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RESEARCH ARTICLE Governance on Low Carbon Technology Transfer

Connect the dots: managing the fragmentation of global climate governance

Harro van Asselt · Fariborz Zelli

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Abstract The debate about post-2012 global climate governance has been framed largely by proponents and opponents of the policymaking process established by the United Nations Framework Convention on Climate Change (UNFCCC). In light of the proliferation of institutions governing some aspects of climate change, analysts have asked whether a centralized or a polycentric climate governance architecture will be more effective, efficient, equitable, or viable. While these are valid questions, they obscure the fact that global climate governance is already polycentric, or rather: fragmented. This article argues that the more pertinent questions are how to sensibly link the different elements of global climate governance, and what the role of the UNFCCC could be in this regard. We examine these two questions for three aspects of global climate governance: international climate technology initiatives, emerging emissions trading systems, and unilateral trade measures. The article shows that there are strong arguments for coordination in all of these cases, and illustrates the possible role of the UNFCCC. It concludes, however, that possibilities for coordination will eventually be limited by underlying tensions that will plague any future climate governance architecture.

Keywords Clean technologies · Climate governance · Emissions trading · Institutional complexity · Trade measures

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1 Introduction

Although climate policy analysts disagree on many things, there is perhaps one aspect they can all agree upon: that global climate governance is "at the crossroads" (Hoffmann 2011) and that important choices lie ahead in the immediate future. For years, international negotiations have been struggling to ensure a concrete follow-up to the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC). Yet notwithstanding the slow progress in the international negotiation process, obituaries for the multilateral, state-driven climate regime had to be shelved time and again. Indeed, while the negotiations on a future climate regime so far failed to produce outcomes that would require ambitious emission reductions (e.g. UNEP 2011), the UNFCCC process itself has proved to be remarkably resilient.

At the same time, observers have pointed to—and tried to make sense of—the rapidly increasing number of climate change initiatives taking place outside of the auspices of the UNFCCC (e.g. Jagers and Stripple 2003; Pattberg and Stripple 2008; Andonova et al. 2009; Okereke et al. 2009; Bernstein et al. 2010; Biermann 2010; Bulkeley and Newell 2010; Hoffmann 2011; Keohane and Victor 2011; Zelli 2011; Abbott 2012). The amalgam of non-UNFCCC efforts covers a wide range of public, private and hybrid initiatives at various levels of governance, aimed at both reducing greenhouse gas emissions (mitigation) and adjusting to the impacts of climate change (adaptation). In the view of these authors, the UNFCCC cannot (or no longer) be seen as the sole site of global climate governance.

The starting point for our argument is that this increasing institutional complexity urges both practitioners and academics to rethink the role of the UNFCCC in a creative and pragmatic manner. Indeed, the lingering uncertainty in the climate negotiations, combined with the emergence of other governance arrangements, has already triggered broader questions about the advantages and drawbacks of different possible climate governance architectures. However, much of the climate policy literature is still preoccupied with asking questions about which climate governance architecture is more effective in reducing emissions, more equitable and just, more economically efficient, more politically viable, etc. (e.g. Biermann et al. 2009; Hof et al. 2009; and various contributions in Aldy and Stavins 2007, 2010). One key tenet in these contributions is contrasting architectures in which the UNFCCC plays a central role with architectures in which the role of the UNFCCC is limited or non-existent.

While these contributions address valid questions, they also obscure the reality of the current state of global climate governance. As we argue in this article, global climate governance *is* already fragmented. Rather than asking which architecture is 'better', we hold that a more pertinent question is how to link the different elements of global climate governance to ensure coherence among them. In particular, we ask how different non-UNFCCC initiatives could be connected to each other, and what the role of the UNFCCC could be in terms of coordinating different initiatives. By doing so, the aim of this paper is to redirect attention to fostering linkages between individual components of the existing global climate governance architecture, as opposed to searching for an ideal governance architecture, and to provide some first

ideas on how such linkages could look like at the intersection of climate change mitigation and trade policies.

The article is structured as follows. First, we explain how global climate governance was initially firmly anchored within the international climate regime, but how this changed in the early 2000s, when the UNFCCC's predominance was increasingly put into question (Sect. 2). Based on this analysis, we advance our argument in favor of enhancing the coherence between the different elements of global climate governance. To this end, we draw on scholarly work that distinguishes various degrees of fragmentation of governance architectures. We posit that by making links between the different elements of global climate governance, it is possible to move away from what Biermann et al. (2009) term conflictive fragmentation (Sect. 3). We illustrate this normative argument with three different cases, showing how coordination of various climate change mitigation initiatives could make a contribution from a practical perspective (international climate technology initiatives; emerging emissions trading systems; and unilateral trade measures), with specific attention for the role that the UNFCCC could play (Sect. 4). We provide concluding remarks in Sect. 5.

2 Global climate governance: from centrality to plurality

2.1 The early stages: the centrality of global climate governance

From the late 1980s up to the early 2000s, few observers would have questioned the centrality of the United Nations (UN) process in global climate governance. In the 1980s, the UN played a pivotal role in fostering scientific consensus through the establishment of the Intergovernmental Panel on Climate Change by the World Meteorological Organization and the United Nations Environment Programme. More importantly, in 1989, the UN General Assembly put the issue of climate change on its agenda, resulting in the establishment of a negotiation committee that led to the adoption of the UNFCCC in 1992 (Bodansky 1993). The Convention stated an overall goal for the international community to prevent dangerous anthropogenic interference with the climate system, and listed several guiding principles. It further included broadly defined commitments for all parties, and specified more detailed commitments for industrialized countries. The Convention has been widely ratified—including by all major greenhouse gas emitters—and launched an ongoing international negotiation process to address the causes and impacts of the problem. This in itself should not be underestimated. As Depledge and Yamin (2009: 439) note, "[t]he negotiating environment of a regime enmeshes delegations in a dense web of meetings, practices, processes, and rules, generating an inherent motivation among negotiators to advance the issue". This 'momentum' ensures that all countries have moved forward—albeit slowly and incrementally—towards a common goal of avoiding dangerous climate change.

While national and regional approaches to tackle climate change were not absent, the UNFCCC process remained of central importance in the 1990s. For instance, climate action in the European Union (EU), seen by various observers as a leader in

addressing climate change (e.g. Gupta and Grubb 2000), was largely symbolic in nature up to the adoption of the Kyoto Protocol in 1997, with a widening gap between increasingly ambitious targets and troubled implementation. For various reasons, including the need to comply with its commitments in the Protocol and the urge to show international climate leadership, the EU stepped up its game in the early 2000s (Jordan and Rayner 2010; Jordan et al. 2012). Although it can be argued that some of these developments would have taken place also in the absence of the international climate regime, certain aspects are undoubtedly influenced by international developments. For instance, the speed with which the EU's emissions trading system (EU ETS) was adopted in 2003 can be explained at least in part by the need for the EU to have policies in place to implement the Kyoto Protocol (Skjærseth and Wettestad 2008).

The adoption of the Kyoto Protocol—and its subsequent development—reinforced the impression that the UN process was the "only game in town",[1] or at least the main show. All industrialized nations came together to inscribe targets (of varying stringency) in the Protocol. The Protocol proved to be resilient enough to withstand the departure of one of the most powerful countries (and at that time also the largest carbon dioxide emitter), the United States (US), in 2001. The Marrakech Accords, agreed upon in 2001, allowed for the operationalization of the Protocol's flexibility mechanisms. In particular, the Protocol established a market for credits from the Clean Development Mechanism (CDM). Between 2002 and 2008, 1.9 billion credits worth US$ 23 billion were contracted. This amount, in turn, could leverage up to US$ 106 billion in carbon finance (Kossoy and Ambrosi 2010: 42). While the CDM has received its fair share of criticism (e.g. Wara and Victor 2008; van Asselt and Gupta 2009), it is undeniable that it has helped to scale up low-carbon investments in developing countries.

A further indicator of the central role played by the climate regime is the sheer number of issues dealt with in climate negotiations. By its very nature, climate change is an issue that affects various sectors of society. However, it would have been hard to predict that within 20 years after its adoption, the UNFCCC would be one of the key international venues for discussing issues such as tackling tropical deforestation.[2] The scope of the regime has also been widened by the inclusion of six greenhouse gases in the Kyoto Protocol. As a result, also non-CO_2 emissions from sectors such as agriculture are now covered. Besides its breadth, the regime has also deepened through the development of an impressive rulebook on a wide range of issues (e.g. Yamin and Depledge 2004). In particular, it has helped to develop the necessary infrastructure for monitoring and reporting emissions, and has provided detailed guidance for the operation of market-based mechanisms in practice.

The most recent development seemingly (re)affirming the central importance of the UNFCCC process (or at the very least its institutional resilience) was the Cancún climate summit in late 2010, as well as the Durban climate talks a year later.

[1] Christine Todd Whitman, former Administrator of the US Environmental Protection Agency in the Administration of George W. Bush; on 6 March, 2001. See http://www.time.com/time/world/article/0,8599,103985,00.html (Accessed 13 May 2012).

[2] Since 2005, tropical deforestation has emerged as a key issue in the climate negotiations under the heading of reducing emissions from deforestation and forest degradation (REDD). See van Asselt 2012.

Following a year after the chaotic Conference of the Parties in Copenhagen, negotiators in Cancún had the difficult task of keeping the UNFCCC process alive. To the surprise of many, they actually managed to do so by adopting the Cancún Agreements (UNFCCC 2011), which fleshed out the shorter and less concrete Copenhagen Accord. The agreement reached in Cancún—like the one in Copenhagen—lacks the ambition and the specificity to achieve meaningful greenhouse gas emission reductions (e.g. Rogelj et al. 2010; UNEP 2010, 2011). In addition, although several operational features were tackled in Durban (UNFCCC 2012), some of the crunch issues in the negotiations—i.e. by how much should we reduce emissions, and who should do what?—remain unresolved. Yet the agreement did succeed in 'saving' the negotiation process from going into a complete deadlock or, in other words, the Cancún Agreements ensured that 'momentum' was maintained (cf. Depledge and Yamin 2009).

In summary, the initial development of global climate governance has been characterized by the centrality of the UNFCCC. Despite the criticisms voiced about the UNFCCC process, and despite a turbulent period following the United States' withdrawal from the Kyoto Protocol, the process is still ongoing. However, as the next subsection indicates, claims that the UNFCCC is the main show in town should be critically examined in light of climate action emerging at various levels and jurisdictions, and undertaken by a variety of public and private actors.

2.2 The 2000s (and beyond?): the plurality of global climate governance

In the 2000s, attention was increasingly drawn to initiatives outside of the UNFCCC context. In part, this can be explained by the US exit from the Kyoto Protocol. However, the emergence of new governance arrangements (and the shifting focus of existing ones) has also been due to the higher profile of climate change on the international policy agenda. While it is beyond the scope of this article to exhaustively list the multitude of non-UNFCCC governance arrangements, we distinguish several broader types below.

First of all, international organizations such as the World Bank (e.g. World Bank 2008) have sought to integrate climate change concerns in their operations. In addition, multilateral environmental agreements have started to address climate change-related issues falling within their mandates. For instance, from the late 1990s onwards, parties to the Convention on Biological Diversity have adopted numerous decisions highlighting the links between biodiversity and climate change (van Asselt 2012). Another environmental treaty, the Montreal Protocol aimed at the reduction of ozone depleting substances, has even been argued to be more successful in terms of reducing global greenhouse gas emissions than the Kyoto Protocol (Velders et al. 2007).

Other initiatives comprise high-level, club-like forums involving the political leaders of a limited number of important countries (cf. Victor 2011: 242–243), such as various Group of 8 (G8) summits held since 2005, and the Group of 20 (G20) meetings held since 1999. Another initiative is the Major Economies Process on Energy Security and Climate Change launched by US President Bush in 2007, which has been continued as the Major Economies Forum by President Obama.

Other approaches have sought to bring together climate change negotiators in less contentious, informal settings. An example is the Cartagena Dialogue organized in the run-up to the Cancún climate summit, which was credited to contribute to a positive negotiating atmosphere. Whereas some of these novel 'minilateral' initiatives (Naím 2009; McGee 2011; Eckersley 2012) tend to focus largely on the major greenhouse gas emitters, others include developing countries with a high stake in climate politics, such as small island states, least developed countries, and oil-producing nations.

Yet other governance arrangements have taken the shape of multi-stakeholder partnerships involving governments, corporations and/or non-governmental organizations. These partnerships have often focused on particular technologies, such as the Carbon Sequestration Leadership Forum, the Global Methane Initiative, and the International Partnership for Hydrogen and Fuel Cells in the Economy, or they have supported investment and policy development across certain types of technologies, such as the (now-defunct) Asia-Pacific Partnership on Clean Development and Climate (APP) and the Renewable Energy and Energy Efficiency Partnership (REEEP) (van Asselt 2007; de Coninck et al. 2008; Karlsson-Vinkhuyzen and van Asselt 2009).

Another category consists of the wide variety of regulated and voluntary markets that have been established before and (especially) after the adoption of the Kyoto Protocol (Bernstein et al. 2010). These include large regulatory (or compliance) markets such as the EU ETS. Interestingly, while the EU ETS is now linked to the Kyoto Protocol's flexibility mechanisms, it was created with an expectation that it could function entirely independent from the international legal context at a time when it was still unclear whether the Kyoto Protocol would enter into force (Biermann et al. 2009). Even more independent from the UNFCCC process are the voluntary carbon markets, which have emerged in particular to cater to the demand of companies and individuals to offset their greenhouse gas emissions (Pattberg and Stripple 2008). The creation of both regulatory and voluntary markets has in turn led to the emergence of new arrangements that seek to govern these markets. For instance, voluntary standards for carbon offsetting such as the Voluntary Carbon Standard and the Gold Standard have been created to ensure some level of oversight of the voluntary markets in the absence of (international) regulatory bodies (Lovell 2010).

Other relevant initiatives undertaken by non-state actors include actions to hold corporations to account for their carbon footprints, either through self-regulation (e.g. the Carbon Disclosure Project) or through scrutiny by civil society organizations, such as Greenpeace (Pattberg and Stripple 2008). Moreover, private actors that are specifically affected by climate change, such as the insurance industry, have started to respond to the risks posed by the problem by autonomously taking measures (Jagers and Stripple 2003; Ceres 2011; Phelan et al. 2011).

Finally, numerous sub-national efforts have been launched in recent years. Especially in the United States, where policymakers have struggled to put in place meaningful climate policies at the federal level, states and other sub-national actors have become increasingly active (see various contributions in Selin and VanDeveer 2009). California, for instance, adopted the Global Warming Solutions Act in 2006,

capping its emissions at 1990 levels by 2020, and setting the additional objective of reducing emissions by 80 % by 2050. Furthermore, several states have become involved in emissions trading systems, both domestically—such as the Regional Greenhouse Gas Initiative (RGGI)—and transnationally—such as the Western Climate Initiative. Other sub-national initiatives have involved municipal governments. In addition to stand-alone initiatives at the local level, this also includes the creation of transnational networks through which urban actors have sought to cooperate on climate change issues, such as the Cities for Climate Protection program (Betsill and Bulkeley 2004; Bulkeley 2010).

In summary, global climate governance in the 21st century has increasingly emanated from different sources. Some of these initiatives can be seen as a response to the UNFCCC process—either in support of it, or promoting alternative discourses—whereas others have seemingly emerged in an autonomous fashion. Although governance arrangements outside of the UNFCCC may come and go, it is nevertheless likely that a variety of initiatives outside of UN climate negotiations will persist in the foreseeable future.

3 The case for a more integrated climate governance architecture

So far, we have shown that global climate governance has become increasingly 'polycentric' (Ostrom 2010). However, while it is important to acknowledge the multiplicity of sites of climate governance, the previous section has also made clear that the UNFCCC process has not all of a sudden ceased to play key role in the entire climate governance complex. These nearly parallel processes have spurred a heated debate. Some authors have made strong pleas in favor of the UNFCCC process (e.g. Depledge and Yamin 2009; Hare et al. 2010), whereas others have emphasized that this overburdened process will block any progress and that it would be wise to pin our hopes on decentralized approaches (e.g. Victor et al. 2005; Prins and Rayner 2007; Rayner 2010).

Rather than positing that there is a 'choice' between centralized or fragmented climate governance architectures, we argue that the starting point should be the current state of global climate governance, which, as outlined in the previous section, is already characterized by fragmentation. Thus, rather than simply contrasting two different ideal-type architectures, it is more sensible to focus on attributes of the existing climate governance architecture.

A first effort in this regard has been made by Biermann et al. (2009), who argue that fragmentation is a structural characteristic of any global governance architecture, but that the degree of fragmentation varies considerably across such architectures. They define 'governance architecture' as "the overarching system of public and private institutions that are valid or active in a given issue area of world politics" (Biermann et al. 2009: 15).The attributes deemed relevant for assessing the degree of fragmentation of an architecture are (1) the level of institutional integration; (2) the extent to which core norms conflict; and (3) the existing actor constellations (i.e. which actors support which institutions?).

Based on these criteria, they differentiate between 'synergistic fragmentation', 'cooperative fragmentation', and 'conflictive fragmentation'. Synergistic fragmentation, which can for instance be found in the issue area of ozone layer depletion, refers to a global governance architecture in which almost all countries participate in the core institution in an issue area, and where this institution "provides for effective and detailed general principles that regulate the policies in distinct yet substantially integrated institutional arrangements" (Biermann et al. 2009: 20). There is cooperative fragmentation when there are only loosely integrated institutions and decision-making procedures, when the relationship between norms and principles of these different institutions is ambiguous, and/or when not all major countries participate in the core institution. Finally, they argue that conflictive fragmentation occurs when the institutions in a given architecture are hardly connected or have very different decision-making procedures, when the principles, norms and rules are conflicting, and when the memberships of the institutions overlap in such a way that different actor coalitions accept or advance these conflicts. One example for conflictive fragmentation is the institutional architecture on plant genetic resources (Biermann et al. 2009: 20).

Keohane and Victor (2011) follow a similar line of analysis in their discussion of what they term the 'regime complex'[3] for climate change. They argue that there are on the one end "fully integrated institutions that impose regulation through comprehensive, hierarchical rules" and on the other there are "highly fragmented collections of institutions with no identifiable core and weak or nonexistent linkages between regime elements". Sitting in between is "a wide range that includes nested (semi-hierarchical) regimes with identifiable cores and non-hierarchical but loosely coupled systems of institutions" (Keohane and Victor 2011: 8). In other words, for Keohane and Victor, a distinction can be made: (1) on the basis of the level of institutional integration; (2) the extent to which an institutional core is identifiable; and (3) the extent to which rules are imposed in a hierarchical fashion.

For both studies, it is clear that the level of fragmentation (or institutional complexity) is a continuum. The studies also suggest that the level of institutional integration is of analytical importance. However, they also suggest that the level of integration is important from a normative perspective. Keohane and Victor (2011: 16), for instance, argue that 'coherence'—meaning that different components "are compatible and mutually reinforcing"—is one of the criteria against which institutional arrangements should be assessed. Biermann et al. (2009) further conclude that the various advantages of non-integrated institutions outweigh the potential drawbacks, and that it would be preferable to minimize the cases of conflictive fragmentation. In particular, higher levels of integration could ensure that different fragments of the climate governance architecture work towards the same goals rather than against each other. Moreover, as Falkner et al. (2010) argue,

[3] Notwithstanding the growing traction that this term has gained in recent years, we argue that it is slightly misleading, and instead suggest 'institutional complex' (cf. Oberthür and Stokke 2011) as the more appropriate term. This accounts for the great diversity of institutions that currently make up the complex of climate governance and that do not only comprise regimes, but also several other types of institutions such as organizations, implicit rules and private–public arrangements (cf. Keohane 1989: 3).

coherence would lead to an increased level of transparency and trust in governmental efforts to address climate change.

Accepting these arguments does not necessarily have to lead to the favoring of fully integrated institutions. However, the arguments make clear that there should be some level of integration or coordination in a fragmented governance architecture. We therefore submit that it is important to think about ways of linking different institutions in global climate governance with a view to moving away from cases of conflictive fragmentation. The following section sketches the outlines of this emerging challenge by providing examples of how policymakers and non-state actors could seek to 'connect the dots' as a means of managing the fragmentation of global climate governance in three realms of global climate governance. For each of these three cases, we identify how it may be possible to enhance the level of institutional integration through coordination of activities. Furthermore, we discuss the role—if any—the UNFCCC might play in this regard.

4 How to manage the fragmentation of global climate governance: three ideas

4.1 Coordination between international climate technology initiatives

The first example concerns the increasing number of initiatives aimed at the promotion of climate change mitigation technologies. So far, the emergence of international technology initiatives has taken place haphazardly with initiatives varying, among others, in terms of:

- *Technologies covered* Some initiatives are established for one specific technology (e.g. the Carbon Sequestration Leadership Forum, focusing on carbon capture and storage), whereas others cover a wide range of technologies (e.g. REEEP, focusing on a variety of renewable energy and energy efficiency technologies).
- *Participation* Different countries participate in different technology initiatives—although most initiatives have at least some involvement of industrialized countries. Additionally, some initiatives are bilateral whereas others seek to engage a wide range of countries. Furthermore, some initiatives promote a more prominent role of private sector participants than others (Tamura 2006: 58; UNFCCC 2010).
- *Stage of technology cooperation* De Coninck et al. (2008: 336) distinguish four different types of technology cooperation activities: (1) knowledge sharing and coordination; (2) research, development and demonstration (RD&D); (3) technology transfer; and (4) technology deployment mandates, standards, and incentives (see also UNFCCC 2010, which identifies several 'innovation phases').

The result of this institutional development is a patchwork of technology agreements with little coordination of their activities. Consequently, there are several arguments for at least some level of coordination. First, coordination could avoid duplication of work in case of overlapping initiatives: experiences with the

development and deployment of similar technologies could be shared among the initiatives, thereby ensuring more efficient international cooperation. Second, countries' technology needs are different, especially across developing countries. To ensure that the development and deployment of technologies are effective in practice, they need to be linked to the assessment of the technology needs of recipient countries. Such an assessment would likely transcend the more limited scope of most technology initiatives. A third rationale for coordination is to keep track of how the different technology initiatives contribute to overall climate change mitigation objectives. For instance, coordination could facilitate an assessment of the extent to which the emission reductions achieved by different technologies could lead to a stabilization of greenhouse gas concentrations in the atmosphere (cf. Pacala and Socolow 2004). Fourth, coordination could help to channel public funding to the various initiatives, for instance, through the Green Climate Fund established by the Cancún Agreements. Finally, coordination could potentially ensure that some of the current gaps in technology cooperation are better addressed. A review by the Chair of the UNFCCC's Expert Group on Technology Transfer (UNFCCC 2010) identifies a number of deficits, including a limited focus on least developed countries, a strong emphasis on the energy sector (rather than industry, transport, forestry and agriculture, etc.), and a dominance of mitigation (rather than adaptation) technologies.

The question can then be raised to which extent the UNFCCC could play a role in such coordination efforts. In this regard, it is interesting to have a closer look at the Cancún Agreements. In the major outcome of the Ad Hoc Working Group on Long Term Cooperative Action, Parties are first of all encouraged to engage in bilateral and multilateral cooperative activities on technology development and transfer (UNFCCC 2011: para. 116). In other words, parties to the UNFCCC acknowledge and encourage a diversity of initiatives. Second, the newly established Technology Executive Committee is mandated to establish cooperation with relevant international technology initiatives, stakeholders and organizations, and to promote coherence and cooperation across various technology activities both within and outside of the UNFCCC (2011: para. 121(f)).

While the need to establish links between the UNFCCC process on technology cooperation and the various initiatives is an important recognition, it remains unclear how exactly the UNFCCC could establish such links. Perhaps the least controversial role that the UNFCCC could play is to intensify the functions that it has carried out already. This includes, first of all, its information and knowledge sharing function, which it has in part fulfilled by acting as a clearing house for technology cooperation, and by continuing the development and compilation of technology needs assessments. Second, the UNFCCC could likely play a role by supporting technology hubs and innovation networks (Tawney and Weischer 2011: 4). Although details still need to be agreed upon, the Climate Technology Centre and Network established by the Cancún Agreements have clear potential to link national and regional centers of technology expertise to each other. Third, the UNFCCC can continue to play an important role in terms of capacity building in developing countries, particularly through its emphasis on technology needs

assessments. Fourth, the UNFCCC could form the focal point for the provision of public finance for some technologies through the Green Climate Fund.

A more far-reaching change would be to make the UNFCCC a forum to establish criteria for financing initiatives through the Green Climate Fund, and through the operationalization of provisions on monitoring, reporting and verification. On the one hand, such a decision would be politically charged and might meet resistance, as it would give the UNFCCCC with its one-country-one-vote structure leeway over considerable financial resources provided by developed countries. On the other hand, it could lead to an accurate and continuous assessment of the contribution of the various initiatives to the Convention's overall objectives.

4.2 Coordination between emerging emissions trading systems

The number of emerging emissions trading systems worldwide is another example of the fragmentation of global climate governance. As in the previous example, it is possible to point to several ways in which such systems are diverging, including the following:

- *Mandatory versus voluntary nature* Some trading systems, such as the Japanese ETS, are implemented on a voluntary basis, meaning that emission reductions are not undertaken as a legal requirement, and that there are no penalties for non-compliance. Other systems, most notably the EU ETS, are linked to legal obligations for covered companies to reduce emissions.
- *Nature of targets* While various systems, such as the EU ETS and RGGI in the North-eastern United States, are based on absolute emission reduction targets, others are linked to relative (emissions intensity-based) targets (Tuerk et al. 2009).
- *Coverage* For a variety of reasons, including political feasibility, data availability, economic costs, mitigation potential, etc., some trading systems have a rather limited coverage (e.g. only the power sector), whereas others have a more comprehensive scope (e.g. also covering emissions from agriculture) (Hood 2010).
- *Allocation methods* There are a wide variety of methods for distributing emission permits to participants. Most systems in the early stages opt for allocating allowances for free, while gradually moving towards auctioning (e.g. the EU ETS). RGGI decision-makers, in contrast, have opted for full auctioning from the beginning (Hood 2010).
- *Use of international offsets* While most trading systems accept the use of CDM credits (in itself a form of linking trading systems), the extent to which different types of CDM credits are accepted varies. Furthermore, some systems also accept offset credits generated outside of the CDM framework, such as credits from domestic offsetting projects (Hood 2010).
- *Price control mechanisms* To reduce uncertainty about the carbon price, some systems, such as RGGI, have chosen to introduce price floors and caps, whereas others, such as the EU ETS, do not contain such price control mechanisms.

Even though the design details of existing and planned systems may differ, there is again a good case for the coordination of their initiation and subsequent development, with a view to allowing the linking of trading systems in the future. It is possible to conceive of various levels of integration of trading systems, ranging from entirely separate carbon markets up to fully integrated global emissions trading (Flachsland et al. 2009a). While the latter may be the least politically feasible at the moment, there are strong arguments for at least some kind of formal linking of trading systems (Flachsland et al. 2009a, b). These arguments are primarily related to the economic advantages of linking trading systems as opposed to having various systems evolve separately. Economists in favor of linking often point out that by linking trading systems, the number of abatement options is increased, leading to overall lower marginal abatement costs. Furthermore, by linking trading systems, the problem of carbon leakage (see below) can be mitigated, market liquidity can be enhanced, and price volatility can be reduced. Furthermore, from a political perspective, linking can be beneficial because it signals a long-term commitment to climate change mitigation, generates domestic support for climate policies, and implicitly shows approval of the mitigation efforts undertaken elsewhere (Flachsland et al. 2009b). It should be kept in mind, however, that linking trading systems may also entail certain risks, such as the importation of undesirable emission reduction allowances.

Coordination of emerging trading systems could thus ensure their compatibility in the future. It is important to note that not all divergences mentioned above will inhibit the linking of two systems. However, there are some 'make-or-break' issues that could affect the desirability of linking trading systems, including differences in the stringency of the cap, differences in the nature of the targets; the existence of a price control mechanism, and differing levels of recognition of international credits from offsetting projects (notably the CDM) (Tuerk et al. 2009). Coordination allows for a discussion between potential linking partners about these various issues, with a view to identifying a feasible level of harmonization of trading systems.

International coordination is already taking place to some extent, notably through the International Carbon Action Partnership (ICAP). ICAP members include several EU Member States, the European Commission, members of sub-federal systems in the United States, as well as countries, such as Australia and New Zealand. Through ICAP, countries and regions are able to share ETS experiences, identify best practices, and establish minimum conditions for linking. In this way, there may be gradual harmonization for countries that opt to implement an ETS. Similarly, the World Bank's Partnership for Market Readiness seeks to build capacity and share lessons with respect to market-based mechanisms in 'implementing countries' in the developing world, which are supported financially by 'contributing countries' from the developed world.[4]

The question can be raised again whether there can (or should) be a role for the UNFCCC in coordinating trading systems. Bernstein et al. (2010: 173) argue in this regard that "there will be an increasing need for multilateral cooperation to address issues that arise from the functioning and interaction of these markets". They point,

[4] See http://wbcarbonfinance.org/docs/PMR_Brochure_v2.pdf (Accessed 13 May 2012).

in particular, to elements of the infrastructure for carbon markets such as registries and standards that require common guidelines. The UNFCCC could potentially fulfill a role as an information clearing house for domestic emissions trading systems, through its function as a registry for mitigation actions as agreed in Cancún, and on that basis seek to develop guidance for the introduction of carbon markets. This would mean that through the registry, information is collected about the design choices made for different emerging trading systems, and possibly also indications of their effectiveness in terms of emission reductions. Of course, to which extent the UNFCCC could effectively take on this role would depend on the level of detail required by the registry as well as the operationalization of the modalities and procedures with respect to monitoring, reporting and verification of mitigation actions.

The UNFCCC's main role could also be confined to providing a platform for international crediting mechanisms—including, but not limited to, project-based mechanisms—following its experience with the Kyoto Protocol's flexibility mechanisms. The exact future of these mechanisms beyond 2012 remains uncertain—notwithstanding the agreement on a second commitment period for the Kyoto Protocol in Doha in 2012—but it is undeniable that much institutional capacity has been built within the UNFCCC in terms of developing and assessing methodologies for climate change mitigation projects (van Asselt and Gupta 2009).

4.3 Coordination of unilateral trade measures

This case, like the second, concerns coordinating policies adopted at national or regional levels. In the last few years, various actors in the US and the EU have suggested the possibility of unilateral trade measures to accompany existing or planned climate policies. More specifically, both existing legislation in the EU and proposed legislation at the federal level in the US have at one point included the option of adopting border adjustment measures to offset the (perceived) costs of implementing emissions trading (van Asselt and Brewer 2010). This issue is relevant in the context of a fragmented climate governance architecture, as such measures would fall under the auspices of both the UNFCCC and the World Trade Organization (WTO). A growing number of observers argue that such measures may conflict with the most-favored nation and/or national treatment principles enshrined in the General Agreement on Tariffs and Trade (GATT, Articles I and III). The former requires WTO members not to discriminate between trading partners, whereas the latter requires members not to discriminate against foreign producers in favor of domestic ones. These measures may be saved by some of the general exceptions of the GATT (contained in Article XX), whether border adjustment measures are WTO-compatible will ultimately depend on their specific design and implementation (see, in greater detail, UNEP and WTO 2009; Zelli and van Asselt 2010).

Border adjustment measures have been proposed for a variety of reasons (van Asselt and Brewer 2010). First, they are seen as a way to alleviate concerns about the impacts on competitiveness and carbon leakage resulting from the implementation of carbon pricing policies. With regard to competitiveness, there are

concerns that industries exposed to international competition will be adversely affected by climate policies vis-à-vis their international competitors that operate in countries that do not have binding emission reduction targets in place, or that have otherwise less stringent climate policies. Carbon leakage generally refers to an increase of emissions in countries without climate policies that can be related to emissions reductions in countries with climate policies in place. In addition, border adjustment measures are viewed as a way to address 'free rider' concerns in international climate policy, and they have been suggested as a possible means to create support for domestic climate policies. Although the discussion on border adjustment measures has slowed down following the failure in the US Senate to pass a comprehensive cap-and-trade bill, the issue is likely to return when the ambition level of climate policies is ratcheted up.

There are several rationales for the international coordination of border adjustment measures (Climate Strategies 2008) either formally (for instance, through a multilateral agreement) or informally. First, coordination could ensure that developing countries that may potentially be affected are convinced that the measures will not be used to discriminate against their producers. Second, it could reassure the trade community that protectionist measures will not be implemented, and that climate policies will not violate WTO rules. Third, the disciplined use of border adjustment measures could smoothen the transition to full carbon pricing policies across the globe while addressing potential carbon leakage problems, thereby contributing to the environmental effectiveness of such measures. Additionally, international coordination makes sense for countries adopting border adjustment measures after all, as it would provide them with some credit in case a WTO dispute arises (Pauwelyn 2007).

International coordination could target numerous issues related to the design features of border adjustment measures (Climate Strategies 2008). First, the product coverage could be discussed, with a view to providing clarity about which (sub-) sectors are indeed exposed to risks of carbon leakage, and for which ones border adjustment measures may make sense. Second, the country coverage could be discussed. This would include a discussion of how climate policies in different countries could be compared, for example, comparing policies with quantitative and qualitative objectives, and comparing policies with short-term and long-term objectives. Furthermore, exemptions for countries with low emissions and/or low capacity to reduce or limit emissions could be agreed upon. Third, international discussions could seek to agree on how to calculate the border adjustment, for example, by using expert bodies identifying the appropriate level of adjustments. Finally, international coordination on border adjustment measures could go hand-in-hand with broader discussions on how to engage developing countries in future climate change action. Rather than simply discussing the 'stick' of trade measures, this could include issues that developing countries perceive to be more important, such as technology transfer, mechanisms to avoid deforestation, and funding for adaptation to climate change (Zhang 2009). Such an approach is taken, for example, in the Montreal Protocol, where trade restrictions are combined with financial support and technology transfer.

It is an open question what would be the most appropriate forum for limiting border adjustment measures. A first option would be to discuss border adjustment measures (or more broadly: climate-related trade measures) in the context of the UNFCCC. However, it seems unlikely that Parties to the UNFCCC, which have so far largely refrained from any discussion of climate-trade interactions, would be willing to take up such a sensitive subject. Moreover, it can be questioned whether it is sensible to add more topics to an already overburdened negotiation process (Zelli and van Asselt 2010). The same challenge holds true for discussing border adjustment measures in the WTO, where the Doha negotiations already face difficulties even without adding this topic. Another option would be to address the issue outside of the climate and trade regimes, for example in the G20, or through ICAP. Whatever forum is chosen, it is probably more realistic to start the discussions in informal settings, and refrain from technical debates about the implementation of border adjustment measures for the time being. However, even "an informal guideline might be very effective as it could enhance the WTO acceptability and certainty of any approach [and] could also be effective in limiting the use of border adjustments" (Climate Strategies 2008: 11).

5 Conclusions

The aim of this article has been modest: to redirect academic and policy attention to the actual level of fragmentation of global climate governance, and to the options for enhancing coordination. In doing so, it has sought to move away from a normative discussion of whether a single, comprehensive climate regime is 'better' than a diversity of initiatives—or whether the invisible hand of a 'market of institutions' would lead to a better distribution of functions and effects by default. Instead, the paper takes institutional complexity as a given and asks under which conditions—and through which management approaches—this complexity may indeed provide a sensible division of labor. In short, to what extent can we make use of the respective strengths of the various institutions, while avoiding too many overlaps and tensions. The argument made here is that there are good reasons for at least some level of coordination between the different elements in global climate governance, although this does not mean that a unified climate regime should be the ideal strived for.

The three cases discussed in this article show that there are strong practical arguments for coordination. The case of international technology initiatives shows that coordination can assist in linking technology needs (especially of developing countries) to technology RD&D and deployment, and may further enhance the transparency of how these initiatives contribute to the overall goals of the climate regime (cf. van Asselt 2007). The case of emerging emissions trading systems suggests that the economic benefits of linking trading systems are more likely to materialize if there is coordination in the design stages of the various systems. The case of unilateral trade measures, lastly, illustrates that coordination may not only help to make policies more effective—in this case by ensuring that border

adjustment measures actually tackle carbon leakage—but that it can also potentially help to build trust between nations.

The examples further show that it is possible to look for new ways of thinking about the role of the UNFCCC process in global climate governance. The examples move beyond the view of the UNFCCC as a top-down institution for implementing climate policies, and indicate that there is a potential role for the climate regime in facilitating and coordinating the wide variety of bottom-up approaches. Indeed, they show how the UNFCCC could act as an 'orchestrator' of various initiatives (cf. Abbott and Snidal 2010). More detailed studies could provide insights into the precise functions the UNFCCC could carry out in this regard, including monitoring, reporting and verification, enforcement, and promoting common guidelines for the numerous climate change measures implemented across the globe.

A few important underlying challenges will remain. First of all, any climate governance architecture will need to address the larger geopolitical tensions at play (Depledge and Yamin 2009). These tensions indeed have a major impact on the observed design and effectiveness of the UNFCCC and other institutional arrangements. They include the big questions of what the overall emission reduction goals should be, how the burdens should be distributed among countries, as well as questions concerning the differentiated legal nature of commitments and actions for developed and developing countries. Although critics often point to the inability of the UNFCCC to address these issues, it is by no means obvious that these would be better addressed by the same major players acting in different fora.

Second, coordination is simply not always possible. The case of unilateral trade measures shows that actors in the UNFCCC have been unwilling to address the issue, while the WTO has been equally reluctant to take it up. A related problem is that certain actor constellations might prevent coordination. If a major actor is not involved in some of the initiatives, that actor might be opposed to the respective coordination efforts. What is more, such actors might be inclined to cause or intensify conflictive fragmentation by creating rival institutions. This has, for instance, been argued by some observers (van Asselt 2007; McGee and Taplin 2009) with regard to the funding of the APP by the former Australian and US administrations.

Lastly, we conclude with a call for further research on the multi-level implications of institutional overlaps and their management. Coordination at the international level is only part of the picture. Coordination at the national level is at least equally important, and may attend to certain conflicts of interests early, before they materialize in the form of different or rivalling institutional approaches at the international level. Moreover, dovetailing the implementation of distinct institutional approaches on the ground might address some of the international coordination gaps in a more realistic and pragmatic manner. Thus, further inquiries are warranted to highlight the dynamics of fragmentation of global climate governance across scales—and ultimately, to which extent domestic and international coordinate could manage this fragmentation in conjunction.

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