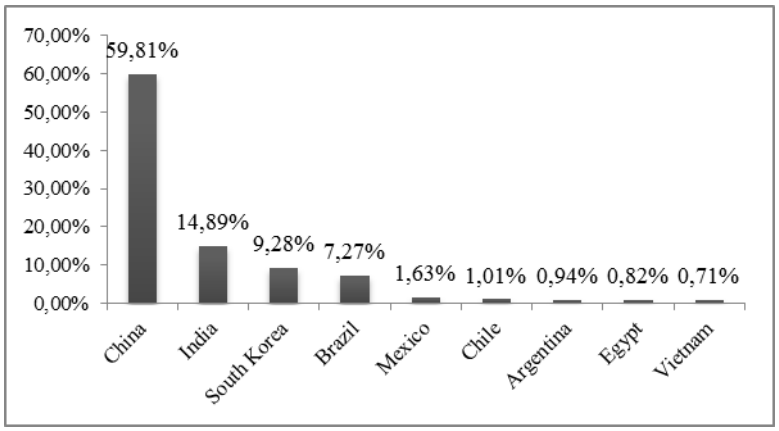

Figure2: Nations with percentage of CERs issued until 2012
(Source: Own compilation from the CDM websites)

Total distribution of project types in the CDM system in China and India (as of 01.05.2012) is given in Table 3.

Table 3: CDM Market in China and India

Project Type	Total projects		% Total		k CO_2		% k CO_2	
	China	India	China	India	China	India	China	India
Hydro	1363	232	35,2	10,5	245723	41825	19,6	6,6
Wind	1401	850	36,2	38,3	239110	149115	19,1	23,5
Biomass energy	166	399	4,3	18	22516	54121	1,8	8,5
Methane avoidance	96	56	2,5	2,5	8281	4830	0,7	0,8
EE own generation	285	139	7,4	6,3	119141	58107	9,5	9,2
Methane avoidance	96	NA	2,5	NA	8281	NA	0,7	NA
EE own generation	285	NA	7,4	NA	119141	NA	9,5	NA
Landfill gas	118	34	3,0	1,5	31496	9075	2,5	1,5
Solar	126	101	3,3	4,6	2268	1818	0,2	0,
EE Industry	15	110	0,4	5	1053	7719	0,1	1,2
Fossil fuel switch	37	58	1,0	2,6	28639	44893	2,3	7,1
EE Supply side (power plants)	16	55	0,4	2,5	2498	8586	0,2	1,4
Coal bed/mine methane	108	1	2,8	0	65867	610	5,3	0,1
N2O	**48**	**8**	**1,20**	**0,4**	**230121**	**38353**	**18,4**	**6,0**
EE Households	13	64	0,3	2,9	351	1728	0,03	0,3
Afforestation & Reforestation	4	16	0,1	0,7	0	0	0	0
Fugitive	3	6	0,10	0,3	5652	11244	0,5	1,8
Cement	28	27	0,7	1,2	6031	5816	0,5	0,9
Transport	9	16	0,2	0,7	1317	2341	0,1	0,4
EE Service	0	28	0,0	1,3	0	0	0	0
Geothermal	1	0	0,0	0,0	508	0	0,04	0
Energy distribution	18	6	0,50	0,3	0	1896	0	0,3
HFCs	**11**	**9**	**0,30**	**0,4**	**239894**	**196277**	**19,2**	**31**
PFCs and SF6	3	1	0,10	0,0	1319	440	10,0	0,07
Agriculture	0	1	0,0	0,0	0	0	0	0
CO_2 usage	0	0	0,0	0,0	0	0	0	0
Tidal		0		0	0	0	0	0
Total	3873	2217	100%	100%	1251785	634557	100%	100

Source: UNEP Risø Centre, 2012. UNFCCC, 2012.

The Table offers details of each project type and the percentage of projects relative to the total sum of CDM projects. The two columns to the right (k CO_2[44] and p of k CO_2 total) show the estimated amount of k CO_2 reduced by each project type and the percentage relative to the estimated total k CO_2 reductions of all CDM projects. (Some project types had few projects with issued CERs to use as reliable estimates of project outcomes in terms of CO_2 – these have not been included; e.g. energy distribution and EE service). We see clearly from the table 3 that HFC-23 and N_2O projects have contributed to about 37% CO_2 reduction in both countries, although the projects number is quite limited (1.5% of China, and 0.8% of India).

One of the major criticisms of CDM projects is additionality. The fundamental of CDM under the Kyoto Protocol Article 12 explains the reduction in emissions "must be measurable and long term benefits related to the mitigation of climate change and additional to any that would occur in the absence of the certified project activity" (UNFCCC, 1997). The additionality has been calculated in various settings and found that the emissions reductions might have happened, even without the implementation of CDM projects (Zhang and Wang, 2011; Fischer, 2005;Wara and Victor, 2008; Haya,2007). The methods to evaluate additionality of CDM are still under development and need a critical assessment (Zhang and Wang, 2011). While due to the weak regulatory mechanisms, the CDM regime actually increasing emissions as the number of CERs issued are greater than the reduced emissions (Boyd et al., 2007, Schneider, 2007).

Moreover, at international level, the criterion for SD is widely missing as argued by developing nations for impinging on their sovereignty, and therefore is highly dependent on the DNAs for achieving SD goals through CDM projects (CDM Watch). Based on the individual country SD goals, each country's DNA has developed certain assessment procedures for approving CDM projects. Although India and China are both dominating counties in terms of project number and share in global CERs, they are posing different political settings with varied DNA functioning and different SD goals.

In Carbon market, cumulated CERs generated from HFC-23s and N_2O projects accounts 65% of the total GHG reductions until 2012 (Table 4). The CDM Executive Board launched a series of restrictions in order to cope with this problem. EB has limited the incentives for implementing such projects, but yet to be eliminated (UNEP, 2012). The increasing number of HFC-23 and N_2O projects, which does not support the sustainable development goals, is in line with the criticism of CDM mechanism (Schneider, 2010; 2011; Olsen, 2007; Ball, 2008; Tollefson, 2008; Wara and Victor, 2008). The critiques argue that the CDM projects are increasing the emissions rather than decreasing due to the weak enforcing mechanism (Schneider 2010, 2011; Paulssson 2009). On the other hand, the industrial gas reduction CDM projects don't contribute to sustainable development, as they only need small change in technology to reduce the emissions and do not provide employment or create better environmental conditions (Schneider, 2010; 2011). At the same time, because of high potential of CERs through HFC-23 reduction CDM projects, there is an incentive for the polluters to increase the HFC-23 production (Schneider 2010; UNFCCC).

[44] Mulitply by 1000 to get number of CERs issued to each project type.

Table 4: Types of CDM projects

	CDM							
	Number		CERs/yr		2012 CER		CERs issued	
HFC-23s projects	23	0.3%	81727	7%	476504	18%	414363	43%
N_2O projects	107	1.2%	57793	5%	251769	10%	212767	22%
Total	8871	100%	1233845	100%	2612586	100%	973934	100%

Note: The accumulated 2012 CERs is the total GHG reduction in the projects from the start or the crediting period until the end of 2012. Source: UNEP RISOE

4. Analysing the prosperity of industrial gas emission projects

The above analysis concludes that industrial gas reduction CDM projects developed largely and rapidly although they are not consistent with the sustainable development goals, and have limited contribution to emission reduction. Thus, the following section focuses on China and India cases to understand why and how the industrial gas reduction projects developed?

4.1 Institutional setting

This sub-section examines how the institutional arrangements in domestic domain promote the strategic behaviour of implementing the industrial gas reduction projects in China and India.

4.1.1 The Chinese situation

China's preference for the CDM is aligned with its national strategy in energy and climate change and sustainable development. The priority areas cover three dimensions including energy efficiency improvement, development and utilization of new and renewable energy, methane recovery and utilization. Currently, there are not many comprehensive financial incentive tools in place to support these sectors. However, the development of CDM projects in such areas is encouraged by the government through taxation generated from CER sales. The CDM projects related to the reduction in the emissions of GHGs-N_2O, HFC-23, PFCs, and SF6 are discouraged because reducing their emission involves end-of-pipe treatment and other simple technologies. As a result, the industrial gas reduction projects only offer quite limited social, environmental, and economic benefits. Such projects generate large amount of CERs at low costs, thus they may drag down the prices of CERs and negatively affect other projects' contribution to sustainable development. Therefore, Chinese government heavily taxes these CDM projects (table 5). For projects identified belongs to the priority areas, forestry and small-scale projects, China has a 2% levy on the CERs originated from CDM projects. While for 'low-hanging fruits' projects (such as HFC-23s) that generate CERs at low cost, the levy is 65%; for N_2O emission reduction projects, it is 30%. The levy collected then managed and utilized in a CDM fund under the Ministry of Finance for supporting other activities, promoting sustainable development and CDM development. Specifically, to fund CDM administration and approval activities, climate change-related capacity-building

activities, sponsoring the preparation of PDD and other pre-phase CDM expenses from poor regions and those with high sustainable development contributions (NCCC, 2005).

Table 5: Taxation of CERs from different types of CDM projects in China (Source: NCCC)

Project type	HFC-23s	PFCs	SF6	N_2O	Priority Areas	Forestation	Small-scale projects
Tax rate in % (of the CER price)	65%	65%	65%	30%	2%	2%	2%

However, the "measures for operation and management of CDM in China" (2005) also demonstrated that "the revenue obtained by CDM projects shall belong to the Chinese government and Chinese enterprises implementing the project. As discussed earlier in the paper, the high economic value of these type of projects (i.e., HFC-23s and N_2O) due to the calculation methods (destruction of one ton HFC-23 is equivalent to 11,700 CERs) strongly motivates the project proponents to implement and to trade these projects while widely ignore the limited contribution of these projects on achieving SD goals. The special regulation on revenue distribution as the Chinese government sharing the revenue with enterprises contributes to the high pass rate of HFC-23 (100%) and N_2O (65%) projects.

Table 6. Basic situation of CDM in China

Types of emission reduction	Ratified projects		Registered projects		Issued projects		Expected average annual CERs from registered projects		Expected average annual CERs from Issued projects	
	No.	%	No.	%	No.	%	No.	%	No.	%
Renewable energy	3251	75.08%	1789	55.03%	668	79.43%	220,118,187	53.47%	95,634,394	39.24%
Energy saving and efficiency improvement	583	13.46%	164	28.13%	73	8.68%	39133481	9.51%	20105099	8.25%
Methane recovery & utilization	313	7.23%	134	42.81%	42	4.99%	37922737	9.21%	20190687	8.28%
N_2O decomposition	**40**	**0.92%**	**26**	**65.00%**	**15**	**1.78%**	**24421570**	**5.93%**	**22182128**	**9.10%**
Fuels substitute	49	1.13%	24	48.98%	17	2.02%	19885728	4.83%	17175140	7.05%
Chemical pollutants reduction(HFC-23)	**11**	**0.25%**	**11**	**100.00%**	**11**	**1.31%**	**66798446**	**16.23%**	**66798446**	**27.41%**
Landfill burning power generation	20	0.46%	4	20.00%	11	1.31%	543542	0.13%	150158	0.06%
Afforestation and reforestation	4	0.09%	3	75.00%	0	0.00%	116272	0.03%	0	0.00%
Others	59	1.36%	11	18.64%	4	0.48%	2711399	0.66%	1494305	0.61%
Total	4330	100.00%	2166	50.02%	841	100.00%	411651362	100.00%	243730357	100.00%

Source: calculated from China CDM database: http://cdm.ccchina.gov.cn Data time: updated on 1st August, 2012

As illustrated in Table 6, the number of issued renewable energy projects accounts for 79.43% of the total ratified projects, much higher than that of HFC-23 (1.31%) and N_2O (1.78%) projects. However, among all expected average annual CERs, issued renewable energy is expected to contribute 39.24% of it, mere slightly more than HFC-23 and N_2O projects (in total 36.51%), and the approval rate of HFC-23 projects reaches 100%, that of N_2O projects (65%) is also high compare with other project types. The average annual CERs of HFC-23 and N_2O projects are greater, thus providing huge economic incentives to both project producers and government though has limited contribution to regional environment protection and social sustainability (Yang et al., 2011).

4.1.2 The Indian Situation

The sustainable development goals and priority areas for Indian situation are also similar to the China's priorities. Though, the expected benefits from the CDM projects are same in all the host nations, India has developed specific sustainable development goals. But, in contrast to China, India did not develop a special levy tax on CERs generated from the industrial gas reduction CDM projects. This encourages local industries to participate in the CDM (Sukumar and Liu, 2008). India does not specify priority areas for CDM projects, instead, it illustrates explicit sustainable development indicators for policy design including social wellbeing, economic wellbeing, environmental wellbeing, technological wellbeing (Sukumar and Liu, 2008). India's approach towards sustainable development includes the enrichment of quality

of life of the poor in addition to protecting the environment. The main sustainable development indicators, which should be considered in developing the CDM projects in India are

Social wellbeing: In addition to the environmental protection, the CDM projects should generate more income, additional employment to support the removal of the social disparities and improve the quality of life of the local communities.
Economic wellbeing: The CDM projects should attract additional investments.
Environmental wellbeing: The main focus is to reduce the pollution levels, but the CDM projects should also consider the impact of project activity on resource sustainability, resource degradation, bio-diversity protection, impact on human health.
Technical wellbeing: The transfer of the technology with in the country and from other nations should lead to environmentally safe and sound technologies to assist in up gradation of the projects elsewhere in the country.

Among the above-discussed sections, the social wellbeing is well institutionalized by contributing 2% of CERs from each CDM project for the local villages' development. These activities on how the project proponent intends to spend the money from the 2% CERs must be clearly mentioned in a prescribed form during the PDD. The implication of the 2% CERs utilization in India is not well studied due to the dearth of information. The baselines for each kind of CDM projects developed by the NCDMA are to be followed by the project proponents during the development of the PDD. These baselines are provided to increase the transparency in the process and monitoring. The methodology to monitor the projects is prescribed by the NCDMA to facilitate the calculation of emission reductions.

The Government of India plays a crucial role in approving the HFC-23 and N_2O projects. Though the number of projects involves HFC-23 is less in number compare to China, the available projects have applied for the CDM process to obtain the low-cost CERs. On the other hand, the HFC-23 involved industries were developed rapidly because of the high economic profits involved in these projects. The CDM watch argues that, the number of HFC-23 projects has increased in India because of the CDM benefits. Since, the technological changes in these projects are not costly compare to other CDM projects, the projects proponents established new refrigerator manufacturing units after learning the benefits. But, the number of coolant gas industrial units has been reduced after the inclusion of these products into the Montreal protocol. Moreover, because of the CDM projects benefits, the industrial units which produce HFC-23 are not putting any efforts to upgrade the technology to reduce the emissions, in spite of the available technologies. The industrial units are demanding more financial support either in the form of incentives or relaxed CDM procedures for HFC-23projects (www.eia-itnernational.org). Since the destruction of HFC-23 is the cheapest ways of climate mitigation, the CERs from these projects are considered as scandalous and hence banned from the marketing in various Carbon markets.

4.2 Economic motivations

International buyers' motivation towards CERs trading plays an important role in the behaviour of firms to adopt the CDM projects. Existing research shows that global buyers prefer projects generating higher volume of CERs (CERs >100 kt CO_2eq./year) with less uncertainty in delivering CERs (GIZ, 2008). HFC-23s and N_2O projects fit well with this

demand by generating large volumes of CERs with limited investment. The huge potential to generate the CERs through destruction of HFC-23 is attracting many project proponents. Another reason for the prosperity of larger projects such as HFC-23 and N2O projects is the transaction cost involved in the project, which have "in some cases, been significant enough to prevent projects from proceeding (UNDP, 2006)". The transactions costs involved in the projects become a hurdle for the small scale projects, which would have considerable social and economical impacts at local level by reducing the carbon emissions (Krey, 2005; Chadwick, 2006). The transaction costs here are mainly the costs directly contributes to CDM project cycle, including the project design, validation, registration, verification, and contracting with potential purchasers. The costs vary among projects from US$40,000 to US$200,000 (excluding registration fees), especially for small-scale projects in which transaction cost are likely to account for 20-40 % of its carbon revenues (UNDP, 2006). Taken into consideration the transaction cost and the long crediting period, small-scale projects are less attractive for investors from the economic perspective. The uncertainties arising in the process of CDM approvals are crucial due to the transactions costs and can influence the type of projects approved for development in the nation (Sukumar and Liu, 2008). The projects which can contribute to the SD goals, are constrained due to the high transactions costs involved in developing the methodologies and approval mechanisms and due to the less economic profits for the proponents (Paryavarnamitra, 2012).

In addition, the usage of HFC-23 was not included in the regulated substances of Montreal Protocol until 2005 (UNEP, 2012). This particular exemption from the other HFC products is a clear evidence for the international level lobbying which is expected to generate huge profits by claiming the CERs from the HFC-23 reduction projects (Carbontradewatch.org). There is a strong debate on whether the HFC-23 should be included in Montreal Protocol, so that the ratified parties automatically reduce the production of HFC-23. However, due to the high political and economic sensitivity the issue took considerable time. This sensitivity was evident by the decision of EB to postpone the decisions of the Korean CDM projects of HFC further to 2012 and waiting for the UNFCCC post Kyoto approaches (UNEP, 2012). The nations involved in industrial gas reduction are mainly China, India, Japan, United Kingdom, Norway and Italy (UNEP). The lobbying from these groups is trying to influence the decision of the EB and UNFCCC on the industrial gases reduction CDM projects (CDM watch, 2012).

5. Discussion

It is very clear from the project process description that the DOEs and consultants play very important role in the approval process of CDM projects. Because of the increasing demand of the consultants to approve the projects, the competition between DOEs has increased and the quality of CDM projects is in danger (Schneider, 2007). The DOEs have come up with innovative methods to attract project proponents by reducing the price and time of approval. In the process of the profit maximizing, the private DOEs are possibly compromising in the verification process (Schneider, 2010; 2011). Schneider (2007) has pointed out the informal arrangements evolved between DOEs and project proponents to acquire the fast approvals with success related payments. To overcome this problem, EB has made several changes in the administration by increasing members in the boards, innovative screening methods for the approval of projects. Since the buyers of CERs and sellers and producers of CERs are not directly incentivized through the Kyoto Protocol, the EB has to overcome the regulatory bottlenecks (Lecocq and Ambrosi, 2007). Another strong institutional drawback behind

approval of the industrial gas reduction projects is the weak baseline methodology to prove the additionality of these projects (Schneider 2010; 2011; Sukumar and Liu, 2008). In addition, the international level concept for the SD for each CDM project is missing and creating scope for the national DNAs to modify the baseline methodologies according to the demand of the CDM market. The power to develop methodology for establishing the baselines rests with the DNAs which are therefore instrumental in affecting the desirable change in industrial gas reduction projects or otherwise .

Generally, the CDM has made the abatement of HFC-23 too profitable (Ostrom, 2012; Wara, 2007). Therefore, the sale of CERs generated from HFC-23 project is far more valuable than production of the refrigerant gas that leads to its creation in the first place. It strongly challenges the goal of carbon emission reduction as the high market demand for CERs incentivized the manufacturers of HFC-23 to produce it in order to offset it, instead of dealing with the threat of climate change. "There is a strong incentive (of HFC-23 projects) to ... not improve the efficiency of the plant ... during any refurbishment because of the CDM benefits." (CDM methodology panel report, 2010). Moreover, under such circumstance the buyers' increased emissions may not be fully offset because of the excess of carbon credits received by such projects (Wara and Victor, 2008). It causes a major distortion of the market. The calculation done by Wara (2007) shows that payments to refrigerant manufacturers and carbon market investors by governments and compliance buyers for HFC-23 credits, will be approximately 4.7 billion euro while the cost of abatement would have been less than 100 million euro if refrigerant producers would be compensated the extra cost of installing the simple technology needed to capture and destroy HFC-23.

Moreover, the domestic governance in terms of administrative structures of designated national authority (DNA), types of rules, and actors involved playing essential role in influencing CDM implementation. The administration of DNA in China is well organised in terms of the CDM approaches while the Indian DNA is still struggling to develop a strong approach towards industrial gas reduction projects. Although, both nations adopted similar approach towards technology transfer through CDM projects, it was proved that China is well advanced in this process than India due to the difference in the political setting and the fundamental approach. The review system on the proposed CDM projects by experts gives total command to the already strong DNA in China. In contrast, Indian DNA is depending on the Environmental Ministry which lacks the system of reviewing the CDM proposals before approval (Sukumar and Liu, 2008). In India, important representatives from the ministries such as Ministry of Coal, Ministry of Petroleum and Natural gas are missing in the DNA board (Michaelowa, 2003; Sukumar and Liu, 2008). At the same time, the industrial organizations such as Confederation of Indian Industry (CII), the Federation of Indian Chambers of Commerce and Industry and Cement Manufacturer's Association and research organizations such as The Energy Research Institute and NGOs like Centre for Science and Environment are involved in the deliberations of the CDM process in India while their counterparts are absent in the case of China.

6. Conclusion

The CERs produced from the industrial gas reduction projects are criticized. The main critiques about these projects are, the profits from these emission reductions are not matching with the sustainable development goals. The destruction of the HFC-23 is the cheapest

technological option available among all GHGs emissions. In spite of these critiques, the CERs generated from the industrial gas reduction projects are taking major proportion in India and China until 2013. Although, there are certain steps taken at international level to eliminate the industrial gas reduction projects from the CDM list and addition of HFC-23 in Montreal Protocol, there is an urgent need to strengthen the national level institutions to enhance the quality of CERs in both China and India. The feedback from the China indicates that China is trying to enhance quality of the CERs to get profits in the carbon market. On the other hand, the Indian administration is attracting investments from international market and more collaboration in the local CDM projects. There is a possibility that the close relations between industrial association and department of Industrial policy may form lobby groups to influence the decisions of DNA to approve less sustainable CDM projects such as HFC-23 and N_2O. To overcome such kind of problems and to learn more about the sustainability impacts of the CDM projects at local level, there is an urgent need to strengthen and to develop the networks, and to encourage the participation of the civil society and NGO in the CDM process.

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Justice in environmental institutions - How do frameworks for institutional analysis consider ideas of justice?

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Abstract

We propose to include dimensions of justice more explicitly into institutional and policy analysis of environmental governance. We investigate how alternative frameworks for the analysis of environmental institutions - the IAD framework by Elinor Ostrom, the Environmental Governance framework by Arild Vatn, and the Diagnostic Approach by Oran Young - address concerns of justice. More specifically, we ask: (1) What dimensions and elements of justice are relevant for institutional analysis and design? (2) Do these dimensions appear in existing frameworks for institutional analysis? And (3) if not, can these frameworks be adapted to include core elements of justice? Based on the political philosophy literature on justice the authors develop a check-list of different dimensions and aspects of justice, which they use when analyzing the different frameworks for institutional analysis. We find that the investigated frameworks, although not explicitly excluding questions of justice, do not fully exploit their potential to consider different dimensions and categories of justice. Drawing on the conceptual analysis as well as on the limited examples of empirical studies which examined justice as part of an institutional analysis, we suggest ways to improve the analysis of justice in institutional analysis frameworks.

1 Introduction: Global Environmental Governance and justice

Questions of justice, fairness and equity[45] are at the heart of democratic and legitimate environmental governance and law (Sunshine and Tyler 2003, Franck 1995). They gained momentum with the environmental justice movement in the 1960s and are today key issues in the scientific and political discourses on climate change and other environmental concerns. This manifests in an emerging body of literature on global environmental justice (e.g. Bullard and Johnson 2000, Schlosberg 2004) and climate ethics (e.g. Gardiner 2004, 2010; Hayward 2012). Shue (1992) even claims that "justice is unavoidable", and Young (1999) argues that "fairness matters" both in the formation and the outcomes of institutions.

However, institutional analysis, as the theoretical perspective which "concerns how institutions are formed and how they function" (Vatn 2011: 134), seems to provide no conclusive guidance or tools on how to systematically assess justice in environmental governance. This gap is highlighted in the Earth System Governance Science Plan, which outlines a

[45]In this paper, we use the terms "justice", "fairness" and "equity" as roughly synonymous, while being aware of the different connotations of each of the three terms and the different uses by different authors and in different disciplines and jurisdictional systems.

broad research agenda for the global social science community (Biermann et al. 2009). The authors of the Science Plan underpin not only the necessity to better understand environmental institutions and, more broadly, governance; but highlight the need to assess their fairness and implications for justice in two out of five main agenda points: *accountability and legitimacy* of governance(procedural justice) and *allocation and access* (distributive justice) (Biermann et al. 2009: 6).

Paavola (2007: 94) goes one step further: He proposes an extended definition for environmental governance "as the establishment, reaffirmation or change of institutions to resolve conflicts over environmental resources", claiming that these processes are all about social justice rather than efficiency. In his proposal for conceptual revisions of the new institutional approach to environmental governance, the author further suggests the acknowledgement of "radical pluralism" as a means to broaden distributive concerns and give a role to recognition, fair participation and legitimate distribution of power as the underpinnings of legitimacy (Paavola 2007:101). Moreover, Paavola (ibid.) claims that a gain in resolution by looking at functional and structural tiers, governance functions and institutional rules, justice implications may be more easily determined.

Overall, both scientific and political discourses reflect the need for increased attention to justice in institutional analysis. In particular we feel that there is a considerable gap in conceptual work linking political-philosophical and applied science to institutional analysis. The aim of this paper is to address this gap. Inspired by the work of Paavola (2007) we want to dig deeper and investigate how alternative frameworks for the analysis of institutions address different elements of justice. More specifically, we ask: (1) which elements of justice are relevant for institutional analysis and design? (2) Do these dimensions appear in existing frameworks for institutional analysis? And (3) if not, can these frameworks be adapted to include core elements of justice?

As a background to our analysis, we examine the justice literature coming out of political philosophy (section 2.1), the global climate justice discourse and more local issues in the context of the environmental justice movement (section 2.2).Based on this, we identify a set of dimensions and elements of justice as a "checklist" to analyze different institutional analysis frameworks (IAFs) (section 3). We analyze the IAD framework by Elinor Ostrom, the Environmental Governance framework by Arild Vatn, and the Diagnostic Approach by Oran Young (section 4) and find that the investigated frameworks, although not explicitly excluding questions of justice, do not fully exploit their potential to consider different dimensions and categories of justice(section 5).In the concluding remarks (section 6), we highlight key issues when assessing justice in institutional analysis.

2 Background: The idea of justice

2.1 Theories of justice in political philosophy

The concept of justice has a central place in both ancient and modern political philosophy. It is a contested concept, which means that there are many different understandings, or *conceptions*, of justice (see Rawls 1973: 5). Justice concerns that part of morality which is *owed* to others. It has to be distinguished from other concepts such as charity which are ethically desirable but not related to specific rights of others (see e.g. Mill [1871]1998: V: 15). Justice, then, is about duties (or virtues) that are ethically required due to the rights of

others, such as not do harm to other persons. Justice, therefore, always entails a *claim holder* who has certain *claims* (or rights) against (one or several, specific or "general") *claim addressees* or duty bearers (e.g. Stumpf 2011). To speak meaningfully about justice, we therefore need to answer the question: Who is entitled to what types of claims/rights and on what basis of reasons or justifications? Different conceptions of justice can be linked to different strands of ethical reasoning such as *deontology*, *consequentialism*, or *virtue ethics*.

"Justice" is not a thing, but is an *attribute* of "things" with evaluative and normative, i.e. conduct-guiding, meaning (Pogge 2006: 862f.) This attribute can apply to different *judicanda* which can be judged to be just or unjust: individual or collective actors, actions and omissions, institutions or states of the world (Pogge 2006: 863).

An important distinction that is frequently made regarding different *domains* of justice is that between a) *distributive* justice, which considers the right way to define who is entitled to what share of what kind of (socially desired, but scarce) goods, b) *corrective* justice, that considers the rectification of harm/damage done to others, c) *retributive* justice, that refers to the right retribution of doing such harm, and d) *justice-in-exchange*, which refers to justice in voluntary exchanges (see e.g. Aristotle, EN 1130b ff., Pogge 2006: 865 with a slightly different terminology).

Another recurrent distinction is made between *procedural* and *substantial* justice (Dobson 1998: 70). Pogge (2006) argues that this distinction can be applied to all the "domains" of justice. Procedural justice is often associated with transparent, legitimate processes and fair bargaining positions. However, the mere presence of the relevant actors in decision-making procedures does not guarantee just or fair outcomes, as power relations can heavily impact on the outcomes (see also section 2.2.2).

Institutional and structural issues are particularly important for questions of justice. The design of political and societal structures is a fundamental precondition for the assignment of claims and the distribution of goods. Some argue that the (re)production, stability and order of the underlying structures and constitutional rules of a community are independent matters of justice which should be judged in addition to, for example, the distributional outcomes and procedural fairness. Faber and Petersen (2008) refer to this aspect as *political or structural justice.*

Sen (1979) pointed out that justice judgments can rest on different *metrics* (informational bases). The judgment could for instance be made on grounds of information about utility, primary goods (Rawls 1973), or capabilities (Sen 1979, 2009, Nussbaum 2000). *Instruments* of justice are those objects or actions that are employed to satisfy claims of justice (e.g. Anand and Sen 2000) and to score better on the justice metric: This could for instance be a (re)distribution of income, or an institutional reform.

The question of trade-offs between different justice goals, such as between inter- and intragenerational justice, or between justice and other societal goals, such as between justice and the effectiveness of environmental regimes (Baumgärtner et al. 2012) poses difficult questions both in terms of setting priorities between these different goals ("value side") and in terms of the right allocation of instruments to achieve the respective goals ("production side").

2.2 Environmental justice discourses

2.2.1 Justice in the literature on applied climate ethics

Climate justice has been treated mostly as a *global level* issue (Gardiner 2011). Authors particularly highlight the North-South discrepancies in framing mitigation solutions and adaptation finance (e.g. Ikeme 2003, Grasso 2011); and the inequalities between the developed and developing world in terms of uneven *distribution* of impacts of and vulnerability to climate change on the one hand, and *historical responsibility* and *ability-to-pay* on the other hand (e.g. Müller et al. 2009, Dellink et al. 2009).

Scholars have focused on the issue of *mitigation* (e.g. Ringius et al. 2002, Metz 2000), which is most often framed as a global commons problem (e.g. Singer 2006), always transnational and is almost exclusively about the *duty-bearers*. Work on who should bear the *cost of adaptation* only started to emerge recently (e.g. Paavola and Adger 2006, Dellink et al. 2009, Grasso 2010). Questions of global adaptation finance and just distribution of costs are closely linked to mitigation issues, as one predominant argument highlights the responsibility of those who emit most and thus cause climate change to not only pay for mitigation, but also for the resulting need to adapt to the adverse impacts of climate change.

Most authors distinguish between *procedural and distributive justice*. The former is mostly about the inclusion of parties in decision-making processes, while the latter and dimension focuses on normative principles for burden sharing in climate policy (Klinsky and Dowlatabadi 2009). Such applied principles include *historical and causal responsibility, ability to pay, putting the most vulnerable first* from a Southern perspective *and utilitarian and efficiency proposals as well as grandfathering* in the North (e.g. Ikeme 2003, Moellendorf 2012). The dominant approach across the literature is *actor-centered*, i.e. the key question is about which agents to hold accountable (e.g. Page 2008) or about how to guarantee *fair processes* including all actors concerned.

Ever since the Club of Rome's "Limits to growth" report (Meadows et al. 1972) the *intergenerational* dimension of justice has been an important aspect of the sustainability debate and has received increasing attention in the context of climate change (e.g. Page 1999).Hans Jonas remarked that due to increased power of humankind to substantially change the global biosphere and impact the farther future, new ethical questions arise beyond the perspectives of traditional moral philosophy, which was mostly an ethics of the "here and now" (Jonas 1974). Intergenerational justice is thus concerned with the distribution of wealth and resources between generations and the potential claims of future people and the respective duties of the current generation (Meyer 2010, Gosseries 2008, Ott and Döring 2008, Barry 1989).

2.2.2 Environmental justice at the local level

At the local level, environmental justice is mainly advocated by social movements. Their claims focus on socially marginalized minorities that often live in environmentally vulnerable territories or where natural resources necessary for their subsistence are excessively affected by environmental degradation. The theoretical perspective that illustrates the claims by local environmental justice is called environmentalism of the poor (Martinez-Alier 2002). This perspective assumes that the environmental impacts disproportionately affect different social groups and frames environmental justice as an issue of the *(re) distribution* of environmental burdens and natural resources.

These environmental justice movements share the perception that different social groups have different levels of *responsibility* regarding the depletion of natural resources and, more importantly, that social *inequality* defines levels of exposure to environmental risks (Acselrad 2004). In other words, their argument is based on the assumption that vulnerable groups are *excluded from the policy formulation process* and, therefore, are negatively *affected by decision making results* concerning environmental issues (Ikeme 2003).

The environmental justice movement is based on a few general principles (Acselrad et al. 2009, Bullard 2004). First, it opposes policies based on the displacement of risk and pollution. Instead of adopting the "not in my backyard" (NIMBY) strategy, they advocate for the "not in anybody´s backyard" (NIAMBY) approach (Bullard 2004). Consequentially, polluting activities should not be displaced from one country to the other. Instead, the responsible actors groups responsible for such activities would have to abolish pollution sources and promote changes in the production and consumption model. At the same time, Environmental Justice advocates argue for a "just transition", which should be negotiated with workers of polluting industries so that the movement towards a cleaner society does not create unemployment among these workers (Acselrad et al. 2009, Bullard 2004).

The theoretical work on environmental justice at the local level was and is largely driven by real cases of protests against environmental injustices. The environmental justice movement began in the United States in the 1960s, starting with protests against location patterns of pollution sources and health hazardous facilities and their proximity to specific communities *(territory)*, and later discussing also environmental issues in an urban context. In research organized by social movements in the 1980s, *ethnicity* was the variable that best explained the distribution of hazardous waste disposal sites in the United States (Acselrad, 2004, Bullard, 2004). Representatives of the environmental justice movement in Brazil argue that the displacement of socially excluded groups to environmentally sensitive areas without appropriate urban infrastructure during the urbanization in the 1950s can be interpreted as an environmental injustice in terms of *unequal access* to environmental resources (e.g. treated water, clean air) or disproportionate distribution of environmental burdens and risks (such as floods, landslides and noise) (Maricato1996, Oliveira 2004).

Authors like Williams (2004) and Fonseca (2011) indicate that the presence of local representatives in decision-making arenas does not necessarily imply procedural justice. They indicate cases where the presence of local representatives aims to legitimize decisions taken previously by those who have greater political and economic power. Especially in developing countries, the actors who hold economic power are often the decision makers in the political arena (Eversole 2003, Cleaver 2005, Sayago 2007, Tatagiba 2005).

3 Method: Checklist of dimensions and elements of justice

From our discussion of the justice literature coming out of political philosophy, the global climate justice discourse and more local issues in the context of the environmental justice movement, we identify the following elements and dimensions of justice that we think should be taken into account when addressing justice in institutional analysis (the list proceeds from a high level of generality to more specific issues):

Table 1: Dimensions and elements of justice. We consider different levels of specificity (low to high). More specific questions might not apply to the IAFs analyzed here, but are relevant for the analysis of case studies. IAF = Institutional Analysis Framework.

Dimension / element	Questions related to this dimension / element
Unit of analysis / judicandum	What units of analysis that are relevant to justice are addressed in the framework? Does it refer to individual or collective actors, actions and omissions, institutions or states of the world?
Norms and values, ethics	Does the IAF consider norms and values? Does the IAF refer to a particular ethical theory as background?
Procedural justice, power	Does the IAF refer to the inclusion or exclusion of particular actors? Does the IAF address (fairness in) the decision-making process? Does the IAF account for the power structures in the decision-making process?
Distributive justice	Does the IAF include distributive rules (allocations/outcomes)? Does the IAF refer to the distribution of rights, goods, income, etc. between different groups and individuals?
Corrective justice and retributive justice	Does the IAF refer to harms done by one actor to another? Does the IAF refer to interdependencies or externalities between actors?
Justice-in-exchange	Does the IAF capture (market) exchanges between actors? Does the IAF refer to rules for such exchanges?
Political / structural justice	Does the IAF refer to underlying structures / constitutional rules and norms? Does the IAF consider how these structures, rules and norms are (re)produced?
Intergenerational justice	Does the IAF allow to assessing future outcomes and impacts? Does the IAF allow reference to future persons' rights?
Principles of justice	Does the IAF invoke specific principles of justice? such as - Precautionary principle - No-harm principle - Equality - Historical and causal responsibility - Ability to pay - NIABY (Not in anybody's backyard)
Scale	Does the IAF refer to different impacts on different spatial levels? Does the IAF refer to the notion of territory?

Dimension / element	Questions related to this dimension / element
Metric	Does the IAF consider different performance standards? Does the IAF include tools to measure the distribution of impacts? Does the IAF generate data on income, utility, capabilities or other informational bases?
Trade-offs	Does the IAF address trade-offs between different (justice) goals? Does the IAF address trade-offs between regime effectiveness and justice?
Claim holder / beneficiary	Does the IAF specify who is entitled to certain claims?
Duty-bearer /claim addressee	Does the IAF specify who is responsible to ensure that the claims are fulfilled?
Instruments	Does the IAF make suggestions of how to make processes, outcomes, impacts more just?

Based on this checklist, we analyzed three IAFs and their predisposition and capacity to include dimensions and elements of justice: Elinor Ostrom's Institutional Analysis and Development Framework (IAD), Arild Vatn's framework for studying environmental governance systems, and Oran Young's Diagnostic Approach.

4 Analysis: Justice in frameworks for institutional analysis

4.1 Elinor Ostrom's Institutional Analysis and Development Framework (IAD)

For the Institutional Analysis and Development framework (IAD), Ostrom(2005, 2007, 2011) identified the common building blocks constituting the diversity of social behaviors (institutions) organizing human life. The level of abstraction is therefore high and the IAD is compatible with and in need of a variety of theories and models of human behavior. Subsequently we will describe the components of the IAD (see figure 1) and will highlight those which allow for consideration of justice concerns.

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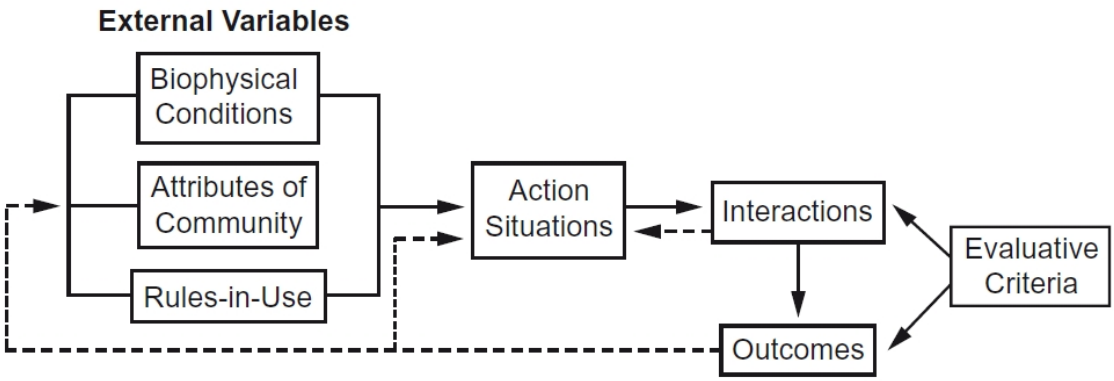

Figure 1: The institutional analysis and development framework. Source: Ostrom (2011).

Action situations are the core conceptual unit of the IAD. They can be described using the following variables: (1) the set of actors, (2) the specific positions to be filled by participants, (3) the set of allowable actions and their linkage to outcomes, (4) the potential outcomes that are linked to sequences of actions, (5) the level of control each participant has over choice, (6) the information available to participants about the structure of the action situation, and (7) the costs and benefits assigned to actions and outcomes. These components need to be identified at the beginning of any institutional analysis using the IAD. If as part of such a study dimensions of justice are addressed, the action situation would provide information specifying the *judicandum/judicanda.*

Describing an action situation includes assumptions about the behavior of the actors involved. Traditionally these assumptions have rested on the *homo oeconomicus* model. However, the IAD also allows employing alternative models of human behavior acknowledging that humans may follow different rationales influenced by *norms and values*.

An action situation generates interactions, which in turn lead to outcomes. The evaluation of such outcomes constitutes the most overt consideration of justice in the IAD. Ostrom (2005) recognizes many potential criteria for the evaluation of outcomes, but highlights (1) economic efficiency, (2) equity, including fiscal equivalence and redistributional equity, (3) accountability, (4) conformance to general morality, and (5) adaptability. Criteria 3 and 4 refer to broader ethical questions. 'Accountability' is seen as a form of responsibility, and relates explicitly to officials' responsibility concerning the development and use of public facilities (Ostrom2005). Whereas, 'conformance to general morality', relates to questions such as "Does cheating pay off in an institution?" or "Is keeping promises rewarded?" Criterion 2 corresponds to principles of *distributive and corrective justice.* Using the term 'fiscal equivalence', Ostrom refers to equity based on contributions and benefits regarding an individual's effort (*merit-based principle and beneficiary pays principle, justice in exchange*), and the '*ability to pay*'. By 'redistributional equity', Ostrom implies the preferential treatment of those most vulnerable. Economic efficiency refers to the allocations of cost and benefits and is measured by the magnitude of the change in the flow of net benefits associated with an allocation or reallocation of resources. Ostrom underlines the potential *trade-offs* between these criteria, particularly for efficiency and redistributional equity.

Ostrom considers action situations as the dependent variables, which are explained by three categories of independent variables: (1) Biophysical conditions, (2) community attributes, and

(3) rules. Community attributes refer to the culture of a community and include the norms of behavior generally accepted in the community (*norms and values*).

Most important for our study are 'rules'. Rules are defined as shared understandings by participants about enforced prescriptions concerning what actions are required, prohibited, or permitted (Ostrom 2005). Ostrom (2005, 2007) offers several types of working rules: e.g. (1) Entry and exit rules (boundary rules), (2) position rules, (3) authority rules, (4) aggregation rules, (5) information rules, and (6) payoff rules. Exit and entry rules determine who may participate in an action situation and thus pertain to the dimension of *procedural justice*. Position rules create different positions for participants in an action situation, with different kinds of authority assigned to them. They can be analyzed as regards the dimension of *political justice*. Aggregation rules specify how collective choices are taken, whereas information rules, define what kind of information is accessible to participants, both relate to ideas of *procedural justice*. Payoff rules assign rewards or sanctions for particular actions or outcomes, for example in market transactions, pointing to *justice-in-exchange***,** but also *distributive and corrective justice*. Each rule in place might serve as a *judicandum* and thus be analyzed as to its justness. The perspective of *scale* relates to the embeddedness and continuity of action situations, which are linked with other action situations as well as dependent on higher and lower level action situations. Particularly this latter – vertical – dimension is important for the analysis of justice at different scales. Justice at a local scale may have very different meanings than justice at a constitutional scale. Also, ideas of justice at one level may be embedded in a fixed understanding of justice at a higher level, such as Ostrom explains for any rules (Ostrom 2007). The operational level entails day-to-day actions and decision making of individual actors, whereas the collective choice level refers to public decision making levels constrained by collective-choice rules. The constitutional tier in turn influences these lower levels, where rules are made defining who is eligible to create collective-choice rules. This can be seen as an issue of *political justice* and *power*, raising the question of the legitimacy of the respective decision-making procedures.

Regarding the intertemporal dimension, Ostrom challenges "the presumption that scholars can make simple, predictive models of social– ecological systems" (2007: 15181) and argues that sustainability science should aim to identify variables that affect human behavior and social-ecological outcomes over time, and to recognize combinations of variables that lead to sustainable and productive uses of resources rather than combinations of variables that lead to collapses and high costs for humanity (2007: 15183). As solutions may not work the same over time, Ostrom emphasizes that as "structural variables change, participants need to have ways of learning and adapting to these changes" (2007: 15181). While Ostrom does not elaborate on that further, the concern about *intergenerational justice* could be introduced into the framework both regarding the careful prediction and evaluation of long-term outcomes and regarding the design of rules and procedures that allow learning and adaptation.

The IAD is a broad conceptual framework, not designed to explicitly address justice. However, it provides multiple entry points for including aspects of justice. The clearest link is made through the evaluative criteria, where distributive justice features prominently. The notion of scale is very important for the IAD and combines well with the scale dependency of ideas of justice. There is room both in the evaluation of outcomes as well as in the rule typologies to include further principles of justice. Rule typologies might even be adapted to include specifications regarding claim holder / beneficiary and duty-bearer /claim addressee, which also may arise from the community attributes or the action situation itself. Power issues

might be addressed when asking who creates what kind of rules. Yet, dimensions such as metric and instruments are too specific to be included at the general level of the framework.

4.2 Arild Vatn's Environmental Governance Framework

Vatn (2011) develops a framework for studying environmental governance systems; with the objective to guide the analysis of the environmental governance processes at global and local scales. Vatn builds his framework in different layers(figure 2). First, he defines the notion of a "resource regime", representing the institutions governing access to resources and the types of interactions related to them (Vatn 2011: 136ff.). Second, he describes the "governance structure", including economic and political actors and institutions governing the policy process in addition to the resource regime (Vatn 2011: 139ff.). Finally, the "environmental governance system" comprises technology, environmental resources and their attributes, patterns of interactions and outcomes (Vatn 2011: 142).

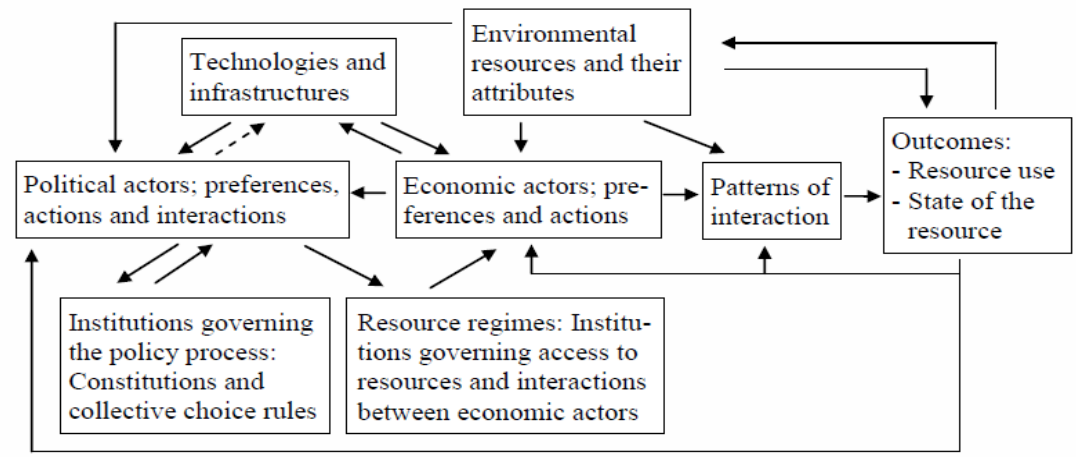

Figure 2: The framework for studying environmental governance systems. Source: Vatn (2011).

Vatn recognizes that environmental governance is intrinsically related to who gets access to the resources and "who has won in the battle over conflicting interests" (2011: 131), and thus recognizes the importance of *power*. Vatn emphasizes that efficiency should not always be the main criterion to be pursued (Vatn 2011: 132). In criticizing the omnipresence of rational choice theory, the author makes room for moral and ethical dilemmas and a rationality based on *norms and values* (Vatn 2011: 133).

Vatn emphasizes four core issues of institutional analysis: (1) legitimacy of institutions, (2) distributions of rights and responsibilities among the actors, (3) transaction costs, and (4) influence of institutional structures on actor's perceptions, interests and motivations (Vatn 2011: 134). The first and the second have strong implications for questions of justice.

Regarding legitimacy, Vatn distinguishes between legitimacy derived by following defined decision procedures and legitimacy by some ideal standard or "the better argument – to a set of general standards both about what are good processes and good outcomes" (Vatn 2011: 134). Thus, whereas the first form of legitimacy can be related to some formal version of *procedural justice* ("playing by the rules"), the second form of legitimacy relates to an ideal standard, which could very well be some conception of *substantial (e.g. distributive) justice*.

Vatn also warns against the rhetoric use of ideal standards (such as justice ideals): “Any power would refer to ideal standards to defend positions and conclusions” (Vatn 2011: 134).

In describing resource regimes, Vatn distinguishes between rules of access, i.e. rules defining the bundle of property or use rights of certain actors, and rules governing interactions, i.e. defining rules for transfer of the resources to which an actor has access. The rules of access can be judged under the perspective of *distributive justice*, whereas rules of interaction can be judged under the perspective of *justice-in-exchange* (in the case of voluntary transfers) or *corrective justice* (in the case of involuntary “transfers”, e.g. of pollution). Turning to the broader governance structure, Vatn includes “rules governing the political process (typically constitutional rules and collective choice rules)” (2011: 139), to be judged under the perspective of *political justice*.

Vatn mentions several examples of institutional dynamics, raising the question of long-term durability of institutional solutions (such as e.g. the problem of firms moving away due to regulations, Vatn 2011:144f., or a temporal misfit of institutions due to technological change, Vatn 2011: 143) and possible solutions for some of them (such as international agreements, Vatn 2011: 144f.). These are issues with potential implications for *intergenerational justice.* Vatn does not give more detailed advice on this, but a starting point to address this issue could be to look at the distribution of rights and responsibilities as well as at outcomes of institutions in a temporal dimension. Furthermore, one might ask what “natural order of things” (i.e. institutions that are taken as given, Vatn 2011: 135) the current generation bequeaths to the coming generations, and look at the way in which institutions influence motivations and values, including those that allow for a concern for or obligations towards future generations. Finally, one might look at the way institutions influence the construction of knowledge (cf. Vatn 2011: 135) and therefore the possibilities to recognize challenges for the future.

In sum, Vatn essentially understands institutions as the result of a conflict of interests. The author thus recognizes the importance of power relations in institutional analysis. He also shows that multiple standards and values go beyond the rational choice theory. Rules of access and interaction offer main docking points for analyzing justice within the framework. Another docking point is the core issue “legitimacy of institutions“. The framework thus allows including dimensions of procedural, distributive, corrective and political justice and justice in exchange.

Not all dimensions of justice from our checklist are dealt with in the environmental governance framework, or only in a limited sense. For example, Vatn does not formally mention normative principles of justice and does not cite any metric to analyze or to measure justice issues. Although Vatn asserts that “the framework could support analyses at different scales” (Vatn 2011: 143), little is said about the differences in interests, values and what form of analysis is needed to deal with environmental issues that affect distinct territorial configurations.

It is important to recognize that, at the local level, actors with political and economic power are generally the same. We therefore suggest paying close attention to the categories of political and economic actors. When an actor appears in both categories, this could be seen as an indication of a possibly problematic power accumulation.

4.3 Oran Young's Institutional Diagnostics

As a third framework for institutional analysis we consider the approach of "institutional diagnostics" (Young 2008b). This approach is part of the "scientific legacy" of the project on "Institutional Dimensions of Global Environmental Change" (IDGEC) (Young et al. 2008). Young stresses the "need to devote more systematic consideration to the roles that regimes play in determining who gets what and the extent to which subjects regard regimes as fair or just in procedural terms" (Young 2008a: 22).The diagnostic approach presents a list of questions representing matters of high priority to the IDGEC community (Young 2008b: 121). The aim is to achieve a better understanding of a specific environmental problem, in order to tailor fitting institutional solutions. The queries are grouped into the "Four Ps": Problems, Politics, Players, and Practices. The category "Problems" assesses the major characteristics of the problem and their implications for the regime. "Politics" is concerned with the basic features of the political setting, such as the distribution of power, the framing of discourses, and the pervasiveness of corrupt practices. "Players" concerns the characteristics of the actors involved, such as their basic motivational structures. "Practices" is concerned with the social practices or meta-practices which a new regime has to be taken as given. In addition, Young gives a number of "best practice" guidelines for creating regimes (see figure 3).

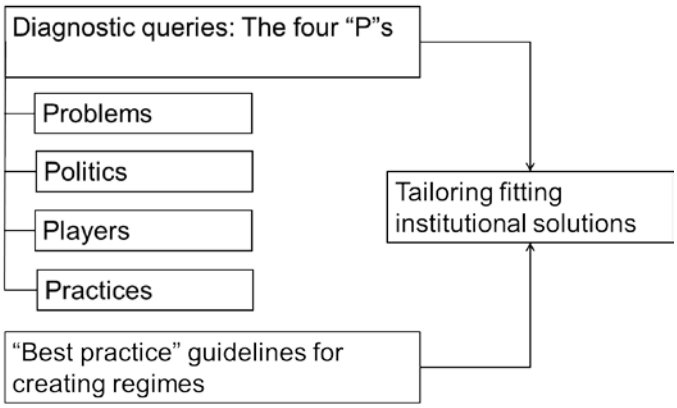

Figure 3: The Diagnostic approach by Young (2008b). Own illustration.

Young states that "institutions have always been important as determinants of efficiency and equity in human affairs" (Young 2008b: 116, see also Breitmeier et al. 2011). Institutions and their impacts therefore qualify as possible *judicanda* of the institutional diagnostics approach. However, the role institutions can play in the achievement of justice (and other) goals is limited by the extent to which institutions are indeed a causal factor and not mere "epiphenomena" reflecting relations of *power* (Young 2008b: 118). Power also arises as one of the important aspects of the group of queries "Politics" (Young 2008b: 126).

As one of the "practices" (i.e. social norms) in the international arena, Young refers to a specific *principle of justice*, namely the principle of *common but differentiated responsibilities* (2008b: 131, 133) as a meta-principle that frames the negotiation process and the feasibility of certain institutional designs. Furthermore, Young refers to the *equal treatment of all states* on the basis of their sovereignty (2008b: 133). Here, it becomes clear that Young sees *nation states* as the basic *claim holders* (and not, for example, individuals and social groups inside those states).

Young stresses that "all parties are concerned acutely with the degree to which outcomes are equitable in the sense that the distribution of benefits and burdens conforms to some reasonable standard of fairness, and processes are legitimate", and concludes that "regimes that fail to meet basic standards of equity seldom form" (Young 2008b: 138). *Just outcomes and procedures* are therefore seen as key variables for the successful *formation* of regimes. At the same time, equity is also named as a criterion of *performance* (Young 2008a: 17, 21, see also Mitchell 2008: 80), pointing to the question of the *metric* of justice while acknowledging that it is "extremely hard" to demonstrate the impact of institutions (Young 2008a: 19).

Pointing to a possible *trade-off* between problem solving and distributive consequences of institutions, Young (2008a: 44) notes that "it is not necessary to ignore or even downplay the importance of institutions in terms of problem solving in order to consider the allocative or distributive consequences of institutional arrangements". The distributive influence of environmental institutions could be quite specific (as the initial allocation of emission allowances) or rather implicit(as in the choice between private property and public or common property).

Young is clearly aware of the temporal dimension of institutions, which might have implications for *intergenerational justice*. As Vatn, he points to the possibility of institutional misfit over time when conditions change (Young 2008b: 116). He argues for "adaptive management" (2008b: 118f., 141) in the face of changing conditions and complex socio-ecological systems, and names the "framework-protocol approach" as one example for a flexible approach which is adaptable over time (2008: 133). Young doesn't explicitly address concerns for intergenerational justice or obligations towards future generations. However, one could include such issues, e.g. when inquiring into the "framing" of problems (Young 2008b: 137) – it might make a difference whether a problem is framed as an issue of intergenerational ethics or as a mere problem of the present.

Summing up, although justice issues are not the focus of the "institutional diagnostics" approach, it offers some docking points. Justice enters into the approach both as a condition for successful regime formation and as a performance criterion. Young does not explicitly mention different types of justice, and does not refer to a specific ethical theory or any specific metric to assess justice outcomes. However, the structure of the framework – a set of questions – offers excellent possibilities to include justice issues more explicitly, by including questions in each of the four Ps.

5 Discussion

None of the three frameworks was explicitly designed to address aspects of justice or relates to particular ethical theories. However, they all offer entry points for the analysis of justice. In the IAD framework by Ostrom, the clearest link to justice is in the evaluative criteria. In the Diagnostic Approach by Young, justice enters both as a condition of successful regime formation and as a performance criterion. In Vatn's framework, the clearest docking point to justice regards the rules of access and interaction and the key issue of "legitimacy".

Some entry points for dimensions of justice are accounted for in all three frameworks: (1) rules/ institutions and their outcomes and impacts qualify as units of analysis or judicanda; (2) social norms are accounted for and could include norms of justice; (3) procedural justice may be considered in terms of the inclusion and exclusion of actors; (4) distributive justice may be

included on the outcome (evaluative / performance) side in Ostrom's and Young's frameworks and linked to rules of access in Vatn's framework; (5) all frameworks are applicable at different scales.

Linkages to other aspects of justice appear just in one or two of the frameworks analyzed: (1) Power is treated by Vatn and Young. Vatn emphasizes that institutions are the result of power struggles. Young discusses how the distribution of power influences feasible institutional designs.(2) Political justice receives space in the frameworks by Ostrom and Vatn. In the IAD, constitutional structures and rules could be subject to political justice assessments, in Vatn's framework, such an assessment could be applied to the rules governing the political decision process. (3) Ostrom (efficiency vs. equity) and Young (environmental effectiveness vs. distributive consequences) concretely address potential trade-offs, whereas they are only implied in the general assumption of Vatn's framework as a "battle over conflicting interests". (4)Finally, principles of justice feature most prominently in the IAD, as part of both evaluative criteria and rule typologies. Young mentions the principles of common but differentiated responsibilities and equal treatment.

All three frameworks are too broadly designed and abstract to include metrics or instruments of justice, or details on claim holders and duty bearers of justice claims. Such specific aspects can only be addressed in combination with particular theories of justice. This in turn may lead to difficulties in the face of a pluralism of values and ethical positions.

Summing up, we found that all three investigated frameworks have a potential to include justice issues, but do not fully exploit this potential. Still, as highlighted by Paavola (2007), there is an urgent need to consider justice more in institutional analyses. We argue that this should be done systematically and based on a comprehensive understanding of justice, as lined out e.g. in our check-list of justice dimensions.

Young's diagnostic approach would allow the easiest adaptations to better include dimensions of justice by adding questions to the list. For example, the "Problems" category could be amended by questions regarding the distribution of benefits and burdens of possible solutions; the "Politics" category could include questions about whether the dominant discourse allows for equity considerations; and under "Players", one could inquire into the motivations of principle actors (e.g., sense of justice vs. narrow self-interest). From each of these questions, insights could be gained about a fitting institutional design which pays attention to justice – such as e.g. the need for a burden-sharing mechanism in the case of highly unequal distribution of burdens or the right incentive and monitoring structure depending on the motivations of principal actors.

In the cases of the IAD and the Environmental Governance Framework adaptations of the components should be taken out carefully so as not to distort the purpose of the frameworks, i.e. to represent common building blocks of institutions. We see most potential to include justice in these frameworks by focusing on rules and the evaluation of outcomes. Rules can determine both inclusion and exclusion of actors (procedural justice) and access to resources (distributive justice), and they can become the object of justice assessments (i.e. judicanda) themselves.

In terms of evaluation (relevant to all three frameworks), first, tools are needed to determine actual impacts of institutions on different groups. Mitchell (2008: 100) points out that environmental institutions „generate equity concerns in at least three ways":(1) they determine which actors must change their behavior and whether they must pay the associated

costs themselves, (2) the benefits (e.g. of improved environmental quality) that institutions generate accrue unevenly across actors, (3) the efforts to remedy environmental problems mandated by institutions may, via indirect impacts (such as changed terms of trade), impose costs on some but not others. Mitchell emphasizes that careful counterfactual analysis is needed to determine these impacts of institutions.

Second, clear criteria to evaluate these impacts need to be defined. This requires a sharpening of the very broad criteria given by the authors of the frameworks (such as redistributional equity, legitimacy), which should be based on an explicit discussion of the adequate principles of justice or ethical background the institutional analyst might wish to adopt. This does not necessarily require a normative commitment to one or the other theory of justice; different criteria drawn from different ethical backgrounds could also be considered comparatively. Mitchell (2008: 101) promotes "separating empirical identification of an institution's distribution of costs and benefits from normative and/or prescriptive judgments about that distribution".

6 Concluding remarks

Concluding, we would like to raise some issues that we consider of key importance when assessing justice in institutional analysis, discuss the limits of our paper and highlight open research questions.

First, we emphasize the dimension of power relations. To recognize the presence of power relations will help to explain political and economic inequalities between actors. We indicated ways to address power in the analyzed frameworks (section 4). A more detailed inquiry into the relationship between different forms of power and justice is an important research task for institutional analysis.

Second, we point out that for any substantive assessment of justice, the institutional analyst has to be explicit and transparent about the ethical background and the principles of justice the analysis builds on. This in turn would allow an identification of who should be the claim holders and the duty bearers of justice claims in each governance network, according to this ethical perspective or principles of justice. Given the pluralism of values, this transparency is highly important. Empirical assessments of (e.g.) distributive impacts should if possible be reported in a way that makes the application of different normative criteria possible.

Third, an open question pertains to the metric of justice: To what extent is it possible to define "objective" standards of justice? If institutional analysis wants to assess issues of justice, surely some kind of metric is needed. However, any "measurement" of justice would also have to be transparent about the ethical background and principles of justice on which it is based. In that sense, the metric can be inter-subjective at most. We believe that there is a growing body of literature which is not explicitly labeled as institutional analysis, but might be useful to move forward on the issue of metrics, trade-offs, and distributional issues.

While we find that all three frameworks for institutional analysis provide room to better consider certain dimensions of justice, such as some ideas of distributive justice and procedural justice, none of them entails the necessary resolution and detail that is required for a comprehensive analysis of justice implications when it comes to the formation and reformation of institutions.

Much research remains to be done, for instance, assessing in greater detail the roles that (perceptions of) justice, fairness and equity play in the formation of institutions, as well as for their environmental effectiveness.

Due to the restricted time and limited scope of this study, we only proceeded at the theoretical level. This is clearly a limit of our analysis. Empirical analyses – analyzing concrete case studies using one of the frameworks – might be a promising way forward to identify additional potentials and shortcomings of the frameworks in terms of addressing justice, and to identify additional variables needed to address justice in institutional analysis in general.

The analysis of justice may appear to be an almost impossible task due to its normativity. However, given the key importance of justice issues in scholarly and policy debates, we encourage institutional analysts to embrace this topic and to work on concepts and tools that foster transparency in assessments of justice and allow incorporating a pluralism of values.

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Combining valuation methods to improve decision-making? An institutionalist analysis using case studies on ecosystem services valuation

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Abstract

It is often argued that monetary valuation and cost-benefit analysis are important tools to motivate public investment and decision-makers for a better protection of the environment. However, the way valuation methods in general relate to real institutional structures and decision-makers remains in our view unclear. Apprehending valuation methods as "value articulating institutions" (VAI) provides a useful framework in disentangling this issue. It emphasizes that as institutional structures, valuation methods are sets of rules defining what value is and what and how participants can make inputs. It shows that no method is able to deal with all the problems involved in environmental valuation. At the same time it highlights that collective formats and social rationalities, but also methods oriented towards the understanding of complex problems are most suited. In that sense, recent trends towards the combination of methods such as deliberative monetary valuation and deliberative multicriteria analysis seem promising, though numerous issues remain. This paper underlines that the VAI perspective fundamentally questions the linkages between valuing and decision-making as it emphasizes that data production cannot be understood without its sociopolitical contexts. We undertake a reasoned survey, based on an in-depth qualitative analysis of four case studies, each having implemented different types of methodologies for the valuation of multiple ecosystem services. This part of the analysis is focused on the emerging technical problems when combining approaches for valuing ecosystem services and what inputs the valuation process produce for decision-making.

1. Introduction

Environmental valuation has always been a core issue within Ecological Economics (Spash, 1999) and various methods and tools currently exist to support decision-making (Gasparatos and Scolobig, 2012). As a field involving a strong tradition in socio-economics, economic and monetary methods such as contingent valuation (CV) and cost-benefit analysis (CBA) have been widely criticized, while multicriteria analysis (MCA) and deliberation are among the proposed alternatives (Røpke, 2005). Today the ecosystem services field of research is updating the debates (De Groot et al. 2002). TEEB (2010) advocates for the development of economic valuation, as a way to mobilize decision-makers for biodiversity protection, while those types of valuation exercises and the way they relate to decision-making remain problematic (Spash 2011, 2008, Spangenberg and Settele 2010).

From a methodological point of view, environmental valuation evolved and trends towards the hybridization of methods can be identified. An emerging method combining CV/CBA and deliberation called "deliberative monetary valuation" (DMV) (Spash, 2001) is discussed (Sagoff, 1998, Howarth and Wilson 2006; Spash 2007) and the term "social multicriteria analysis" (SMCE)

is proposed for forms of MCA including deliberation (Banville et al. 1998; Munda 2004). The purpose of this paper is not to review exhaustively the potentials and limits of each type of method or what would offer all the combinations possible for decision-making, but rather to highlight the importance of developing an institutional framework of analysis for environmental valuation.

Jacobs (1997) proposed to characterize valuation methods as "value articulating institutions" (VAI), a perspective then developed by Vatn (2005; 2009) and used by Gasparatos and Scolobig (2012) to implement classifications of valuation methods and to help the choice of the most appropriate tool. Vatn (2009) underlines that it is largely recognized that institutional issues are weakly handled in valuation process: this dimension is "mostly treated ad-hoc". The notion of VAI is of great help to overcome this problem as it emphasizes that valuation methods are embedded into social systems (Gasparatos, 2010) and hence imposing different rationalities when implemented (Vatn, 2009).

In an institutionalist perspective, valuation encounters several difficulties due to the complexity and the uncertainty involved in environmental functioning (cf. the cognitive, normative and composition problems identified by Vatn (2005) and presented in section 1). Using the VAI framework allows assessing to which extent various existing tools recognize and therefore are able to deal with those difficulties. Vatn (2009) shows that favoring collective formats and social rationality, as well as methods allowing problem structuring and pluralism of values and units are most suited for environmental appraisal. In that sense, trends towards combining VAIs (either CV/CBA or MCA with deliberation) seem to evolve in the right direction, even though many issues still remain and refinements have to be made. According to Vatn (2009), a crucial step is to decide which forms deliberation should take, depending on which problems are considered but also on the general characteristics of the social structures involved. Dealing with this "second order problem" would need a vast institutionalist program of research for which he advances specific perspectives (Vatn, 2009).

For Vatn (2009) the point is therefore not to study how deliberation is facilitated in each particular case. However, in our perspective, reporting on empirical studies is needed, focusing on both which technical problems arise when combining approaches for valuing ecosystem services and what inputs the valuation process produce for decision-making. Indeed in our view, what an institutionalist perspective on valuation should emphasize, and does through the notion of VAI, is the fundamental linkage between the production of data during a valuation exercise and the sociopolitical conditions of productions of those data, their decision-making context, logics and the actors they involve.

For this reason we developed a reasoned survey, based on 4 case studies, each of them mixing methods for environmental valuation. The cases are firstly presented in a Table, focusing on the core constitutive dimensions of the VAIs. We then expose in further details the various contexts, political commands and other institutional elements about the studies, before developing an assessment of how the cognitive, normative and composition problems were addressed by combining VAIs. Finally, our analysis concludes by underlining numerous issues appearing in the cases considered regarding the forms deliberation, the articulation of preferences through weighting processes, consensus building and voting procedures and how this varies between the cases.

Before the empirical analysis, the basics of environmental valuation and the problem it faces are presented, along with the VAI perspective on valuation methods and decision-making.

2. An institutionalist perspective on environmental valuation

2.1. What is environmental valuation?

By definition, most valuation processes reduce multiple dimensions into one single scale of value (e.g. school grades, notation agencies etc.). More precisely, Vatn (2005) presents valuing as a cognitive exercise during which the production of a single metric (Vm) is understood as the scalar product of two vectors: one describing the attributes of a good (a = (a1…..an)) that an individual perceives as valuable and the other describing the weights (w = (w1…..wn)) each attribute is given, depending individual preferences.

Therefore, from an institutionalist perspective, all valuation processes are socially constructed: even in daily life and for common purchases this process has to be learned. Applied to the environment, valuing is formulating a social choice over the consumption or preservation of resources. This process is complex as it brings together biophysical and social value types. Environmental valuation is in that sense intrinsically pluralistic. Vatn (2005) emphasizes that two dimensions of value are important: 1) the biophysical consequences (of the decision or project under valuation) and 2) which of those consequences matter the most socially.

According to Vatn (2005) three types of problems arise from valuing the environment. First, there is a "*cognitive*" or an informational type of problem related to the difficulties in observing and weighting attributes, because ecosystems are characterized by a "*functional invisibility*" (p. 308). This complicates the communication of information and challenges the emergence of a mutual understanding over what exactly have to be valued. Second, environmental valuation triggers a "*normative*" problem: that of incommensurability. Converting values into a single metric indeed implies that individuals are able to do this/believe that it can be done. However, various ethical and moral dimensions, commitments and judgments (often detrimental in the environmental sphere) can preclude commensurability. In turn however, commensurability can allow comparability between different environmental and social value types, or even compensability (i.e. the possibility of making trade-offs), even if viewed as problematic (Munda, 1996; Martinez-Alier et al. 1998). Finally, the third issue is the existence of a "*composition"* problem, linked with the "*functional indivisibility*" (p. 308) of ecosystems: valuing requires to bundle the object under valuation, while ecosystems can best be characterized as functioning systems and processes. Hence, most valuation exercises imply modifying the way we perceive the environment to characterize it as "goods and services" or "commodity-like". However, in a system, each part cannot be valued separately from the whole to which they belong or traded-off against each other.

The complexity of environmental and social processes therefore challenges valuation exercises, understood as processes during which plural value dimensions are reduced to a single scale of measurement. It remains that social choices have to be made. To support them, different tools have been developed, which however present important differences in their ability to address those three types of problems.

2.2. The variety of methods for environmental valuation as value articulating institutions (VAI)

The limits and advantages of various tools designed to support decision-making are well-known in the literature (Gasparatos and Scolobig 2012). A useful way to critically apprehend their differences is to understand them as "value articulating institutions" (Jacobs 1997; Vatn 2005, 2009; Gasparatos 2010; Gasparatos and Scolobig 2012).This emphasizes that as institutional structures indeed, valuation methods define what is value (which dimensions ought to be taken into account), frame how their object is understood (i.e. which components of ecosystem services and/or biodiversity) and direct the way participants can make inputs. More precisely, Vatn (2005) deconstructs this set of rules into three distinct elements: 1) various valuation methods imply different forms of participation: who participates, on what premises (e.g. that of the consumer or of the citizen) and how the participation is done (e.g. in a written form, orally, individually or in some collective form etc.); 2) valuation methods differ in terms of what counts as data (e.g. prices observed, price bids, biophysical units, weights, arguments etc.); 3) they differ regarding the ways in which data and values are handled, articulated, or coordinated (i.e. how data is produced during the process and then how data is weighted, aggregated or agreed upon). As a result, the use of a particular valuation method influences what gets priority in the decision-making process: "the process frames the outcome" (Vatn, 2009). Fundamentally, valuation methods refer to different ontological views on reality and on rationalities, which they facilitate – even enforce – when implemented, or become meaningless otherwise (Gasparatos, 2010).

Monetary valuation is based on the idea that the cause of environmental degradation (e.g. losses of ES and biodiversity) relies on market failure. Among the methods for monetary valuation (e.g. market prices, avoided and replacement costs, hedonic pricing, travels costs), CV is the most used because of its greater flexibility but is also the most criticized (Vatn, 2005). CBA is used to assess the economic efficiency of environmental projects or policies on the basis of monetary valuation. The aim is to maximize the total benefits for society by prioritizing between alternatives on the basis of how much benefits the project brings, minus its costs. CBA also presents numerous practical and theoretical limitations that have been widely discussed (Wegner and Pascual, 2011). An important point is that through CV/CBA all values "captured" are considered commensurable and compensable, which frames the overall choice procedure as a trade-off (Munda, 1996). Thus, the applicability of CV/CBA relies on core hypotheses of the standard neoclassical model, where the key unit of analysis is the individual, framed by the behavioral model of rational choice. This implies strong assumptions regarding "what is a choice" (individual calculation) and "how this choice is done" (individual are able to make this calculation on the basis of a given information), but also "what are environmental characteristics" (commodities often unaccounted for in real markets). For this reason, the cognitive, normative and composition problems are not taken into account.

MCA and deliberative methodologies offer other possibilities. Adopting a social constructivist perspective broadly means recognizing the existence of institutions, social interactions and norms. It allows a better apprehension of social and psychological complexities: both MCA and deliberation are responses to the "bounded rationality" of individuals (Simon, 1947). Globally, rules concerning the participants differ (citizen framing, preferences formation)

along with the format of the process (collective reasoning, integration of biophysical units and arguments in addition or instead of prices). In addition, the articulation process no longer implies to necessarily aggregate preferences and force trade-offs across value dimensions, but can instead take the form of an explicit consideration of conflicting dimensions or, ideally perhaps, lead to forms of consensus.

More specifically, MCA emulates and explicates the cognitive process of environmental valuation (cf. vectors of attributes and weights) (Vatn, 2005). All types of MCA rely on a similar structure and key steps (a matrix of criteria, alternatives and weights), but differences among several types of MCA (and compared to CBA) rely on the assumptions made regarding commensurability and compensability, materialized by the forms taken by the weighting. In other words, MCA can be designed for dealing with the problem of incommensurability (Martinez-Alier et al. 1998) and developed to issues of compensability through the framing of weights as coefficients of importance (Munda, 1996). Furthermore, the cognitive problem is addressed through the construction of the problem and the assessment (Vatn, 2009). However, each type of MCA has its own limits and pitfalls. MCA is considered an appropriate tool to deal with conflicting situations over interests and values, which can be very difficult to properly handle (Vatn, 2005). Furthermore, putting too much emphasis on how a problem can be deconstructed (i.e. how the favored alternative may change according to variations in weighting) can lead to difficulties in reaching a final decision.

Deliberation focuses on reaching a consensus or an agreement on the basis of arguments and discussion instead of framing the valuation around a calculative or mathematical process such as in CBA and MCA (Vatn, 2005). As Vatn (2005) highlights, deliberation is based on the communicative rationality of Habermas (1984), which is focused on the production of a mutual understanding through dialogue and arguments assessments allowing preferences construction. However, the ideal of communication is particularly difficult to attain and the institutional setting of the valuation is here of utmost importance. If well-handled, the core idea is that the dialogue process discourages strategic behavior (e.g. “we” thinking is supported), and arguments are openly tested (Vatn, 2005). As for MCA, applied to environmental valuation, a large array of deliberative methods exists. Vatn (2005) includes, among others, in this category focus groups (FG) and citizen’s juries (CJ). In a FG the objective is to document insights for the decision-makers, while CJ aims at reaching a consensus. In other words, FG and CJ differ in terms of the power they give to participants. An important point is that deliberative methods for environmental valuation are strongly supported by the post-normal science perspective (Funtowicz and Ravetz, 1994). When facing radical uncertainty indeed, problems can hardly be framed as “positive” and a-political. Thenceforth, formulating social choices (i.e. implementing environmental valuation) becomes a matter of public debate aiming at eliciting arguments. Nevertheless, many issues arise in deliberative VAIs (Vatn 2009; Spash 2007). Those concern for instance the size of the group, representativeness, the inclusion of stakeholders and/or citizens, and the potential introduction of voting procedures.

2.3. Combining methods: an institutionalist perspective on valuation and decision-making

Understanding valuation methods as VAI therefore implies a critical analysis of CV/CBA. Vatn (2005; 2009) highlights that applying a particular evaluative logic (e.g. reduction of

plural value dimensions to a single metric), related to specific institutional structures (e.g. markets) to assess and make decisions "out of its area" is problematic (i.e. when applied to the environment, understood as a complex functioning of interdependent features and common goods). MCA and deliberation appear more suitable for environmental decision-making due to its complexity and uncertainty. However, the VAI perspective is also critical about MCA and deliberation (Spash, 2007; Vatn, 2009).

On this basis, using the notion of VAI has also proven useful to analyze more recent trends towards combining valuation methods, as a way to shorten their limits and increase their possibilities. Vatn (2005) identifies trends towards combining either CV/CBA or MCA with deliberation. The former emerging method is called "deliberative monetary valuation" (DMV) (Spash, 2007) while the term "social-multicriteria evaluation" (SMCE) has also been proposed (Munda, 2004).

Basically, in DMV a phase of deliberation precedes the elicitation of WTP. Ongoing debates around DMV present the method either as an alternative to CV/CBA or as a way to improve the elicitation procedure in CV/CBA (Spash, 2007). According to Vatn (2005) DMV is fundamentally based on a contradiction as it mixes different types of rationalities (consensus building and individual calculations, social and individual representativeness, incommensurability and commensurability). Spash (2007) develops this point by showing the various ways in which DMV can be conducted and how the results then ought to be interpreted. According to him, the basic point in DMV is that it allows preferences construction, i.e., the formation of political opinions and social values, which are paradoxically often constrained in DMV as the analysts leading the experiments want to continue eliciting exchange values (close to those in CV), so as to let the possibility of including them in CBA. Thus, two opposed path for DMV exist: either the exercise is about producing exchange values, legitimated by a process of deliberation/participation or DMV aims at producing "arbitrated social WTP/WTA", i.e., monetary values that could not be interpreted as "the value of ecosystem services" neither be compared to other monetary values in CBA processes (Spash, 2007).

Instead, MCA and deliberation are based upon similar rationalities and their combination is considered as more consistent (Vatn, 2005). Because MCA is often applied when an environmental issue is framed as a problem involving conflicts between various interests and values, increasing participation can be a good alternative (Munda, 2004). However, several configurations can also occur: we can distinguish a MCA process where stakeholders/citizens are involved into a communicative process around the alternatives, the criteria and the weighting, from a deliberative process where MCA is included to help participants to structure and document the process (Vatn, 2005). This can have important consequences on how the process is handled because the logic of structuring the valuation around MCA can conflict with the openness of deliberative processes (Vatn, 2009). Numerous issues then arise depending on how the weighting process is lead and the assumptions made on comparability, compensability and commensurability (Vatn, 2009). Both in DMV and SMCE, those specific issues add-up to the basic issues in any deliberative process – the selection of participants and their assigned premises, the size of the group and the introduction of voting or the necessity to reach a consensus.

Hence, adopting the perspective of VAI allows a better understanding of the potentials and challenges related to combining methods. Valuing is already defined as the formulation of a

social choice, which is framed by formal tools also embedded into opposite rationalities. In other words, both the valuation procedure and the final recommendations pushed forward at the end of the process are intimately interrelated. Vatn (2005) underlines that Jacobs (1997) classifies CBA as a "*decision-recommending institution*", while CV is a "*value articulating institution*". However, given that the boundary between the decision-making process and the valuation becomes fuzzier in MCA and deliberation (or combined methods), Vatn (2005) does not pursue the distinction. Recognizing the porosity between valuing and decision-making (i.e. defining valuing as formulating a social choice) appears to us essential in an institutionalist perspective. It means that the production of data cannot be properly understood without relating them to their sociopolitical conditions of productions. The qualitative analysis of case studies we realized allowed us to identify at once the institutional contexts of the studies (logics behind the appraisals) and the technical/methodological issues linked with combining VAIs.

3. Combining methods in practice – four illustrative case studies

The analysis includes four cases: a combination of a CV and focus groups (FG) (Holmes et al., 2004); a deliberative monetary valuation (James and Blamey, 2005); a MCA, combined with CBA and participation – a method referred to as "Integrated multicriteria analysis (IMA) by the authors (Messner et al., 2006); and, finally, a deliberative MCA (Proctor and Drechsler, 2003). In order to synthesize the analysis, main characteristics of the cases and methods implemented are described in Table 1. The case studies have been selected on the basis of a literature review. We choose to restrict the search to a particular topic: biodiversity and ecosystem services protection and valuation. There were two reasons for this. First, it is a very well-documented area of research where many valuation exercises were already undertaken and, second, this restriction allowed us to keep the most stable base possible for the comparison. However, most cases also deal with restoration of river banks and water issues (upstream/downstream conflicts, quality and availability).

3.1. Cases analysis and presentation

The criteria used to describe the methods (lines in the table) follow closely what have been presented as core dimensions of VAIs (Vatn, 2005). In order to facilitate the discussion in the rest of the analysis, one letter (A, B, C, D) is attributed to each case, as presented in the table.

Table 2 – Case studies comparison based on core the dimensions of VAI.

Case studies	Holmes et al. (2004) - A	James and Blamey (2005) - B	Messner et al. (2006) - C	Proctor and Drechsler (2003) - D
Context and objectives of the study (how the problem is framed, which issues are tackled)	Issues tackled by the study: ES are generally unaccounted which causes ecosystem degradation. CBA important for DM to gauge the economic efficiency of projects. Issues on the region: impacts of human uses (agriculture and urban development), on the natural environment along the Little Tennessee River (LTR), North Carolina. Method: CV/CBA: determine which scale of restoration would provide the greatest benefits.	Issues tackled by the study: Incorporating community values into environmental DM;potential to overcome limits of CV (levels of information and deliberation) by citizen's Jury (CJ) Issues on the region: Management of national parks (5 different categories of parks managed by the National Parks and Wildlife Service) in the most populous state of Australia: New South Wales Method: DMV; research application of the citizen's jury (CJ) technique to economic valuation	Issues tackled by the study: lack of consideration for stakeholders in DM, scientific difficulties of dealing with uncertainties and complexity, methodological flaws of CBA Issues on the region: Water allocation conflict between locations (upstream/ downstream) and user types (federal, states, energy, mining, fish-farming, water utilities, tourism associations…) Method: Integrated Methodological Approach (IMA) combining CBA and MCA as 2 phases of the same process and participation for large scale DM; improve de quality of DM through advances in competence and fairness	Issues tackled by the study: identifying and prioritizing ecosystem services; decide upon a suitable option for the management of tourism and recreation activities Issues on the region: Annual influx of tourists causing severe environmental problems, partly related to water issues with influences on downstream users. Method: Deliberative multicriteria evaluation: combining advantages provided by the MCA structure and advantages of deliberation in a CJ framing
Elements under valuation (how are they characterized and apprehended)	ES: habitat for fish (abundance of game fish), habitat for wildlife (in buffer zones), erosion control and water purification (clarity), recreational uses (allowable water uses), ecosystem integrity (index of naturalness)	Five major national park management activities: fire management (number of parks with good fire management), weed control (area controlled per year), feral animal control (area controlled per year), maintenance of visitor facilities (proportion well-maintained) and management of historic sites (number of well-protected sites)	Long term variations (50 years) of economical benefits for fish-farming; lake-tourism; public water management; lake water treatment and of ecological indicators (mean water availability for minimum flow, average water flow for Berlin and for Spreewald). This is done for 5 alternatives and two scenarios, one taking into account climate change.	ES: water quality and quantity, biodiversity, sediment filtration, erosion control, nutrient management, shading, stream health, aesthetics; social and cultural dimensions: public access, jobs, cultural heritage of sites, education; economic costs and benefits; measured through various indicators, or qualitative/binary indexes.
Form of participation (who participates, on what premises and how is it done)	Two types of focus groups: with experts to characterize relationships between ecosystems and their services and select indicators, and with citizens to design CV surveys. 96 respondents (consumers) to CV survey (statistical adjustment to the regional population).	CJ composed of 13 randomly selected jurors through phone surveys following stratification rules (ensure representativeness of the regional population). 5 witnesses with particular expertise in each management activity and 2 witnesses on national park management assisted the jury. The jury met over 3 days (preparation, presentations and deliberation).	20 interviews with authorities and snow ball system to identify relevant stakeholders, to prepare scenarios and criteria, and raise awareness of global change issues. Group talk with one stakeholder group (cross-state group) around CBA (mono-criteria valuation). Discussion of intermediate results with stakeholders. Final group talk with all stakeholders, where the objective is to arrive at a compromise over the weights.	Workshops and questionnaires previous to jury. Stakeholder's Jury with natural resource managers[46] already involved in a larger project. 4 witnesses (local water authority, local ski resort, state natural resource management, and a member of local parliamentary council) and a judge (community psychologist) assisted the jury during one day.

[46] The authors do not specify how many jurors were present, but state that in a CJ in general, 10 to 20 jurors are invited

Data (how is data produced in complement to participation, if relevant and what counts as data)	Computerized CV surveys with photographs and maps and specific biding structure. Expressed WTP represent the benefits associated with each restoration scale, while costs estimated on the basis of similar projects implemented in the region. Net benefits, associated with marginal changes in ES provision.	Deliberation and debates with witnesses. Debates and argumentation around current management practices, compared to alternatives options, complemented by qualitative suggestions. Individual WTP, understood as the maximum amount the citizens can be charged for the given environmental improvement.	Documentation. Interviews. Modeling. Group talks. Co-production of alternatives strategies with DM, selection of criteria by scientists based on previous interviews and data availability. Calculation and ranking (compared to current situation) of net benefits criteria and ecological criteria depending on alternatives under two development scenarios. Individual preferences through weights pre-identified by interviews and discussed in group talk. Analysis of preferences (trade-offs) and future uncertainties.	Preliminary phase (workshops and questionnaires): development of management options, decision criteria, preliminary rankings and impact matrix. Arguments and debates around issues presented by witnesses. Identification and aggregation of jurors preferences (weights). Use of software (ProDecX) to screen and discuss weights and outcomes. Sensitivity analysis posterior to the jury.
Valuation process (main steps, articulation/aggregation procedure)	Study of historical characteristics of the region. Study of costs sharing (public funds and landowners) to implement restoration. Implementation of 2 FG types and CV survey design. Computerized CV. Statistical analysis. CBA. - Aggregation -	The jurors were presented two charges: under charge 1, jurors had to reach a consensus over 3 different options of management activities. Consensus over status quo was reached. Under the second charge, another option was presented: improvement of all activities in counter-part of a tax. No consensus was reached but a voting was applied. - Consensus and voting -	Documentation about history. Two rounds of interviews to identify stakeholders, development scenarios and alternatives. Modeling of climate change impacts and calculation of alternatives impacts in economic and ecological terms. First phase of participatory CBA with ranking of alternatives. Interviews to identify stakeholder's preferences (weights). Deliberative outranking MCA: compromise over weights and subsequent alternative. Iterative process with new alternatives if no consensus is reached. - Aggregation and weighting by consensus -	Preparation of jury to develop options, criteria and impact matrix. The jury included presentations of witnesses, debates and criteria weighting. Aggregation of weights: each juror attributes points to criteria. Discussions of outcomes, explanations about each jurors weighting. Redefinition of the ES criteria. New weighting and discussion. Sensitivity analysis showing a higher level of consensus after the process. - Aggregated weights -
Deliverable to decision-making (DM) (form and content of the information provided to DM)	Annual economic benefits (median WTP) for each restoration scale in the LTR. Full restoration has the highest benefit/cost ratio.	Insights about current management alternatives. Arguments and counter arguments regarding the implementation of a tax on the habitants. Partial agreement on a certain tax level, with discussions over equity issues. N.B. the case is rather about testing a method than responding to a DM problem.	Ideally, the IMA is able to assess and evidence for a consensual alternative for DM, taking into account plural economic, ecological and social (weights) dimensions, global external futures changes (economic and climate) and a multiplicity of stakeholders. However, the paper was published before the end of the process: only the intermediate results (i.e. CBA phase) are presented along with descriptions of what following phases would involve.	As most jurors were decision makers, the process of exchange of arguments and weighting elicitation is an important outcome per se for DM. The process confirmed (after criteria redefinition) the choice of a management option and highlighted the need to take specific dimensions into account. It showed the importance of breaking down the decision process.
Limits of the method/application identified by the authors	Challenges in linking ecosystem sciencewith social values; The FG helped but the communication around complex ecological issues was difficult. Problems to understand how ecosystems are valued by respondents (as substitutes or complementary).	Numerous issues are discussed, such as: compliance behaviors, voting procedure, equity between jurors' contributions, inconsistencies between citizen framing and individual WTP, articulation with CBA, representativeness and interpretation of WTP reached by consensus (...).	The authors underline that IMA does not fully meet the ideal claims on which it is based, regarding the participation debate (Webler, 1995), though it does improves the DM process in terms of competence and fairness. Other important limits concerning time spending and costs are mentioned.	The authors mostly highlight problems with the software used to input multiple weighting and present them to the jurors and underline the necessity to discuss in more details the criteria and impact matrix.

3.2 Valuation, decision-making and institutional contexts

As emphasized by the VAI perspective, valuation methods impose a particular rationality when implemented. This should mean that by analyzing the case studies, we should be able to understand why a particular method and its logic have been used by the analysts, how it relates to existing decision-makers, institutional structures and/or the environmental problems addressed. This can be approached, on the basis of the information provided in the papers, by analyzing how the use of the valuation method is justified (e.g. which research question, real-problem solving or political command), how the environmental, historical and institutional contexts are documented and what are the expected impacts in terms of environmental improvement and/or institutional change (what is produced at the end, for decision-makers). Of course, those questions are not systematically related to the methodologies themselves, but they remain important to document the cases and the various logics behind the appraisals.

Even though the cases represent great heterogeneity in their objectives and contexts, no obvious linkage appears between the nature of the problems and the methodologies applied. All cases are related to pollution, ecosystem degradation and use conflicts, between various social groups and between development and the protection of natural spaces. Those activities however vary across the studies: A is concerned with agriculture and real-estate development, C with mining and water quality and availability and D with tourism.

We found that differences between the studies and the way they relate to decision-making are primarily related to whether they address a real problem or if they are only developed to test a methodology. More precisely, all studies are testing methodologies but they relate to real-problem solving in different ways. Study A concludes for both the scientific community (the dimension of scale can be taken into account in CV/CBA as an indicator of ecosystem services provision) and for decision-making (the optimal solution would be: the "full restoration", as it has a bigger cost-benefit ratio than other scales). The logic of the appraisal is supported by the idea that economic activities and human development degrade ecosystems because their value is not accounted for in market transactions. It is argued that the government is concerned with ecosystem protection as funding is allocated to restoration activities, but that showing the economic efficiency of projects can motivate public investments.

Study B is clearly a research application. The authors state the absence of empirical application of DMV and intend to address this problem. The study was presented as experimental even to the Jurors, who had to consider a hypothetical national park in which decisions had to be made regarding management activities, knowing that "*there would never be enough money to do all the things which might be required to meet the public's expectations*" (p.229). Neither real decision-making actors, existing institutional structures (authorities in charge) and the problems they encounter, nor the environmental situation are very much documented in case B.

In contrast, in study C the authors put a strong emphasis on the need to offer "*practicable science-based decision support processes*" aiming at both quality and legitimacy in decision-making "*by taking social dynamics into account*" (p.64). Indeed the problems in the region are very well documented, from an historical, environmental and institutional perspective. The sources of environmental degradation, the victims/users and the several layers of political

bodies in charge are identified as well as their interrelations. All identified stakeholders were part of the process (fish-farming, energy and mining industries representatives, water utilities and state-owned restoration company, ministries, (federal) state authorities, and farmer and tourism associations, majors of small cities etc.). The study provides measurements of environmental impacts in a long term perspective, an assessment of the current political strategy and of the proposed alternatives (with economic and ecological indicators) and intensive dialogue between the stakeholders was catered for.

Concerning case D, it is hard to tell whether the study aims rather at testing a methodology or at answering a real political issue: both aspects seem to be well-integrated. The valuation process implicates a smaller diversity of stakeholders compared to case C, but the current conflicting situation is well described and the study provides numerous data on economic, social and ecological dimensions. It also assesses the current political strategy and compares it to proposed alternative, engaging in a discussion about criteria definition and weighting.

Hence we can draw two conclusions from this analysis. First, the ways in which valuation relates to real decision-making and institutional structures vary across studies. This is obviously strongly related to the cases considered and the ways in which the analysts led the studies in those particular circumstances. We could for instance imagine a case were a DMV would have been applied while engaging much more existing institutional structures, stakeholders/citizens compared to study B (e.g. Gregory and Wellman, 2001). However, by definition, methodologies such as deliberative MCA insist on the need for stakeholder involvement and are directed towards real problem-solving. They appear therefore much more engaged with institutional structures and decision-makers than what we could find in case A. In the latter, the valuation is rather used to justify and legitimize a political action (in that case, river bank restoration) than to answer to a conflicting situation: the impacts in terms of social acceptability and environmental improvement are not central in the analysis. Therefore, as the concept of VAI underlines, the ways in which problems are addressed vary across the studies also because of the methodologies themselves. A and B put emphasis on budget constraints, the need to make trade-offs and economic efficiency, while C and D focus more on political strategies, on the legitimacy of public decisions and on the involvement of stakeholders and institutional structures. However, C and D also include numerous economic measurements (benefits and costs) in the impact matrix, along with social (jobs, visitors etc.) and ecological (water quality and availability, biodiversity…) criteria.

3.3 Combining methods to overcome the cognitive, normative and composition problems

In contrast to the previous section, this part of the analysis focuses more on methodological dimensions. We assess in which extent the cognitive, normative and composition problems (cf. Section 2.2) seem to have been dealt with by combining methodologies in the cases considered.

In case A, several focus groups (FC) were implemented to explicitly frame the information to be included in the CV surveys and its form. FG with experts helped characterizing relationships between ecosystems and their services, while FG with citizens aimed at designing the surveys. Including participatory techniques in this case aimed at answering to the cognitive and composition problems, but did not address the issue of preference

construction as survey respondents were not the citizen participating to the FC. By definition, a process of CV is not able to deal with incommensurability. We furthermore did not find any information concerning the occurrence or treatment of 0-bids and/or non-responses. Even though the focus groups helped in designing the CV surveys, the authors state that some information problems persist and conclude that "*much remains to be done to improve methods for communicating complex ecological dynamics in the context of economic valuation studies*" (p. 29), which indicates that the cognitive and composition problems were not very well handled.

In case B neither ecological complexity nor incommensurability are particularly discussed, as the study focuses on management practices, not on the valuation of environmental attributes *per se*. Concerning cognitive dimensions the interactions among jury members and with witnesses during the 2 days undoubtedly helped preference elicitation and construction.

In case C the cognitive and composition problems were very well handled: ecological attributes were integrated through climate and future-uncertainties modeling, as well as through the criteria design and the development of ecological indicators. The process postulates a degree of commensurability (cardinality for economic and ecological values in the CBA phase), but this issue is discussed in the paper. The process does not nevertheless imply compensability as stakeholders normally have to agree on the weighting during the subsequent MCA phase.

The case D explicitly aims at dealing with the cognitive and composition problems by providing structure for complex decision problems (MCA) as well as allowing preferences construction through argumentation and dialogue (CJ). The iterative nature of the process indeed allowed a redefinition of the criteria for ES. In our view, this way of implementing a deliberative MCA could be characterized as involving weak commensurability (use of cardinal and ordinal indicators in the impact matrix), but also weak compensability due to the partial aggregative nature of the weighting procedure (no compensability between criteria types i.e. economic, ecological and social, but compensability within criteria categories)[47].

Based on the above, we conclude that substantial differences remain between the cases concerning the ability to address the inherent problems of environmental valuation.

3.4 The various framings of deliberation

Finally, our analysis allows to document issues related to the concrete applications of deliberation, its relations with monetary valuation and MCA. Those issues include representativeness, exclusion, the uncertainty in outcomes, consensus reaching and the introduction of voting procedures (Spash, 2007) and the relationships between the MCA structuring and deliberation (Vatn, 2009).

The issue of representativeness comes from the idea that decisions taken by a small group of people, who would assume the outcomes of the process to a limited extent, lack legitimacy (Spash, 2007). On the other hand, O'Neill (2001) and Vatn (2009) highlight that statistical

[47]Each juror were given 100 cannellini beans to split between each of the 15 criteria considered, respecting a rule of 1/3 for ecological, 1/3 for economic and 1/3 for social criteria.

representation is not adapted to processes involving strong political and normative questions. The study A assumes statistical representation through the CV surveys, but the FG included a group of citizens considered competent to design the surveys. In the study B, participants endorse the role of citizens, selected following stratification rules. In DMV the question of representativeness is crucial. The process aims at ensuring sounder WTP through preferences construction, but this depends on how well the participants assume their role of citizens instead of expressing values according to their own personal situation. This issue is discussed in depth in case B and the study addressed the problem by communicating socioeconomic information about the general population.

In the two other cases, participation was less based on citizenship and more on stakeholder representation, in the sense that the personal interests of participants and their responsibilities are more involved. As already mentioned, case C involved a wide array of stakeholders, but they were allowed to intervene in different phases of the process. Interviews ensured that all stakeholders and vested interest would be taken into account and this point is strongly emphasized by the authors. The CBA results were only discussed with state representatives, while the MCA should involve as well other representatives (e.g. industries and locals) but this remains rather unclear in the paper. Overall, the procedure seemed strongly focused on the elicitation of each stakeholder positioning, capacities of actions and socio-institutional relationships. Case D does not aim at being representative in the sense that participants are all traditional decision-makers whose legitimacy is not questioned and the premises are clear. Local associations and stakeholders along with governmental representative intervened as witnesses. The “stakeholder jury” therefore implies a particular form of deliberation with a narrow array of participation.

For the same reason, the question of exclusion is not as relevant in D as in other cases. The issue of exclusion in deliberative methods relates to the fact that all individuals are not equal in terms of oral expression skills and in developing or defending arguments. This issue is widely discussed in case B. The authors raise the question of when is a “consensus a consensus” and how differences of participation between jurors and compliance behaviors can be dealt with. The need for clear protocols is emphasized as well as the possibility to run questionnaires after the jury asking for explanations if jurors change their opinions. In case C differences of power and positioning between participants are detrimental and handled during the BCA phase by accounting the net benefits of alternative options reflecting the economic situations of the unprivileged groups. Participants to the BCA group talk were all state representatives but it remain unclear how this question would be handled in the MCA phase, during which the authors mention the possibility to include a wider array of stakeholders who would have to reach an agreement over the weighting.

The uncertainty in outcomes is relevant for studies dealing with strategic problem-solving issues involving real decision-makers as it was the case in the cases C and D. Indeed leading an exercise implicating various stakeholders, in a conflicting situation over interests and values, with the purpose of validating a political strategy which resolves a problem between environmental protection and human development is more risky than producing a monetary number (Spash, 2007). Furthermore decision-makers can hardly disapprove the strategies validated at the end of the process, legitimated by participation and careful problem construction, whereas a number can more easily be adjusted, dismissed or recalculated (Spash, 2007). In case C, the authors discuss widely the risks involved in large participatory processes (rejection of stakeholders’ inclusion by decision-makers, technicality of the process

etc.). However, they highlight that it could be done in their specific case because the decision-makers started a participatory process themselves and were used to technical algorithms. The issue is less discussed in case D. Again the diversity of stakeholders is smaller, but it remains interesting to note that after a first round, the analysis presented an alternative as the favored one, which was not the policy option upon which the stakeholders had agreed before the study. After a moment of discussion, the criteria were redefined and a new alternative chosen, this time validating the initial strategy. However, it remains hard to tell whether the outcomes were influenced by a certain "path-dependency" or not: after the redefinition of the criteria it was not possible to perceive the final results in advance.

Finally, the way consensus is reached by voting and weighting processes is particularly interesting and varies across cases B, C and D. This issue is widely discussed in case B, during which a consensus had to be reach at 2 points. During charge 1 alternatives management options were considered given a constant budget (through a framework similar to a MCA), while during the second charge the improvement of all dimensions of environmental management was considered, in counterpart financed by the implementation of a tax on inhabitants. The second charge was only presented after a consensus was reached for charge 1, but no consensus was reached concerning the amount of the tax during the second charge. The process was closed by voting and the amount of the levy determined by applying the majority rule. The authors highlight the need for procedures to avoid false-consensus and guide-lines for the introduction of alternatives decision-rules.

In case C, a consensus normally had to be reached upon the weighting during the MCA phase. The authors state that this might involve an iterative process of redefinition of criteria, alternatives and weights, but do not document precisely how this should be handled. In our view reaching a consensus over the weights in this case would be difficult as most criteria presented in the BCA phase represent interests of particular stakeholders involved.

In contrast, the final collective weighting in case D is a proportional aggregation of the jurors' individual weights, which means that no consensus over the weighting has to be reached. This might be a particular procedure for a deliberative MCA and underlines some conflicts between the deliberative and the MCA logics. Instead of directly discussing a common weighting, the jurors were asked to justify their positions. The preferred alternative and the degree of consensus over the weights were also discussed. As already mentioned, this discussion led to a redefinition of the nine criteria previously identified into four. The weighting procedure was carried out again and also followed by discussions. After the jury had finished its processes, the analysts run a sensitivity analysis which showed that a higher degree of consensus over the weighting was reached after the redefinition of the criteria and a full day of debates. Precisely because of the combined nature of the process, it is difficult to say whether the consensus reaching can be explained by the jury process, the exchange of arguments and debates among jurors and with witnesses, or if this is more of a mechanistic effect linked with the redefinition of the criteria.

Comparing the deliberation in cases B and D also provides interesting insights. The debates and exchanges of arguments that occurred in B seem to have dived less deeply into the issue considered. This can be explained because jurors were citizens and not experts in natural management, but also because the information was less structured and abundant than in the deliberative MCA case study. Actually, the debates in case B appear as a "trick" to inform jurors and familiarize them with the subject, the true purpose being WTP elicitation.

However, even then, jurors had troubles with understanding the idea of maximum individual WTP and the authors report problems with its interpretation. Other issues related to existing antagonisms between the citizen framing and the expression of individual WTP, and the potential use of the results in CBA are discussed in the study B. Altogether, what is striking is the quantity and the depth of the methodological pitfalls and points of discussions appearing in study B compared to those highlighted by study D.

4. Conclusions

Based on this analysis, several important points can be made. Developing an institutional framework of analysis for environmental valuation is crucial to understand the potentials and limits of each type of method and what their combinations offer for decision-making. In that perspective, valuing the environment is understood as a sociopolitical choice, involving inherent difficulties related to the complexity and the uncertainty in environmental functioning. Vatn (2005) proposes an interesting framework of analysis to understand the nature of those problems (cognitive, normative and composition issues) and to assess the capacities of the existing methods to deal with them. This approach empathize that because of the nature of the problems involved and because of the intrinsic logics of the methods, deliberative formats, framing the valuation around collective reasoning and social rationality, but also tools allowing complex problems understanding and the inclusion of pluralistic values and units, are better suited for environmental appraisal.

The perspective emphasized in this paper is largely built on this approach, but emphasizing a slightly different aspect. The idea is that because valuation methods frame the rules for participation, there is a relationship between the methodological dimensions and the possibilities that valuation offers for decision-making.

Indeed, methodologies insisting on the importance of participation and of stakeholder involvement, but also directed towards real problem-solving appear therefore much more engaged with institutional structures and decision-makers. In other words, the forms of participation appear critical for the quality of the information provided for decision-making. The forms of participation refer to who is involved in the valuation process and on what premises. This encompasses the analysts, the various experts and stakeholders, the “lay” people or citizens, locals etc. and concerns their various degrees of involvement and positioning. In that sense, the forms of participation have massive consequences on the way the results are framed, but also on the links (their forms and intensity) between the issue considered, the valuation exercises and the institutional processes of decision-making and implementation.

For instance in study A, the positioning of the analysts is that of the scientific expert delivering “truth” to decision-making (i.e. what is the optimal solution, from an economic efficiency point of view) and the “lay” participants have a rather passive role. They either state WTP during the CV survey or help designing it, after that experts have chosen the relevant indicators. This contrasts with the studies B, C and D, in which the research is rather oriented towards quality in information production and communication, institutional suitability and stakeholders involvement (to various extent depending on the studies). Hence the forms of participation should be viewed as crucial dimensions to be handled with great care.

Our analysis is based on few cases and only on the information provided in the scientific articles, while covering a wide variety of tools. A difficulty was to differentiate between the methodological elements and the particular ways in which the analyst used the methods. However, the theoretical framework of VAIs was of great help in that task and the qualitative and comparative methodology developed allowed us to highlight the importance of the linkages between the valuation methods *per se* and the various contexts and political demands they aim at answering. Our analysis shows that combining methods for environmental and ES valuation is a promising avenue for research and problem-solving, but that many issues remain. This paper attempts to practically review those issues, highlighting when they appeared, why and how the analysts attempted to overcome them when possible.

This paper emphasizes that in an institutionalist perspective, differences should be made between 1) the relationships between the existing institutional structures and the valuation exercises; the political command and the needs for valuation (either as a process of legitimization or as a real problem-solving issue) and 2) the valuation methods as institutions themselves, imposing a particular logic/rationality when implemented (technical and political reductionism or pluralism). However, both should be taken into account and are interrelated, as the notion of VAI emphasizes.

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Uncovering the Urgency/Lag Complex: Addressing Urgency and Time Lags in the Economics and Political Science Literature on Climate Change

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Abstract
This paper deals with the coexistence of time lags in institutional and ecological systems, on the one hand, and the need for timely climate policy measures, on the other – a phenomenon we have called the urgency/lag complex. Climate scientists have long called for urgent mitigating action in order to avoid the most adverse effects of climate change. However, within the economics and political science community the notion of urgency remains an underdeveloped concept. This paper reviews the literature of both disciplines and analyses the ways in which urgency is depicted. Our analysis suggests that "time" is implicated in the research, but that there are incoherencies within the literature to address *urgency* more specifically. We conclude that by situating time lags into the centre of analyses as well as extending the focus to include institutional processes, a more consistent approach to examining urgency would be possible.

1. Introduction

There are strong pleas from the climate science community to adopt quick measures to mitigate the most devastating effects of climate change. Glaciologist Richard Allen has stated that '[i]f you want to be able to head off a few trillions of damages per year a few decades out, you need to start now' (in Kerr 2007: 1230). In the same article, geoscientist Michael Oppeneimer has argued that '[w]e can't really afford to do a 'wait and learn' policy' (in Kerr 2007: 1231). The Intergovernmental Panel on Climate Change has similarly emphasised that 'early mitigation actions would avoid further locking in carbon intensive infrastructure and reduce climate change and associated adaptation needs' (IPCC 2007: 19). There is thus ample evidence from the climate sciences that, either explicitly or implicitly, call for quick climate change policy measures.

Despite the fact that climate change research is still largely absent in the major journals within social sciences (Goodall 2008), the framing of climate change as a social problem has attracted a great deal of interest. The need for action has been acknowledged in the social science literature, but the focus tends to be on political inertia and treating time as an exogenous variable (see e.g. Anthoff *et al.* 2009; Gardiner 2009; Boston & Lempp 2011). Our aim in this paper is to review the literature on climate change in economics and political science and analyse how the notion of urgency is depicted. We have selected economics and political science, as they are two important disciplines within social science operating at the science-policy interface (e.g. Jasanoff 2005). Our main conclusion is that while "time" indeed

is ever-present as an implicit variable in the analyses, the notion of urgency is only addressed to a limited extent. We furthermore argue that the need for extending the analysis to the institutional setting and how it relates to urgency.

In this paper we will introduce the concept of the *"urgency/lag complex"* to illustrate the paradox of simultaneous time lags and need for urgent measures. The complex we propose consists of two parts. Firstly, the existence of time lags in the climate system, for example long-term climatic stock/flow relationships, delays the implications of climate change into the future. Thus, mitigation efforts made now are not to be directly observable because of aggregated effects of previously emitted greenhouse gases. Secondly, institutions in society change slowly and are currently incapable of responding to a changing climatic system characterised by tipping points and dramatic unpredictable shifts. A critically understudied effect of this is a lagging political response to climate change, which in turn effectively depreciates the notion of urgency.

In this paper we put an emphasis on the role of institutions and their relationship to the urgency/lag complex. Institutions are an important field of study, as they guide the climate policy-making process and outputs as well as the ways in which alternative routes of development are conceptualised. In this paper we treat the concept of institutions in a comprehensive fashion – we see them as 'regulative', 'normative' and 'cognitive' (Scott 1995: 33). In other words, we see institutions as not restricted to the jurisdiction of a national polity, but as also including routines, implicit knowledges and "ways of doing things". Naturally, such a broad conception of institutions can be deemed as challenging, but bearing in mind the multidisciplinarity of the topic at hand, a sufficiently wide understanding of institutions is required.

The paper is structured as follows. Firstly, we briefly present the natural scientific evidence for treating urgency within economics and political science seriously. In other words, we treat the findings from the natural scientific analyses about the need for change as the basis for this paper. Secondly, we discuss how the notion of time and the future is depicted in the economics literature and alternative framings of the economic system. Thirdly, the literature on political science is analysed based on the notions of urgency and time lags. Fourthly, we discuss open questions within both disciplines and how they may be addressed. Lastly, we conclude our main findings in the paper.

2. The Natural Scientific Basis for Addressing Urgency as a Socio-Political Problem

In this paper we will treat the natural scientific research on climate change as a springboard for studying the urgency/lag complex. While we acknowledge the issue of uncertainty related to knowledge production of climate science as well as the "constructedness" of climate change as a socio-political problem (see e.g. Yearley 2009; Jasanoff 2010), we argue that climate models represent the best currently available estimations of the implications of climate change.

The climate system is characterised by a combination of lag and resilience. The most basic lag is the long lifetime of CO2 in the atmosphere. The complex estimation of the lifetime of fossil fuel C02 can be summarised as '300 years, plus 25% that lasts forever' (Archer 2005: 5).

Another source of lag is the thermal inertia of the oceans. Even if no GHGs had been added after 2000, the ocean's heat would warm the atmosphere by 0.6°C by the end of the century (Kerr 2007). The resilience of the problem is based on the fact that once enough GHGs have been emitted to cause serious climate change, it is difficult or even impossible to reverse the process. The result of lag combined with resilience is that the actions taken in the past have already committed the Earth to a certain amount of climatic change, while actions taken today are committing future generations to additional change. In other words, temporal proximity does not imply causal proximity and *vice versa*.

The discrepancy is greatly exacerbated by the potential existence of tipping points in the climatic system. This term has been used to refer to a variety of phenomena, including positive feedbacks, reversible phase transitions, resilient phase transitions, and bifurcations where the transition is smooth but the future state of the system depends on noise at a critical point (Lenton *et al.* 2008). A useful formal definition is provided by Lenton *et al.* (2008: 1786) who use the term tipping element to refer to 'subsystems of the Earth system that are at least subcontinental in scale and can be switched […] into a qualitatively different state by small perturbations'. The tipping point is the critical point at which the future state of the system is altered. The paper also presents an expert assessment of policy-relevant potential tipping elements, which is summarised in Table 1.

Table 1. Policy-relevant potential tipping elements in the climate system. Source: Lenton *et al.* (2008)

Tipping element	Feature of system, F (direction of change)	Control parameter(s), ρ	Critical value(s),† ρ_{crit}	Global warming†‡	Transition timescale,† T	Key impacts
Arctic summer sea-ice	Areal extent (−)	Local ΔT_{air}, ocean heat transport	Unidentified§	+0.5–2°C	~10 yr (rapid)	Amplified warming, ecosystem change
Greenland ice sheet (GIS)	Ice volume (−)	Local ΔT_{air}	+~3°C	+1–2°C	>300 yr (slow)	Sea level +2–7 m
West Antarctic ice sheet (WAIS)	Ice volume (−)	Local ΔT_{air}, or less ΔT_{ocean}	+~5–8°C	+3–5°C	>300 yr (slow)	Sea level +5 m
Atlantic thermohaline circulation (THC)	Overturning (−)	Freshwater input to N Atlantic	+0.1–0.5 Sv	+3–5°C	~100 yr (gradual)	Regional cooling, sea level, ITCZ shift
El Niño–Southern Oscillation (ENSO)	Amplitude (+)	Thermocline depth, sharpness in EEP	Unidentified§	+3–6°C	~100 yr (gradual)	Drought in SE Asia and elsewhere
Indian summer monsoon (ISM)	Rainfall (−)	Planetary albedo over India	0.5	N/A	~1 yr (rapid)	Drought, decreased carrying capacity
Sahara/Sahel and West African monsoon (WAM)	Vegetation fraction (+)	Precipitation	100 mm/yr	+3–5°C	~10 yr (rapid)	Increased carrying capacity
Amazon rainforest	Tree fraction (−)	Precipitation, dry season length	1,100 mm/yr	+3–4°C	~50 yr (gradual)	Biodiversity loss, decreased rainfall
Boreal forest	Tree fraction (−)	Local ΔT_{air}	+~7°C	+3–5°C	~50 yr (gradual)	Biome switch
Antarctic Bottom Water (AABW)*	Formation (−)	Precipitation–Evaporation	+100 mm/yr	Unclear¶	~100 yr (gradual)	Ocean circulation, carbon storage
Tundra*	Tree fraction (+)	Growing degree days above zero	Missing‖	—	~100 yr (gradual)	Amplified warming, biome switch
Permafrost*	Volume (−)	$\Delta T_{permafrost}$	Missing‖	—	<100 yr (gradual)	CH_4 and CO_2 release
Marine methane hydrates*	Hydrate volume (−)	$\Delta T_{sediment}$	Unidentified§	Unclear¶	10^3 to 10^5 yr (>T_E)	Amplified global warming
Ocean anoxia*	Ocean anoxia (+)	Phosphorus input to ocean	+~20%	Unclear¶	~10^4 yr (>T_E)	Marine mass extinction
Arctic ozone*	Column depth (−)	Polar stratospheric cloud formation	195 K	Unclear¶	<1 yr (rapid)	Increased UV at surface

The assessment concludes that several tipping elements could reach their critical point within this century. The greatest threats are from Arctic sea-ice and the Greenland ice sheet, but at least five other elements have the potential to surprise us. When Arctic sea ice melts, the albedo of the Earth's surface is reduced, producing a positive feedback effect. This can give

rise to multiple stable states of sea-ice cover. Lenton *et al.* (2008) concludes that the threshold for a new steady-state with ice-free summers is very close or already passed, and that the transition will take place over the next century. This would accelerate global warming. The Greenland Ice Sheet may also exhibit multiple states. Warming at the periphery lowers ice altitude, which accelerates melting, and there may be a threshold beyond which continued melting is inevitable. This would commit the Earth to a sea level rise of 2–7m over the next 300–1000+ years. The risk of crossing such tipping points greatly increases the potential consequences in the future of current emissions.

3. Urgency in Economics and Political Science: Discount Rates and Political Inertia

We can thus recognise a clear message from the natural scientific community emphasising urgent action to mitigate greenhouse gas emissions and limiting the adversarial implications of climate change. In this section we will study two particular disciplines, economics and political science, and how the notion of urgency and timely action is portrayed in the literature. We argue that urgency is treated in both disciplines, albeit in a superficial fashion. We conclude that studying the institutional facet of urgency would be a useful endeavour in both disciplines.

3.1 Economics

As a discipline, economics remains agnostic as to whether and how to react to the impending consequences of climate change. Classical economic theory never included a provision for ecological capital or natural resource use, a hole in the basic calculus that persists to this day. Public goods problems remain endemic to economic theory, which still does not satisfactorily explain, much less mitigate, tipping points and system shocks. As the logic of economics has come to increasingly dominate public policy, a number of alternative theoretical propositions have emerged by way of challenge and remedy to the mismatch between the biophysical and economic system. We address the contributions these traditions have made vis-à-vis time and urgency under the heading “Social Ecological Economics.”

3.1.1 Mainstream Economic Analysis of the Urgency of Climate Change

The issue of how much and how fast we should react to the threat of climate change is the central question within climate change economics. In that respect, time is a central variable in the analysis, but it is treated in a highly abstract manner which is quite detached from the role that time plays in the climatic system, as discussed in the previous section. The theory of intertemporal choice provides a method for comparing costs and benefits that arise at different points in time. The time dimension is reduced to a simple equation for the weight which should be given to costs or benefits at each point in time. This can be expressed through the discount rate, which is the rate at which the weighting decreases for each year. The basic formula for the discount rate is due to Ramsey (1928):

$$r_t = \delta + \eta g_t \tag{1}$$

where r_t is the consumption discount rate at time t, δ is the pure rate of time preference (or utility discount rate), η is the elasticity of the marginal utility of consumption, and g is the growth rate of consumption. It shows that future costs and benefits are discounted for two reasons. The utility discount rate is the rate at which the weight given to future *welfare* declines. However, even if this is set to (near) zero (as has been argued for by leading economists such as Ramsey (1928), Pigou (1932), Solow (1974), Stern (2007) and Weitzman (2009), future costs and benefits would still be assigned less weight than current costs and benefits as long as the world is expected to become richer in the future. Hence, the parameter η becomes highly influential. It expresses how much weight should be given to a dollar in the hands of a rich person relative to a dollar in the hands of a poor person.

Both η and δ are exogenously specified inputs to the economic analyses (and future growth rates are also highly influenced by assumptions). It therefore turns out that the answer to whether climate change is an urgent economic problem is determined by which values one chooses for these parameters. Real physical issues such as the rate of decay of polar icecaps have a very minor influence on the outcome of economic models in comparison. Some economists, most influentially Stern (2007), conclude that urgent and decisive action is needed to mitigate climate change, as delay would be ultimately more costly. Others, like Nordhaus (e.g. 2008), argue for starting with modest measures and slowly increasing the efforts. These economists use different models of the physical climate and the economy, but the different conclusions can be explained entirely by the different choices they make about the discount rate (see e.g. Nordhaus 2007). Hence, for the economic analysis, these types of technical and quite opaque assumptions determine the outcome.

Thus, there is nowhere near a consensus on what are the 'right' values to insert into the discount rate. Stern defends his low discount rate with reference to ethical arguments. This has been criticised by a range of economists as choosing the inputs to get the desired conclusion. Nordhaus argues that one should instead look at the rate of return on capital markets. However, it is far from clear that one can deduce the optimal discount rate for climate measures from today's markets. Furthermore, even if one accepted that the values for these parameters are empirical rather than philosophical questions, the range of estimates is wide. The inability of economics to present a clear policy recommendation is illustrated by Anthoff *et al.* (2009) who show that by varying the values of the parameters in the discount rate within the range of what is defensible, any value for the economic impact of climate change can be obtained.

3.1.2 Social Ecological Economics - Critique of Neoclassical Assumptions

We have shown that, regardless of prescriptive interest, revisions to the economic discount rate are of limited value in addressing the urgency/lag complex. We therefore find it useful to examine the institutional context within which the discount rate has been constructed as the central tool of mainstream climate change economics. To do so, we must explore the structure within which environmental problems, including action to address the threat of climate change, must be rationalised (e.g. Toke 2001; York & Rosa 2003).

As discussed, classical welfare theory relies upon cost-benefit analysis within the context of expansion in the economic sphere of production. The standard practice of applying a positive discount rate implicate that the economy exist in a perpetual state of growth (Daly 1992; Saunders 1992). Indeed, in adhering to the current theories, it is near impossible to imagine a political-economic structure that does not hinge upon what is now an a-priori framing issue in

the continual expansion in the sphere of production (Jackson 2009). Countervailing economic worldviews, including recent discourses in social ecological economics, provide a useful critique of the extant choice structure of classical welfare theory (e.g. Bowles 1998; Gowdy 2005; Memon *et al.* 2011; Spash 2009). A number of alternative economic paradigms have enjoyed a resurgence in the interdisciplinary literature in recent years. Insofar as these critiques form part of a prescriptive reconstruction, none have yet succeeded as a phalanx in supplanting the current neoclassical theory.

Whereas the concept of time is the central question within neoclassical climate change economics, it remains, paradoxically, an exogenous variable in prescriptive analysis (Bromley 1990; Herring & Sorrell 2009). Within the classical model, the value of the future can never be considered sovereign in its own right. It is instead obliged to be perpetually up for negotiation with the present, a requirement fundamentally at odds with the need to problematise urgency itself. Indeed, most social ecological critiques of neoclassical economics can be understood as being fundamentally concerned with restoring sovereignty to the future, and thus incorporating time as an independent variable in economic analysis.

The most basic critique offered by social ecological economics is that of ultimate limits to growth in "throughput" – the conversion of low entropy resources to high entropy waste. Thermodynamically, the operation of the economy (through the production of goods and services) directly creates a throughput-generating process. In terms of natural resources, the earth is a semi-closed system with the conceptual impossibility of unlimited quantitative growth. Within such a system, thermodynamic down-cycling that occurs at rates greater than solar income is materially and energetically unsustainable. The literature on ecological modernisation, which provides for some possibility of the substitutability of man-made capital for natural capital, gives a general discussion of resource-efficiency based dematerialisation (e.g. Lovins 2001; Solow 1991; von Weizsäcker *et al.* 2009). The causal relationship between efficiency and throughput volume remains contested, but recent research seems to validate the existence of the Jevons paradox at the global scale (Alcott 2005; Polimeni *et al.* 2009). That is, increases in efficiency of production serve both to increase the rate of throughput and expand the domain of the total economic sphere. In the face of finite natural resources, thermodynamic limits and certain but unpredictable tipping points in the climate system, a planetary boundaries framework for assessing the ultimate legitimacy of any economic approach to urgency is well founded (Rockström *et al*. 2009). If we accept the existence of planetary boundaries, along with limited substitutability of man-made capital for natural capital, the incommensurability of cost benefit analysis to deal with time becomes apparent.

3.1.3 Economics and the Urgency/Lag Complex

From this overview of economics we can draw some key conclusions concerning the notion of urgency. Mainstream environmental economics places the emphasis on discount rates to evaluate the need for action. The main problem with discount rates relate to the complexity of setting the "correct" discount rate and the need for treating it as a politico-ethical endeavour. Thus, setting the discount rate becomes in a sense "non-economics" in that it forces the analyst to consider matters which are not directly and explicitly quantifiable. On the other hand, social ecological economics critiques the implicit assumptions of the mainstream economic model in which discounting is applied, therefore stressing the need for moving beyond discount rates and classic welfare economics. The introduction of planetary boundaries and throughput stresses the un-sustainability of present development and consequently the necessity for urgent action. Thus, the notion of urgency in economics in

general is highly dependent upon the way in which one conceptualises the future and the potential of tackling climate change through technological development – discount rates to compensate for future technological innovations vs. the increasing empirical evidence of the need for more structural changes of climate change economics.

Bearing in mind the dominance of mainstream economics in climate policy analyses, we argue that the urgency/lag complex existing within economics is predominantly related to the inability of mainstream economics to overcome the institutional barriers to respond seriously to biophysical realities: planetary boundaries, systemic tipping points, and the incorporation of time and urgency as a central component of analysis, rather than an exogenous and indirect variable.

3.2 Political Science

In spite of Wildavsky's (1992: xv) ominous statement as early as the early 1990s that climate change is the *'mother of all environmental scares'*, concerted urgent political action has remained largely absent (Bazerman 2006; Boston & Lempp 2010). Thus far, the interest of scholars has been directed towards political time lags – politicians have failed to make effective and timely climate change policies to address the urgency of the issue. Instead, "wait-and-see" responses have been most symptomatic in this regard (Hovi *et al.* 2009; Gardiner 2009; Sterman 2011).

Political inaction is often considered to ensue from a basic, broadly carried misunderstanding of climate dynamics (e.g. Sterman & Booth Sweeney 2007; Sterman 2008; Young 2012). However, we believe that political inaction is in direct ratio to the delayed ecological effects of climate change, i.e. the hidden urgency of climate change creates time lags in political systems. Most importantly, what results from this, we argue, is that the urgency/lag complex eventually culminates in institutional inertia, which in turn delays timely action to mitigate climate change.

3.2.1 Perceptions and Low Sense of Urgency

A prime basic factor for a low sense of urgency is related to the temporal dimension of cause-and-effect relationships. Gardiner (2009) argues that a low sense of urgency is triggered by the difference between the causal and temporal proximity of causes and effects. Causal proximity becomes inherently more difficult to discern when time passes, particularly when cause-and-effect relationships spawn various generations (Parfit 1984; Callicott 2011). Delayed ecological effects complicate the ability of people to link them to anthropogenic causes (Lazarus 2008). Therefore, the understanding that future ecological effects are caused by our current actions is underdeveloped due to cognitive limitations (e.g. Moser & Dilling 2004; Bazerman 2007; Gardiner 2009; Weber & Stern 2011).

Ecological effects are often translated into social terms; they become appropriated (Doherty & Clayton 2011). Whilst this is essentially human, it reduces the visibility of real-world climate change in relation to its long-term ecological effects. The effects of climate change on human beings that Doherty and Clayton (2011) have observed – mental health issues, intergroup conflict and despair – can be important for instilling a sense of urgency. However, they do not run in par with the long-term character of ecological effects. Especially, the experiences differentiated between the effects of short-term adverse weather events and long-term climatic

changes seem to be in competition (Newell & Pitman 2010). The different time frames of the effects of climate change, perceived or real, require different prioritisations.

In addition to distinction between causal and temporal proximity, current ecological effects are unevenly distributed across the world, thereby having a disproportionately low impact in developed countries when compared to developing countries (Moser & Dilling 2004; Callicott 2011). In terms of geographic causality, this means that the developed countries are not presented a precedent of what is likely to come in the future given their current CO2 emission levels. However, the link between geographic proximity of ecological effects and the sensed urgency of climate change is not only spatial; it is also sustained on the basis of emotional proximity. Individuals privilege their joy of ownership of things, say economic growth, over compassion with the adverse consequences of their ownership as experienced by others (an adaptation of the 'Dittie 4' scenario (Callicott 2011)).

3.2.2 From Perceptions to Political Time Lags

The low sense of urgency on the individual level can help to explain the time lags occurring in the political arena. Political considerations based on the costs and benefits of climate change policy are typically confined to the national polity. This is because of long-standing institutional arrangements, such as elections held at regular intervals, the representation of cost-benefit-driven interests of the constituency and free-for-all competition between interest groups (Held & Hervey 2011). In terms of spatial distribution of the impacts of climate change, this becomes problematic, as policy preferences in the nation-state have a strong egocentric character; political agendas and routines of debate sustain a national mindset.

It is generally understood that political intervention involves costs and benefits that are differentiated over time (Lazarus 2008; Boston & Lempp 2010). Specifically, costly interventions in the short term are needed to secure benefits in the long term. It can be made evident that the temporal distribution of costs and benefits can have decisive political consequences (Hovi *et al.* 2009). Politicians in democratic states often do not want to commit to making long-term policies as voters are driven by short term political gains (Pierson 2004; Bazerman 2006; Hovi *et al.* 2009). Furthermore, vested political lobby groups may countervail proactive measures (Bazerman 2006; Lazarus 2008). The dismantling of environmental policies in recent years can also be placed in this logic. Powerful business and industry actors press for environmental policy dismantling much at the expense of the future utility of such policies for society as a whole (Boston & Lempp 2010; Bauer *et al.* forthcoming).

We have advanced earlier that ecological effects are not only delayed but that they can also be abrupt. However, the imminent threat of "climatic tipping" can lead to an inert political response. Schlesinger (2009) has argued that increased applicability of tipping points in the communication of climate change urgency allows decision-makers to buy extra time before interventions are deemed crucial. Similarly, the notions of thresholds or boundaries may have a counterproductive effect on timely political action if they are set too high or too far into the future. By using the 'switch metaphor', which argues that global warming can lead to a new climatic equilibrium, it may appear as if it is possible to switch back to a "pre-climate change" society once we have the necessary knowledge and technology (Moser & Dilling 2004: 37). The key conception is thus that climate change is reversible and linear and thereby more easily manageable.

3.2.3 Inertia and "Sticky" Institutions

What is perhaps more critical is the fact that while the aforementioned causes for the low levels of urgency can be listed separately, it is the aggregate of these causes which makes the problem at hand even more complicated. Scholars of institutionalist political science have long reminded us that the behaviour of individuals is not (entirely) based on conscious self-rationality – rather, it stems from extra-individual institutions influencing human behaviour (see e.g. DiMaggio & Powell 1983; March & Olsen 1989; Scott 1995). Treating the low level of urgency as an institutional matter opens up fascinating routes for research, as it extends the view of political time lags within climate change from being merely an "unfortunate coincidence" of various reasons to conceptualising it as a problem that permeates societal structures. This temporally out-of-sync institutional arrangement has in the literature been dubbed a 'temporal misfit' (Galaz *et al.* 2008: 154; see also e.g. Folke *et al.* 2007).

It is however important to stress that temporal misfits are consequences of broader and long-term development in society. It is generally understood that institutions in society are to a great extent slow, resistant and continuous (Mahoney & Thelen 2010). Lindblom (1959: 84) argued already some 50 years ago that Western democracies develop only gradually through slow change, they are 'muddling through' – '[d]emocracies change their policies almost entirely through incremental adjustments. Policy does not move in leaps and bounds'. Thus, instead of focusing on abrupt changes, the stress in on the small changes that in the long run reshape policy. In a similar fashion, other scholars have emphasised the path-dependent character of societal development. Path dependence is generally understood as 'constraints on the choice set in the present that are derived from historical experiences of the past' (North 2005: 52). Seen more specifically, path dependency refers to the difficulty and cost of "changing routes" from our current path of development (Pierson 2004). Consequently, incrementalism, institutional inertia and path-dependency all emphasise the stable structure of institutions and their resistance to change.

The stickiness or slowness of institutions has serious consequences for the "urgency/lag complex". It emphasises that the mitigation of time lags relate to greater social structures in society. Laux (2011) argues that this this condition of being out of sync can be derived from the nature of late-modernity. Within late-modernity, complexity is an inherent feature of society, where problems, in this case climate change, are hard to define and categorise. Within the realm of public administration this complexity gives rise to significant challenges for modern bureaucracy that follows a 'linear' timeframe (Adam 2003: 64), which essentially portrays a 'fatal confusion about the nature of time and space' (McKibben, quoted in Bastian 2012: 23). For example, in terms of science-policy interfaces, it is often assumed that the transposition of scientific discovery into decision-making follows a linear logic (Pielke 2007), that is, scientific evidence precedes policy decisions. This viewpoint has however been criticised by scholars studying the social dynamics of science, who argue that this science-policy relationship is significantly complex. The implication of this complexity coupled with the persistent view of science-policy interfaces as a linear endeavour presents severe challenges for the legitimacy of climate change research (Jasanoff 2005) and furthermore a temporally sensitive science-policy relationship.

3.2.4 Political Science and the Urgency/Lag Complex

We thus argue that, according to political science, the urgency/lag complex stems from individual incapacity to translate ecological feedback into a sense of urgency, which as a result feeds into political time lags. Furthermore, instead of treating individual and political

reasons for the urgency/lag complex separately, we emphasise that institutions play a central role. In other words, the urgency/lag complex is an integral part of contemporary society. The problem at hand cannot therefore be limited to a simple managerial issue – rather, the institutional conditions of the temporal lag needs to be properly acknowledged. However, the institutionalist literature has not yet dealt with the notion of urgency *per se*, especially when linked to the demand for timely climate change policy measures.

In addition, the literature on institutionalism has been fairly silent about the consequences of climate tipping points for society and institutional arrangements. Focusing on and examining the inability of "sticky" institutions to foresee drastic climatic events and thereby weakening the timeliness of climate change policy measures would be fruitful.

4. Discussion

The literature review of economics and political science highlights that there are critical gaps in the current debate regarding climate change urgency. In this section we will discuss further some alternatives to conventional research and possible routes of future studies. We acknowledge that the gaps in the economics and political science literature cannot by themselves fully explain the dynamics of policy-making in the climate change regime. Nevertheless, these gaps shed light on the significant challenges for policy to address climate change in a timely fashion.

The limitations of mainstream economic analysis in the face of an issue like climate change have been recognised from within the paradigm. Perhaps the most ground-breaking recent contributions come from Martin Weitzman (2007; 2009; 2010) who has explored the implications of the fact that we are uncertain about which probability distribution describes the future impact of climate change. This so-called structural uncertainty had been largely ignored by economic analyses of climate change. In his 'Dismal Theorem', Weitzman (2009) formally proves that when there is an unknown but non-negligible probability of a disastrous collapse of human welfare, the estimated cost of failure to mitigate climate change becomes unbounded. He argues that in such cases, 'the climate-change economist can help most by *not* presenting a cost-benefit estimate...as if it is accurate and objective' (Weitzman 2009: 18).

The deep social ecological economic analysis is that we need to move away from neoclassical economic archetypes. The theory of discounting, through the lens of cost-benefit analysis does not sit on solid operational ground if we are to truly acknowledge the reality of planetary boundaries. That is, the ontology of any response to climate change within the framework of economics must map faithfully with the framework of general welfare theory, which it currently does not. Partial options are available, and have been discussed (such as "quasi option decision rules" and the like), but until future climate states (i.e. "the future") can be valued significantly for their own sake, the future will remain perpetually up for negotiation with the present – thus sidestepping the centrality of time/urgency in any analysis.

Being able to visualise the future and respond to quickly changing environments can be seen as a prerequisite for timely climate change measures. One strategy is to develop the capacity of society to predict the ecological effects of climate change. Climate change can be called a 'predictable surprise', as although climate change and its effects can to some extent be predicted, its consequences will most likely catch society off guard (Bazerman 2006). As

argued earlier, the urgency/lag complex is heavily bound to institutional inertia, which poses challenges to acting in a predictable manner. In order to be predictable to the complexity of climate change, it is essential that the climate governance system is flexible and adaptive to new forms of knowledge and possibilities of action (Voß & Kemp 2006). While reflexive governance arrangements are part of the solution to address wicked problems, a clearer picture of how reflexive governance can work to manage institutional inertia that prohibit the timely development of climate change policy measures.

Here, the research on agency within institutions can prove to be a fruitful approach. The role of agency is interesting, because it sheds light on how actors are able to shape and create new institutions thereby challenging institutional inertia. The study of agency within institutionalism is essentially divided into two research streams, institutional entrepreneurship and work (for a discussion about the differences between the streams see Lawrence *et al.* 2009: 3–6). The research on institutional agency has thus far largely been concerned with individual-centred analyses focusing on the social capital and strategic skills to envisage different institutional alternatives (e.g. Beckert 1999). However, more recent scholarship has paid more attention to the discursive and relational dimensions of institutional agency (Pacheco *et al.* 2010; Sotarauta & Pulkkinen 2011). These approaches can be useful when studying reflexive governance arrangements and the relationship between institutional inertia and urgency, as they highlight the importance of framing in institutional change and the interlinking of various relevant actors in change processes.

An interesting example within the literature on democratic theory is the concept of unilateral leadership, which has been put forward as a strategy to overcome inaction on climate change (Urpelainen 2011). Following the literature on path dependency mentioned earlier, it can be argued that unilateral leaders with a strong environmental agenda can make decisions which trigger an envisaged action from future leaders. That is, unilateral leadership may induce not merely policy change but paths towards climate policies that would be harder for future governments to ignore.

5. Conclusion

In this paper we have reviewed the literature on economics and political science to assess how the notion of urgency has been depicted. Bearing in mind the extensive calls from the natural science community for urgent means to address climate change, the research on climate change within economics and political science has in general been less inclined to treat the question of urgency equally seriously. The notion of time is indeed prevalent in the literature, but we argue that current research within both disciplines fails to address the notion of urgency because of two main reasons. *Firstly*, the concept of time is largely treated as a distinct or separate concept that can be detached from the rest of the context. One example of this is the use of discount rates in economics to put a price on inaction. One solution to this could be to use zero negative discount rates, which would make inaction increasingly "costly". However, this would be a rather ad-hoc solution. Although not explicitly focused on the dimension of time, the recent developments in incorporating structural uncertainty seem to address the shortcomings of the current models more directly, and it is noted by Weitzman (2009) that doing so can readily outweigh the effects of discounting. We thus argue that more comprehensive changes to neoclassical economic analyses need to be made in order to accommodate to the urgency/lag complex.

Secondly, and interrelatedly, the impact and role of institutions (understood as regulative, normative and cognitive) in addressing urgency is currently underdeveloped. There is a great deal of literature in political science that is focusing upon political time lags and inertia. These approaches are valuable, as they portray the timeframes and temporal rhythms of liberal democratic political systems. In this paper we have advocated that we need to look beyond political time lags and study more closely the institutional mechanisms that embrace political activity – we see politics as taking place within institutions and not vice versa. Therefore, solutions proposed to address the "urgency/lag complex" need to be considerate of the institutional setting.

Thus, this paper has stressed that the urgency/lag complex cannot be solved by a simple technological fix. The future occurrence of dramatic shifts in the climate system (such as tipping points and bifurcation) are outside the domain of regime planning in the current system. The contention of this paper is that inadequacies of climate policy arise structurally from a mismatch between climatic systems and a low sense of urgency as expressed through institutional structures. Future studies addressing the urgency/lag complex will therefore need to be sufficiently inclusive in their approach to account for the holistic characteristics of the problem at hand.

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