

Harald Fuhr (*), Thomas Hickmann, and Fee Stehle (University of Potsdam, Germany)
Markus Lederer and Chris Höhne (Technical University of Darmstadt, Germany)

Carbon Governance Arrangements and the Nation-State:

The Reconfiguration of Public Authority in Developing Countries

Paper for the International Conference on Public Policy 3
Singapore, 27–30 June, 2017

Topic T09 **Governance, Policy Networks and Multi-level Governance**

Abstract

Several scholars concerned with global policy-making have recently pointed to a relocation of public authority in the area of climate politics. They have shown that various new carbon governance arrangements have emerged which operate simultaneously at different governmental levels. Yet, despite the numerous descriptions and mapping exercises of these governance arrangements, we have little systematic knowledge on their workings within national jurisdictions, let alone about their impact on public-administrative systems in developing countries. This article therefore opens the ‘black box’ of the nation-state and explores how and to what extent two different arrangements, i.e. *Transnational City Networks* (TCNs) and *Reducing Emissions from Deforestation and Forest Degradation* (REDD+), generate changes in the distribution of public authority in nation-states and their administrations. Building upon conceptual assumptions that the former is likely to lead to a more decentralized, and the latter to a more centralized policy-making, we provide insights from case studies in Brazil, India, Indonesia, and South Africa. In a nutshell, we find little evidence that TCNs significantly alter the way climate policies are carried out, while REDD+ tends to strengthen the competencies of central governments, without recentralizing the forestry sector at large.

(*) Corresponding author. *Harald Fuhr* is Professor and Chair of International Politics at the Faculty of Economics and Social Sciences of the University of Potsdam, Potsdam, Germany. Contact: hfuhr@uni-potsdam.de

Introduction

The past two decades of international climate negotiations have only recently delivered some promising results, although we are still far away from avoiding dangerous climate change (Rockström et al., 2016). Given the difficulties among national governments to agree upon effective means to address the problem of climate change, a plethora of new carbon governance arrangements have been developed within the past few years. They involve both state and non-state actors and aim to set rules or provide services in the area of climate change mitigation and adaptation at different governmental levels.

The resulting institutional complexity in global climate politics has lately caught the attention of numerous authors. Some discuss the pros and cons of *fragmentation* (Biermann et al., 2010; Zelli, 2011; Zelli and van Asselt, 2013) and emphasize the emergence of a *regime complex for climate change* (Keohane and Victor, 2011; Van de Graaf and De Ville, 2013). Others point to the myriad *climate governance experiments* (Hoffmann, 2011), new modes of *orchestration* (Hale and Roger, 2014), or a *polycentric system for coping with climate change* (Ostrom, 2010). Furthermore, several scholars of global environmental politics (Bäckstrand, 2008; Andonova et al., 2009; Pattberg, 2012; Bulkeley et al., 2014; Green, 2014; Hickmann, 2016) have stressed that the overall effect of these developments has been a “reconfiguration of political authority across multiple levels and between public and private actors” (Bulkeley, 2010, p. 231).

Despite this evolving literature on new modes of climate governance, we have little systematic knowledge about their workings within national jurisdictions. In particular, we are lacking empirical studies on the impact of globally operating governance arrangements on public-administrative systems as the nation-state is often

conceived as a 'black box' in climate policy-making (Purdon, 2015). While some studies have been conducted in industrialized countries (Selin and VanDeveer, 2012; Fisher, 2013), only very little research has been carried out in developing countries.

Against this backdrop, the present article addresses this research gap and focuses on the effects of new carbon governance arrangements on the way public authority is exercised in nation-states and their administrations. More precisely, we explore the question of how and to what extent different types of carbon governance arrangements have induced changes in the distribution of competencies in the area of climate politics across different levels of government in developing countries. Thus, the article's main contribution is a conceptual and empirical illumination of the influence exerted by new modes of climate governance on domestic politics and institutions. The study links the literature on global climate politics with the work on public authority and decentralization. We show that carbon governance arrangements can generate incremental changes of public policies, while domestic factors strongly determine the uptake of international and transnational developments. Therefore, we contend that the reconfiguration of public authority in countries of the Global South is a more complex and cumbersome process than many scholars and policy-makers suppose.

This article proceeds as follows. In the second section, we outline our conceptual and analytical framework and sketch our methodological approach. In the third section, we portray the two carbon governance arrangements, which we have selected for our analysis. In the fourth section, we present the empirical findings from our case studies on Brazil, India, Indonesia, and South Africa. In the fifth section, we summarize and compare our main findings and connect the empirical analysis to the conceptual and

analytical framework. Finally, we draw three general conclusions from the analysis and highlight the relevance of our study for the current post-Paris period.

Conceptual and Analytical Framework

To what extent do carbon governance arrangements act as game changers that lead to a relocation of public authority and how can we actually measure changing patterns of authority in political-administrative systems? We postulate that the type of carbon governance arrangement and its specific *modus operandi* matter for the way public policies are formulated and pursued within public-administrative systems. From the perspective of the nation-state, some carbon governance arrangements work 'top-down' and others work 'bottom-up'.

While an international *top-down* governance arrangement may predominantly be targeting the national level (i.e. the central administration and its respective agencies), a transnational *bottom-up* governance arrangement may be directed towards the sub-national level (i.e. the local administration with its related bodies and communities as beneficiaries). Moreover, due to the (at times massive) resource allocation of global actors operating in developing countries, we expect changes in decision-making processes within public administrations. Consequently, we assume to observe changing patterns of public authority essentially through a *varying degree of (de)centralization* in specific policy sectors and perceive the *changes in the distribution of competencies across governmental levels* as an adequate proxy for operationalizing the supposed reconfiguration of public authority.

The research on public sector decentralization provides interesting insights when it comes to decision-making among different levels of government (e.g. Rondinelli,

1981; Conyers, 1983; Rondinelli et al., 1989; Werlin, 1992; Pollit, 2005; Cheema and Rondinelli, 2007; Smoke, 2015). In this strand of literature, decentralization is conceived of as the devolution of decision-making responsibilities and expenditure authorities from central to regional and/or local governments (Campbell and Fuhr, 2004). The bulk of this research has highlighted that instead of winning or losing authority, federal/national, district, and local levels are often required jointly to build their capacity and interact closely with each other in order to provide effective and legitimate public services (Shah, 2005; Fuhr, 2012; Faguet, 2013).

Based on this body of literature, we formulate two conceptual assumptions for our empirical analysis. First, we expect that the more resources are channeled via *top-down* governance arrangements and the more a certain country is entangled with the particular arrangement, the more likely national governments will act as regulators, coordinators, and monitoring institutions – with the potential effect that the central public administration is strengthened and former decentralization efforts might be reversed (*conceptual assumption 1*). Second, we expect that the more resources are channeled via *bottom-up* governance arrangements and the more funds are directed to climate-related activities undertaken by local governments, the more this will lead to decentralized policy-making and potentially a strengthening of sub-national administrations (*conceptual assumption 2*).

Thus, in this article we investigate the changes in the distribution of competencies in climate policy-making among central and sub-national governments in developing countries. Using the period from 2005 to 2015, we allow for inter-temporal as well as cross-sectional comparisons (Blatter and Haverland, 2012, pp. 44-45) and

seek to discern the effects that our governance arrangements have induced at all governmental levels.

Top-Down and Bottom-Up Carbon Governance Arrangements

Building upon the above framework, we have selected one carbon governance arrangement that works top-down and one carbon governance arrangement that works bottom-up. Both mechanisms are widely discussed in the literature. Our first research object is the top-down governance arrangement *Reducing Emissions from Deforestation and Forest Degradation* (REDD+). Its origins date back to the 2005 international climate change conference held in Montreal (Pistorius, 2012). At that conference, the *Coalition of Rainforest Nations*, led by Costa Rica and Papua New Guinea, put forward a proposal to reduce *greenhouse gas* (GHG) emissions and protect tropical forests through results-based payments (Turnhout et al., 2016). The basic idea of REDD+ is that less developed countries will be compensated for limiting their deforestation and forest degradation rates or sequestering carbon by introducing forest and land-use management strategies, which is regarded as a cost-effective means of mitigating climate change (Eliasch, 2008). In early 2015, more than USD 9 billion were pledged for REDD+ activities, although a smaller amount has actually been disbursed (Lee and Pistorius, 2015).

Our second research object concerns the emergence of *Transnational City Networks* (TCNs), constituting a bottom-up governance arrangement. In general terms, TCNs can be seen as a non-hierarchical and horizontal form of cooperation between local governments across different countries (Pattberg and Stripple, 2008; Kern and Bulkeley, 2009; Bulkeley and Betsill, 2013). TCNs seek to create best or good practices

for dealing with climate change in urban environments (Schreurs, 2008; Bulkeley, 2010). They act as policy entrepreneurs and agenda-setters, trying to overcome the constraints imposed by national and international public bodies, partisan politics, and political timetables (Acuto, 2013). In this study, we focus on the *C40 Cities Climate Leadership Group* (C40) which currently consists of more than 80 of the largest cities worldwide (C40, 2016a). As the network collaborates with resource-rich foundations, private corporations, and international organizations, we expect to examine significant shifts in the redistribution of public authority once cities have joined C40.

The two carbon governance arrangements, REDD+ and TCNs, are of interest for both theoretical and practical reasons. Theoretically, their analysis is relevant since both arrangements are located at opposite ends of the spectrum comprising top-down and bottom-up governance approaches. We therefore expect to trace different impacts in terms of how reconfigurations of public authority work in practice. The findings will hence be conducive to ascertain whether such carbon governance arrangements eventually result in significant policy changes. The latter point is particularly relevant for practitioners because there is little knowledge regarding the effects these initiatives might have on a country's administrative capacity, and whether the large investments underway have a considerable impact.

Conducting a co-variational analysis (King et al., 1994, pp. 137-138; Blatter and Haverland, 2012, p. 42), we compare countries that exhibit both REDD+ and TCN activities with countries in which little or none of such activities exist. We have also included one country in our analysis where both activities are present and one country in which no significant activities exist even though possibilities for such activities abound. This will help us examine whether and how the expected trends

(*recentralization* in forest governance and *decentralization* in urban climate policy-making) lead to contradictory effects. Given our focus on the Global South, the universe of cases comprises all developing countries with regard to the potential presence of the two carbon governance arrangements. In an attempt to control for the existing degree of (de)centralization in the respective policy sectors, we have only chosen countries with a similar base level of decentralization.

Based on these considerations, we focus on Indonesia, South Africa, Brazil, and India. The four developing countries – two with federal and two with highly decentralized political-administrative structures – have significant forest and woodland cover and encompass mega-cities with potentially huge climate impacts. First, Indonesia stands out with regard to REDD+ activities, whereas its cities are only marginally involved in C40. Second, South Africa lacks significant REDD+ activities, but the country's three biggest cities are active C40 members. Third, Brazil has both large REDD+ activities and four cities, which have implemented several climate-related C40 projects. Finally, India serves as a control case as the country shows neither considerable REDD+ activities nor a serious involvement of its cities in C40 during our observation period.

In this study, we have adopted a qualitative case study approach and employed three different methods of data collection to cross-check our empirical results (Rothbauer, 2008): First, we carried out a desk study of existing scholarly work on the two carbon governance arrangements and their operations in the Global South. Second, we undertook a systematic content analysis of government documents and 'grey' literature published by think tanks and research institutes. Finally, we conducted a series

of 28 semi-structured interviews with public officials, staff members of donor agencies and non-governmental organizations in the countries under investigation.

Carbon Governance Arrangements in Developing Countries

After having outlined the conceptual and analytical framework, in this section we turn to the empirical analysis and study our four country cases. In each case, we start with a review of the developments in the forestry sector and investigate the impact of REDD+ on public policies. Next, we focus on the emerging role of local governments in their countries' climate policy and examine the effects of TCNs with a particular focus on C40 activities.

Indonesia

Indonesia is a presidential republic with a three tier political system that was decentralized through the *Regional Governance Law of 1999*. Its unitary government is currently divided into 34 provinces and 504 districts (Lewis, 2015). In 2004 and 2014, further Regional Governance Laws were enacted which strengthened the role of the provinces and the position of the central government.

Indonesia's Forestry Sector

The Regional Governance Law of 1999 granted districts the authority to manage their forest resources. Thereupon, a period of extensive logging began that was driven by district governments and could not be stopped through the *Forestry Law of 1999*, which authorized the *Ministry of Forestry* to manage state forests. In 2002, *Government Regulation 34* tried to end this practice by transferring the authority to issue logging

permits back to the *Ministry of Forestry* (Indrarto et al., 2012). The *Regional Governance Law of 2014* eventually recentralized Indonesia's forest policy and assigned the new *Forest Management Units* to the provincial level which largely act under the supervision of the central government (Ardiansyah et al., 2015; Anderson et al., 2016).

Former President Yudhoyono (in power from 2004 to 2014) put REDD+ at the top of the national agenda and advanced Indonesia's REDD+ policy framework through various presidential decrees. In particular, he reinforced competencies at the national level by creating the *REDD+ Task Force* within the President's Office in 2010, which was later replaced by the *REDD+ Agency* in 2013. As a result, a leadership struggle on REDD+ emerged between different central government bodies that weakened the further advancement of REDD+ (Resosudarmo et al., 2013; Agung et al., 2014). In 2015, the newly-appointed President Joko Widodo curbed this institutional turf war by integrating the *REDD+ Agency* into the new *Ministry of Environment and Forestry* (Anderson et al., 2016, p. 33).

President Yudhoyono also strengthened the role of the central government by adopting a number of new strategies and regulations. He pledged to reduce Indonesia's GHG emissions by 26 percent until 2020 compared to business-as-usual scenarios, and by 41 percent with global support (Brockhaus et al., 2012, p. 30). In 2010, Yudhoyono signed a letter of intent with Norway that promised Indonesia the amount of up to USD 1 billion for verified REDD+ activities (Luttrell et al., 2014). This bilateral agreement was fundamental for the establishment of Indonesia's REDD+ architecture and led to the implementation of a presidential moratorium on new forest licenses in 2011 (Anderson et al., 2016). The *REDD+ Task Force* further expanded the REDD+ related

responsibilities of the central and provincial level in the *National REDD+ Strategy* adopted in 2012. Interestingly, districts have been largely sidelined in Indonesia's REDD+ framework (Indonesian REDD+ Task Force, 2012; Indrarto et al., 2012).

In sum, Indonesia's involvement in REDD+ has engendered a steady increase of competencies at the central and provincial level. The President even partly interfered with sub-national entities by declaring a forest moratorium (Indrarto et al., 2012). There are also indications that REDD+ has supported the recentralization of the forestry sector, as it accelerated the establishment of *Forest Management Units*, which basically act as entities directed by the central government (Bae et al., 2014).

Indonesia's Urban Climate Governance

With the adoption of the *Regional Governance Law of 1999*, significant authoritative functions for urban issues were delegated to local governments (Moeliono, 2011). In 2001, more than 60 percent of the country's revenues were spent by sub-national governments which is in contrast to only 7 percent a few years earlier (Firman, 2002, p. 239). The *Regional Governance Law of 2004* strengthened the provinces alongside the previously empowered cities. Both governmental levels were made responsible for planning processes, private sector development, the environment, and infrastructure (Republic of Indonesia, 2004).

The following years have been characterized by a gradual recentralization in different policy fields. The *Spatial Planning Law of 2007*, for example, established a system for area planning that included guidance and directives from the central government (Moeliono, 2011, pp. 182-183). In 2007, the competencies of the national government were further enlarged by *Government Regulation 38*. This rule stipulated

that governmental affairs, which had formerly been under the exclusive authority of sub-national governments, would henceforth be jointly shared with the central government (Republic of Indonesia, 2007). The *Regional Governance Law of 2014* then redefined intergovernmental relationships with clear advantages for central government agencies (Republic of Indonesia, 2014).

With the 2007 international climate change conference held in Bali and the leadership of President Yudhoyono, climate policies started to gain momentum in Indonesia (Ardiansyah et al., 2015, p. 13). Driven by the President and the *Ministry of National Planning*, the discussions on the country's course of action and decision-making regarding climate-related issues were concentrated at the national level. The President established the *National Council on Climate Change* in 2008 and three years later issued the *National Action Plan for Reducing Greenhouse Gas Emissions* without involving sub-national bodies in the process (Anggraini et al., 2011).

Despite such centralizing features, sub-national governments have also gained some responsibilities in the climate policy domain. In order to comply with the national action plan, provinces have been mandated to develop action plans in line with specific guidelines published by the *Ministry of National Planning* (Republic of Indonesia, 2011). While the central government has not instructed cities to develop such plans, the *Green City Development Program* has invited them to implement principles of green development (Simarmata et al., 2014, pp. 106-107). Given Jakarta's provincial status, the city has developed its own regional action plan (Anggraini et al., 2011). Jakarta joined C40 already in 2007, but did not participate in any of the seven major C40 initiatives and only recently started taking part in one C40 mitigation project on clean buses in 2015 (C40, 2015a).

In the past decade, a trend towards greater control of urban development by the central government has become apparent. Even though cities and provinces hold sufficient competencies to take action on climate change, it was essentially the central government that advanced the topic. Cities have gained fewer climate governance responsibilities than provinces, which appear to be simple followers of the directives given by the national government. The C40 membership of Jakarta has so far not changed this pattern of Indonesia's climate policy.

South Africa

South Africa is a parliamentary republic with a multi-level government divided into a national, a provincial, and a local sphere, which are "distinctive, interdependent and interrelated" (Republic of South Africa, 1996). The country comprises nine provinces, which all possess their own legislature, premier, and executive council, as well as the local sphere that consists of 278 municipalities, eight of them metropolitan (Cameron, 2012).

South Africa's Forestry Sector

Forests and woodlands cover about one third of South Africa's territory. The majority of forests are commercial plantations, whereof 70 percent are private and 30 percent owned by the government (Department of Forestry, 2015). Communities without formal tenure rights occupy about one third of forested state lands as well as an unknown number of private lands. Until 2015, the country has not been involved in any REDD+ activities. Although the *National Climate Change Response White Paper* acknowledges the mitigation potential of afforestation, it states that South Africa's opportunities to cut

GHG emissions by tackling deforestation are fairly limited (Republic of South Africa, 2011).

With the exception of some provincial forests, South Africa's forestry sector is governed by national law and still bears traces of the country's colonial and apartheid history. At that time, forests were managed centrally and local communities were excluded from the use and access to forest resources (Grundy and Wynberg, 2001; Food and Agricultural Organization, 2004). Therefore, the Constitution adopted in 1996 stresses the right of access to environmental resources and guarantees every citizen the right to a healthy environment (Republic of South Africa, 1996).

The *National Environmental Management Act of 1998* stipulates the involvement of communities in conservation efforts (Republic of South Africa, 1998). The related *National Forests Act* adopted in the same year induced the devolution of authority in the field of forest management to local communities, while it does not grant them formal rights. Instead, it locates forest ownership at the national government level and envisions a strategy of forest co-management (Wily, 2002; Rahlao et al., 2012). In 2004, the National Forest Act has been amended by a participatory forest management regime (Brown, 2009). Under this framework, local user groups can apply for joint management at the national forest department, which maintains the supreme authority in forest management issues.

Despite such legal provisions, the decision-making procedures in the area of forest governance remained largely unchanged over the past decade. In fact, key functions to grant communities forestry concessions are still highly centralized (Ribot, 2003). There is no indication for a transfer of competencies and management rights to community management entities or for the integration of forestry programs into

provincial and municipal development plans. In addition, local government bodies were in several cases denied access to forests (Matose and Watts, 2010). Not surprisingly, REDD+ has up to now not played any significant role in South Africa's forestry sector.

South Africa's Urban Climate Governance

South Africa's biggest cities are Johannesburg, Cape Town, and Durban. About 60 percent of the country's population live in urban areas with major development challenges, partially resulting from the neglect of townships during the apartheid regime (Pasquini and Shearing, 2014). Cities are increasingly vulnerable to the adverse effects of climate change, especially in rapidly expanding informal urban settlements. Although the Constitution of 1996 gives cities responsibilities in respect to environmental governance, it also creates challenges for multi-level governance. The 2011 *National Climate Change Response White Paper* only briefly mentions the role of municipalities and does not sufficiently define their functions (Republic of South Africa, 2011).

One of the most conflicting issues in environmental urban governance is the energy sector. While electricity distribution is a core municipal function, municipalities have to purchase their electricity from the state-owned electricity provider *Eskom* (Jaglin, 2014). Licenses for renewable energy sources need to be requested from the *National Energy Regulator* and decisions on energy policy mainly rest with the national *Energy Department* (Resnick et al., 2012).

In recent years, South African cities have increasingly participated in TCN activities. Johannesburg became a C40 member in 2006 and hosted the annual *C40 Summit* in 2014. One year later, the city won a *C40 Cities Award* for issuing a green bond to attract investments in local sustainable development (C40, 2015c). Moreover,

Johannesburg has implemented several low-carbon infrastructure programs, such as a rapid bus system and social housing refurbishments with solar water heaters, through the support of C40 and the *Clinton Foundation* (Carbon Disclosure Project, 2013). In 2009, Johannesburg developed the *Climate Change Adaptation Plan*, including a *Vulnerability Assessment and Risk Management Plan* and a disaster response strategy (Johannesburg, 2015).

Cape Town has often been described as a frontrunner in urban sustainable development (Holgate, 2007). Besides establishing a public transportation system, the city has undertaken climate-related policy initiatives in the building, transport, waste, and energy sectors. Cape Town was the first South African city to approve an *Energy and Climate Change Strategy* and has established an *Energy and Climate Change Committee* (Cape Town, 2011). These steps institutionalized the city's proactive stance on climate change. In 2014, the city became a C40 member and one year later won a *C40 Cities Award* for its water management system in the field of adaptation implementation (C40, 2015b).

Durban is the largest port city on Africa's East Coast and an early adopter of local action on climate change (Roberts, 2010). In 2003, Durban developed a GHG inventory and three years later launched a comprehensive climate change adaptation strategy, mainly driven by the *Environmental Planning and Climate Protection Department*. Since its foundation in 1994, the department has considerably increased its staff and political influence, not only in the environmental but also in related policy domains (Roberts and O'Donoghue, 2013). In 2015, the *Durban Climate Change Strategy* was adopted, focusing on both adaptation and mitigation aspects (Durban,

2015). In addition, Durban was admitted as a member of C40 and its mayor joined the network's steering committee (C40, 2016d).

To summarize, all three major South African cities have adopted a range of policies and created environmental departments or task forces to address climate change. In this endeavor, they are interacting more and more with C40 and it is apparent that the network has provided considerable support to South African metros in the past few years. However, the energy sector, which accounts for the largest share of South Africa's GHG emissions, remains strongly centralized, leading to a gridlock situation in the country's climate policy.

Brazil

Brazil is a federal presidential republic with 27 federal states and over 5,500 municipalities (De la Fontaine and Stehnken, 2016). Executive branches exist at each of the three levels of government. Between the central government and the federal states, constant struggles over the allocation of competencies exist, especially with regard to the distribution of fiscal revenues.

Brazil's Forestry Sector

Until the end of the military regime in 1984, forest management in Brazil was highly centralized (Banerjee et al., 2009). Under the democratic constitution of 1988, the state governments gained profound autonomy and taxing powers, while some of their functions remained ill-defined (Gregersen et al., 2004). In the forestry sector, weak law enforcement and corruption in the distribution of land titles led to exploding rates of deforestation (Larson, 2003; Rajão et al., 2012). Brazil's deforestation crisis peaked in

1995, with an annual deforestation rate of some 29,000 km² representing 0.8 percent of the country's total forest cover (Instituto Nacional de Pesquisas Espaciais, 2008).

In 2003 and 2004, a series of new laws strengthened forest management at the central level, improved law enforcement, and set up institutional arrangements, which lowered deforestation rates (Assunção et al., 2012). An inter-ministerial program in the President's Office and a national monitoring system helped protect forests in the Amazon region. Moreover, the government established the *Brazilian Forest Service* (Federative Republic of Brazil, 2004; Caviglia-Harris et al., 2016).

The *National Policy on Climate Change* adopted in 2009 set the goal of a zero net loss of forest cover and zero illegal deforestation (Inoué, 2012; Nepstad et al., 2014). The *Amazon Fund* was founded with a capital stock of USD 1 billion to reach these targets. By the end of 2015, 80 projects with an amount of USD 566 million were approved, out of which USD 223 million were disbursed (Amazon Fund, 2016).

The national REDD+ strategy was finalized in October 2015 (Federative Republic of Brazil, 2015b). While defining the functions and division of tasks among the three levels of government, the strategy also reveals existing tensions between the central government and the federal states (Jagger et al., 2014; Fatorelli et al., 2015). Amazon governors took a lead role in the implementation of REDD+ initiatives before 2015, but requested representation in executive bodies and access to REDD+ funds to improve institutional capacity and effectiveness (Duchelle et al., 2014; Fatorelli et al., 2015). They joined the multi-jurisdictional *Governors' Climate and Forest Task Force* to add weight to their claim for a 'nested approach' to REDD+ financing (May et al., 2011).

Nevertheless, the new REDD+ strategy stipulates that all funding agreements between state governments and international donors have to be approved by the *National REDD+ Committee*. Only two state governments are permanent members in the committee, further indicating the central government's intention to secure its position in the area of REDD+ governance (Federative Republic of Brazil, 2015a; Di Gregorio et al., 2016).

Overall, the legal and institutional landscapes in Brazil's forestry sector are highly fragmented (Pinto and De Oliveira, 2008). Although the government passed several legal amendments to initiate decentralization of forest management and foster community participation, key forest management functions still largely reside with federal states. The central government refuses to decentralize access to REDD+ funds and maintains key functions such as monitoring, reporting, and verification.

Brazil's Urban Climate Governance

Given Brazil's high rates of urbanization, cities are very important players in Brazilian politics. They are entrusted with key social policies, the development of their infrastructures, and the response to environmental risks (Souza, 2005; Fernandes, 2007). The Constitution of 1988 provides the basis for municipal autonomy with a chapter on urban policy (National Constituent Assembly, 1988). A public consultation process resulted in the inclusion of environmental, social, and participatory aspects. However, urban strengthening subsequently slowed down due to a lack of supporting national legislation (Fernandes, 2007). During recent years, major cities in Brazil implemented their own plans to reduce GHG emissions, established councils for urban climate action,

and became active members of transnational city networks, such as São Paulo and Rio de Janeiro, the country's two largest cities (Kahn and Brandão, 2015).

São Paulo was a founding member of C40 and has conducted various C40 projects (Johnson et al., 2015). In 2005, the city set up a *Municipal Committee on Climate Change and Sustainable Economy* encompassing representatives from civil society, academia, and local governmental bodies (Barbi and da Costa Ferreira, 2013). The committee's policy proposal issued in 2009 inspired state and national climate policies by setting a GHG emission reduction target of 30 percent compared to 2005 levels, following a cross-cutting, multi-sectoral approach (São Paulo, 2009; Romeiro and Parente, 2011; Barbi and da Costa Ferreira, 2013). Beyond that, a number of other climate-related actions have been undertaken in collaboration with C40, particularly targeting local transportation systems, energy efficiency, and waste management (C40, 2016c).

Following the example of São Paulo, Rio de Janeiro started taking several steps to tackle climate change as well. In 2009, the city established a *Forum on Climate Change* and adopted the *Municipal Climate Change and Sustainable Development Policy* in 2011. These policies aimed to reduce GHG emissions by 20 percent until 2020 (compared to 2005) and provided incentives for the use of renewable energies (Rio de Janeiro, 2011). The city government revised the plan in 2013 and focused on public transportation, waste management, and housing (de La Rocque and Shelton-Zumpano, 2014). Since 2006, when Rio de Janeiro joined C40, the city has continuously implemented climate-related projects in key focus areas of the network. Moreover, the city's mayor is currently part of C40's steering committee (C40, 2016b).

Most of the achievements in urban climate policy in Brazil can be traced back to progressive local governments that often faced strong opposition from the central government. Brazil's climate policy might hence be interpreted as a scaling-up process of policies that originated locally. The two biggest cities, São Paulo and Rio de Janeiro, are pioneers in the climate policy domain and have initiated a diffusion process of good practices throughout the country. In this process, C40 appears to function as a platform and catalyst for enhanced urban climate action.

India

India is a federal parliamentary republic that encompasses three governmental tiers. The second governmental level comprises 29 states, six union territories and New Delhi. In 1992, the Indian government acknowledged local governments as the third governmental tier and instructed states to devolve a number of responsibilities to them (Venugopal and Yilmaz, 2009).

India's Forestry Sector

Until 1975, the central government and the states shared decision-making in the forestry sector. After a gradual recentralization of the policy field in the decade that followed, decentralization efforts started again in 1990 (Fleischman, 2015; Kashwan, 2015). One example is the adoption of the *Joint Forest Management Guidelines* in 1990 which introduced *Joint Forest Management Committees* for the collective management of forests by *State Forest Departments* and local village assemblies (so-called 'Gram Sabhas') (Aggarwal et al., 2009). Yet, these committees failed to substantially involve local communities into decision-making and left powers largely with state governments.

Although the *Forest Rights Act of 2006* acknowledged people's rights over forest resources and granted districts the responsibility to assign these rights, the act has barely been implemented (Vijge and Gupta, 2014, pp. 23-24).

In 2007, Prime Minister Singh lifted climate change on India's policy agenda. In this context, he enhanced the authority of the central government through the establishment of the *Prime Minister's Council on Climate Change* (Atteridge, 2013). This institution has put forward a *National Action Plan on Climate Change* and prepared the ground for the *National Mission for a Green India*, which aims to increase India's forest cover from 23 to 33 percent of the country's territory (Ministry of Environment and Forests, 2010). Moreover, it envisages more authority for the 'Gram Sabhas' that are supposed to oversee the *Joint Forest Management Committees* and the implementation of the National Mission (Vijge and Gupta, 2014).

When it came to dealing with REDD+ initiatives, the Indian government embarked on an interesting zigzag process. Initially, the central government expected the National Mission's activities to cover REDD+ activities. It therefore started to set up a REDD+ unit in the *Ministry of Environment and Forests* and developed both a REDD+ strategy and some pilot projects in order to receive funds from external donors (Ministry of Environment and Forests, 2010). The central government, however, staffed the unit with only one public official and never participated in any multilateral REDD+ readiness activity (Prip and Wallbott, 2014). Without multilateral support, the Indian government adopted a *REDD+ Reference Document* and published a *Draft National Policy on REDD+* in 2014. While the former document highlights the importance of sub-national empowerment, the latter puts emphasis on the need to enhance authority at the national level (Ministry of Environment Forests and Climate Change, 2014).

With the introduction of the *Forest Rights Act* and the empowerment of the 'Gram Sabhas' by the National Mission, the pendulum appeared to have swung towards more local government involvement. Yet, these decentralization efforts essentially failed due to the reluctance of state governments to disperse competencies and funding. Prospectively, India's forest governance might become more centralized, as the *Draft National Policy on REDD+* pronounces a heightened authority for the central government, with only minor roles for sub-national governments.

India's Urban Climate Governance

Prior to the amendments to the Constitution adopted in 1992, local governments had often simply acted as implementation agencies of state governments (Heller et al., 2007). Although the amendments recommended the transfer of 18 state functions to the local level, they did not adequately address the redistribution of financial powers (Nandi and Gamkhar, 2013). As state governments were entitled to define the extent of devolution, many cities were left without sufficient competencies and resources (Chu, 2016, p. 284). The 2005/06 *National Urban Renewal Mission* aimed to address these deficiencies by providing funding to cities and advancing the devolution of powers. By 2012, however, 14 out of 37 states had failed to deliver the respective results, leaving cities with little room to independently enact urban (climate) actions (Nandi and Gamkhar, 2013; Beermann et al., 2016).

In 2008, the Prime Minister's Council on Climate Change presented the *National Action Plan on Climate Change*. It defined eight National Missions in policy areas, such as renewable energy and sustainable habitat (Prime Minister's Council on Climate Change, 2008; Atteridge, 2013). As the central government depends on state

governments for implementing policies, it mandated them to develop *Action Plans* in accordance with the *National Action Plan*. Yet, by the end of 2014 only nine states had endorsed their plans (Dubash and Jogesh, 2014; Nachmany et al., 2015). Furthermore, in its 2015 *Smart Cities Mission* the central government highlights the target of taking more sustainability-oriented measures in about 100 cities, while the Mission's governance framework is clearly biased towards reducing the role of the local government in urban policy-making (Phadke and Waghmode, 2016).

Despite the dominant role of central and state governments in climate policy, some cities have joined TCNs in the past few years. Five cities have also become C40 members, although none of them has implemented a C40 project. New Delhi is the only city associated with a C40 initiative in the field of measurement and planning, while Mumbai has been linked to a private project funded by the *Clinton Climate Initiative* (C40, 2011; C40, 2016a). Bengaluru, Jaipur, and Kolkata joined C40 in 2015, but remained mostly inactive in the network.

Overall, the central government maintains a strong position and states are reluctant to transfer responsibilities to cities. In fact, the central government has been the driving force in the development of the country's climate policy since 2007. While certain tasks have been delegated to state governments, the local level has mostly been left aside. There is no indication that the C40 membership of the five cities has so far contributed to increasing climate actions at the local level.

Summary and Comparison

The previous analysis has shown that the debate on the impact of globally operating carbon governance arrangements on public-administrative systems in developing

countries is based on very weak empirical foundations. In our study, we proposed to operationalize such effects by developing an approach that takes (de)centralization between central, regional, and/or local governments as a proxy for the investigation of *changing patterns of public authority* in developing countries. We focused our research on two stylized carbon governance arrangements: one that works top-down (REDD+) and one that works bottom-up (TCNs). Departing from our conceptual assumptions that the former is likely to lead to more centralization, and the latter to more decentralization within the area of climate policy-making, we revealed findings from our case studies on Indonesia, South Africa, Brazil, and India.

Our country cases indicate that there are no easily discernible patterns. Each country case has very specific historic constitutional and political backgrounds that strongly influence and set the pace for their climate policies. Above all, two findings stand out. First, there are mixed results with regard to the impact of TNCs and the engagement of local governments in climate policy-making. On the one hand, we found some evidence that C40 supports the development of local climate initiatives in South Africa, while it functions as a platform and catalyst for enhanced urban climate action in Brazil. On the other hand, we neither found indications that C40 has significantly altered the way in which climate policies are carried out in these countries, nor did we observe a stronger decentralization in the field of urban climate policy. This suggests that the effects of transnational city networks on a country's climate policy are more limited than widely assumed.

Second, in all our cases the role of local governments in the forestry sector has either been historically weak, as in India and South Africa, or there were signs of a gradual recentralization of forest policies. Such changes are particularly obvious in

decentralized Indonesia and, to some extent, in federalized Brazil. Exhibiting high levels of deforestation rates, both countries have received a great deal of international attention and funds for REDD+ activities. Our research indicates that international donors expected a consistent REDD+ approach taken by recipient countries and therefore pushed central government agencies to 'do the job'. Thus, although we have not found strong evidence that a country's involvement in REDD+ has generated a large-scale recentralization in the forestry sector, it has obviously supported the reinforcement and pooling of REDD+ related competencies at the central governmental level.

While these findings have to be treated with caution due to the limited number of cases, they are meant to be conceived as first empirical examinations of the effects that two different types of carbon governance arrangements have on the distribution of public authority in decentralized and federalized developing countries.

Conclusions

In this article, we developed a conceptual and analytical framework to investigate the influence of carbon governance arrangements on nation-states and their administrations in the Global South. Based on our analysis, we draw three general conclusions. First, our study underscores that domestic politics and institutions matter a great deal. In fact, carbon governance arrangements work very differently in different public-administrative systems. This suggests that authors dealing with the global response to climate change need to devote special attention to the national contexts in which new modes of climate governance operate.

Second, the analysis demonstrates that top-down governance arrangements like REDD+ find a potentially strong entry gate at the central governmental level. As underlined by the case studies on Brazil and Indonesia, external influence can bring about institutional changes and hence contribute to the transformation of public policies and underlying authority structures. Yet, this does not necessarily lead to a build-up of competencies at all governmental levels, nor can it overcome strong domestic veto players. At best, the attempt of the international community to address deforestation through REDD+ in the Global South is at a very early stage.

Finally, we did not yield support for the notion that cities and their transnational networks act as strong drivers for climate action in developing countries. For example, the gridlock situation in South Africa's energy sector will not be resolved through the participation of local governments in TCNs alone, even if learning and a transfer of good practices occur. Thus, the reconfiguration of public authority in developing countries is strongly determined by domestic factors and hence a more complex and cumbersome process than commonly supposed.

In practical terms, we argue that policy-makers concerned with the issue of climate change need to concentrate their efforts on nation-states and their administrations. The Paris Agreement adopted in 2015 is an important step forward on the way towards a low-carbon global economy. Nonetheless, the question of whether the promise made in Paris to avoid dangerous climate change can be held will be decided in the realm of domestic politics. Carbon governance arrangements – top-down and bottom-up – can only have an impact and lead to significant policy changes in developing countries once they are fully integrated into public-administrative systems. REDD+ and TCNs are important mechanisms in the fight against climate change, but

their related projects and policies must be embedded in supportive bureaucratic structures down from the local up to the national level.

References

- Acuto M 2013. The New Climate Leaders? *Review of International Studies* **39**(4): 835-857.
- Aggarwal A, Das S, Paul V 2009. Is India Ready to Implement REDD Plus? A Preliminary Assessment. Discussion Paper. The Energy and Resources Institute: New Delhi.
- Agung P, Galudra G, Van Noordwijk M, Maryani R 2014. Reform or Reversal: The Impact of REDD+ Readiness on Forest Governance in Indonesia. *Climate Policy* **14**(6): 748-768.
- Amazon Fund 2016. Amazon Fund: Purposes and Management. Available at http://www.amazonfund.gov.br/FundoAmazonia/fam/site_en/Esquerdo/Fundo/ Accessed on February 20, 2016.
- Anderson ZR, Kusters K, McCarthy J, Obidzinski K 2016. Green Growth Rhetoric versus Reality: Insights from Indonesia. *Global Environmental Change* **38**: 30-40.
- Andonova LB, Betsill M, Bulkeley H 2009. Transnational Climate Governance. *Global Environmental Politics* **9**(2): 52-73.
- Angraini SD, Boer R, Dewi RG 2011. Study on Carbon Governance at Sub-National Level in Indonesia. Case Study: Jakarta Province. Institute for Global Environmental Strategies: Kamiyamaguchi, Hayama, Kanagawa.
- Ardiansyah F, Marthen AA, Amalia N 2015. Forest and Land-Use Governance in a Decentralized Indonesia. A Legal and Policy Review. CIFOR Occasional Paper 132. Center for International Forestry Research: Bogor.
- Assunção J, Gandour C, Rocha R 2012. Deforestation Slowdown in the Legal Amazon: Prices or Policies? CPI Working Paper. Climate Policy Initiative, CPI: Rio de Janeiro.
- Atteridge A 2013. The Evolution of Climate Policy in India: Poverty and Global Ambition in Tension. In *Climate Governance in the Developing World*, Held D, Roger C, Nag E-M (eds). Polity Press: Cambridge, UK; 53-71.
- Bäckstrand K 2008. Accountability of Networked Climate Governance: The Rise of Transnational Climate Partnerships. *Global Environmental Politics* **8**(3): 74-102.
- Bae JS, Kim Y-S, Fisher L, Moeliono M, DeShazo J 2014. Promises and Perils of Decentralized Forest Governance: The Case of Indonesia's Forest Management Units in Reducing Emission from Deforestation and Forest Degradation (REDD+). *Society & Natural Resources* **27**(12): 1346-1354.
- Banerjee O, Macpherson AJ, Alavalapati J 2009. Toward a Policy of Sustainable Forest Management in Brazil: A Historical Analysis. *The Journal of Environment & Development* **18**(2): 130-153.
- Barbi F, da Costa Ferreira L 2013. Climate Change in Brazilian Cities: Policy Strategies and Responses to Global Warming. *International Journal of Environmental Science and Development* **4**(1): 49-51.
- Beermann J, Damodaran A, Jørgensen K, Schreurs MA 2016. Climate Action in Indian Cities: An Emerging New Research Area. *Journal of Integrative Environmental Sciences* **13**(1): 55-66.
- Biermann F, Pattberg P, Zelli F 2010. *Global Climate Governance Beyond 2012: Architecture, Agency and Adaptation*. Cambridge University Press: Cambridge, UK.
- Blatter J, Haverland M 2012. *Designing Case Studies. Explanatory Approaches in Small-N Research*. Palgrave: Basingstoke.
- Brockhaus M, Obidzinski K, Dermawan A, Laumonier Y, Luttrell C 2012. An Overview of Forest and Land Allocation Policies in Indonesia: Is the Current Framework Sufficient to Meet the Needs of REDD+? *Forest Policy and Economics* **18**: 30-37.
- Brown FP 2009. *Participatory Forest Management (PFM) Discourse in South Africa: Ecological Modernization in the Developing World*. University of KwaZulu-Natal: Durban.
- Bulkeley H 2010. Cities and the Governing of Climate Change. *Annual Review of Environment and Resources* **35**: 229-253.

- Bulkeley H, Andanova L, Betsill M, Compagnon D, Hale T, Hoffmann MJ, Newell P, Paterson M, Roger C, vanDeveer SD 2014. *Transnational Climate Change Governance*. Cambridge University Press: New York.
- Bulkeley H, Betsill M 2013. Revisiting the Urban Politics of Climate Change. *Environmental Politics* 22(1): 136-154.
- C40 2011. First Mover: Private Sector Advances Building Energy Efficiency in India. Available at http://www.c40.org/blog_posts/first-mover-private-sector-advances-building-energy-efficiency-in-india Accessed on November 11, 2015.
- C40 2015a. C40 Cities Clean Bus Declaration of Intent. Available at http://c40-production-images.s3.amazonaws.com/other_uploads/images/233_C40_CITIES_CLEAN_BUS_DECLARATION_OF_INTENT_FINAL_AUG27.original.pdf?1440690557 Accessed on May 9, 2016.
- C40 2015b. Cape Town - Water Conservation and Demand Management Programme Available at <http://www.c40.org/awards/2015-awards/profiles/64> Accessed on January 15, 2016.
- C40 2015c. Johannesburg - Green Bond. Available at <http://www.c40.org/awards/3/profiles/56> Accessed on January 15, 2016.
- C40 2016a. C40 Cities. Available at <http://www.c40.org/cities> Accessed on March 30, 2016.
- C40 2016b. Rio de Janeiro. Available at <http://www.c40.org/cities/rio-de-janeiro> Accessed on January 15, 2016.
- C40 2016c. Sao Paulo. Available at <http://www.c40.org/cities/sao-paulo> Accessed on May 9, 2016.
- C40 2016d. Steering Committee. Available at http://www.c40.org/steering_committees Accessed on November 2, 2016.
- Cameron R 2012. Vertical Decentralization and Urban Service Delivery in South Africa. Does Politics Matter? UNU-WIDER Working Paper. UNU World Institute for Development Economics Research: Helsinki.
- Campbell T, Fuhr H, (Eds.) 2004. *Leadership and Innovation in Subnational Government: Case Studies from Latin America*. The World Bank: Washington D.C.
- Cape Town 2011. *Moving Mountains: Cape Town's Action Plan for Energy and Climate Change*. City of Cape Town: Cape Town.
- Carbon Disclosure Project 2013. *Carbon Disclosure Project*, CDP: London, United Kingdom.
- Caviglia-Harris J, Sills E, Bell A, Harris D, Mulland K, Roberts D 2016. Busting the Boom-Bust Pattern of Development in the Brazilian Amazon. *World Development* 79: 82-96.
- Cheema SG, Rondinelli D, (Eds.) 2007. *Decentralizing Governance: Emerging Concepts and Practices*. Brookings Institution Press: Washington D.C.
- Chu E 2016. The Political Economy of Urban Climate Adaptation and Development Planning in Surat, India. *Environment and Planning C: Government and Policy* 34(2): 281-298.
- Conyers D 1983. Decentralization: The Latest Fashion in Development Administration. *Public Administration and Development* 3(2): 97-109.
- De la Fontaine D, Stehnken T, (Eds.) 2016. *The Political System of Brazil*. Springer: Heidelberg.
- de La Rocque E, Shelton-Zumpano P 2014. *The Sustainable Development Strategy of the Municipal Government of Rio de Janeiro*. Paper presented at the Seminar on Citizen Security in Brazil: Progress and Challenges, held in Washington, D.C., USA.
- Department of Forestry 2015. An Overview of Forests. Available at <http://www.daff.gov.za/daffweb3/Branches/Forestry-Natural-Resources-Management/Forests> Accessed on December 15, 2015.
- Di Gregorio M, Fatorelli L, Pramova E, May P, Locatelli B, Brockhaus M 2016. *Integrating Mitigation and Adaptation in Climate and Land Use Policies in Brazil: A Policy Document Analysis*. Centre for Climate Change Economics and Policy; Sustainability Research Institute: Leeds.
- Dubash NK, Jogesh A 2014. *From Margins to Mainstream? State Climate Change Planning in India as a 'Door Opener' to a Sustainable Future*. Centre for Policy Research Climate Initiative: New Delhi.
- Duchelle AE, Cromberg M, Gebara M, Guerra R, Melo T 2014. Linking Forest Tenure Reform, Environmental Compliance, and Incentives: Lessons from REDD+ Initiatives in the Brazilian Amazon. *World Development* 55: 53-67.
- Durban Co 2015. *Durban Climate Change Strategy*. Durban, South Africa.
- Eliasch J 2008. *Eliasch Review: Climate Change: Financing Global Forests*. Office of the Prime Minister: London.
- Faguet J-P 2013. Decentralization and Governance. *World Development* 53: 2-13.

- Fatorelli L, Gebara MF, May P, Zhang S, Di Gregorio M 2015. The REDD+ Governance Landscape and the Challenge of Coordination in Brazil.
- Federative Republic of Brazil 2004. Plano de Ação Para a Prevenção e Controle do Desmatamento na Amazônia Legal. Government of Brazil: Brasília.
- Federative Republic of Brazil 2015a. Intended Nationally Determined Contribution towards Achieving the Objective of the United Nations Framework Convention on Climate Change. Government of Brazil: Brasília.
- Federative Republic of Brazil 2015b. National Strategy for REDD+. Government of Brazil: Brasília.
- Fernandes E 2007. Implementing the Urban Reform Agenda in Brazil. *Environment and Urbanization* **19**(1): 177-189.
- Firman T 2002. Urban Development in Indonesia, 1990-2001: from the Boom to the Early Reform Era through the Crisis. *Habitat International* **26**(2): 229-249.
- Fisher DR 2013. Understanding the Relationship between Subnational and National Climate Change Politics in the United States: Toward a Theory of Boomerang Federalism. *Environment and Planning C: Government and Policy* **31**(5): 769-784.
- Fleischman F 2015. Understanding India's Forest Bureaucracy: A Review. *Regional Environmental Change* **16**(1): 1-13.
- Food and Agricultural Organization 2004. Country Profile South Africa. Available at <http://www.fao.org/forestry/country/57479/en/zaf/> Accessed on December 21, 2015.
- Fuhr H 2012. The Seven Traps of Decentralization Policy. *Bisnis & Borikrasi: A Journal of Administrative Sciences and Organization* **18**(2): 1-12.
- Green JF 2014. Rethinking Private Authority: Agents and Entrepreneurs in Global Environmental Governance. Princeton University Press: Princeton.
- Gregersen H, Contreras-Hermosilla A, White A, Phillips L 2004. Forest Governance in Federal Systems: An Overview of Experiences and Implications for Decentralization. Paper presented at the Interlaken Workshop on Decentralization in Forestry, held in Interlaken, Switzerland.
- Grundey I, Wynberg R 2001. Integration of Biodiversity into National Forest Planning Programmes. The Case of South Africa. Paper presented at the Workshop on "Integration of Biodiversity in National Forestry Planning Programme", held in Bogor, Indonesia.
- Hale T, Roger C 2014. Orchestration and Transnational Climate Governance. *Review of International Organizations* **9**(1): 59-82.
- Heller P, Harilal KN, Chaudhuri S 2007. Building Local Democracy: Evaluating the Impact of Decentralization in Kerala, India. *World Development* **35**(4): 626-648.
- Hickmann T 2016. Rethinking Authority in Global Climate Governance: How Transnational Climate Initiatives Relate to the International Climate Regime. Routledge: London.
- Hoffmann MJ 2011. Climate Governance at the Crossroads: Experimenting with a Global Response after Kyoto. Oxford University Press: Oxford.
- Holgate C 2007. Factors and Actors in Climate Change Mitigation: A Tale of Two South African Cities. *Local Environment* **12**(5): 471-484.
- Indonesian REDD+ Task Force 2012. REDD+ National Strategy. Government of Indonesia: Jakarta.
- Indrarto GB, Murharjanti P, Khatarina J, Pulungan I, Ivalerina F, Rahman J, Prana MN, Resosudarmo IAP, Muharrom E 2012. The Context of REDD+ in Indonesia. Drivers, Agents and Institutions. CIFOR Working Paper 92. Center for International Forestry Research: Bogor.
- Inoué C 2012. Governance of Global Climate Change in the Brazilian Amazon: The Case of Amazonian Municipalities of Brazil. *Revista Brasileira de Política Internacional* **55**: 170-189.
- Instituto Nacional de Pesquisas Espaciais 2008. Monitoramento da cobertura florestal da Amazônia por satélites, Sistemas PRODES, DETER, DEGRAD e Queimadas, 2007-2008. Available at <http://www.obt.inpe.br/degrad/> Accessed on May 9, 2016.
- Jagger P, Brockhaus M, Duchelle A, Gebara M, Lawlor K, Resosudarmo I, Sunderlin W 2014. Multi-Level Policy Dialogues, Processes, and Actions: Challenges and Opportunities for National REDD+ Safeguards Measurement, Reporting, and Verification (MRV). *Forests* **5**(9): 2136-2162.
- Jaglin S 2014. Urban Energy Policies and the Governance of Multilevel Issues in Cape Town. *Urban Studies* **51**(7): 1394-1414.
- Johannesburg 2015. Climate Action in Joburg. Available at http://www.joburg.org.za/index.php?option=com_content&view=article&id=8936&Itemid=266 Accessed on May 9, 2016.
- Johnson C, Toly N, Schroeder H, (Eds.) 2015. The Urban Climate Challenge: Rethinking the Role of Cities in the Global Climate Regime. Routledge: London.

- Kahn S, Brandão I 2015. The Contribution of Low-Carbon Cities to Brazil's Greenhouse Gas Emissions Reduction Goals. Stockholm Environment Institute: Seattle.
- Kashwan P 2015. Forest Policy, Institutions, and REDD+ in India, Tanzania, and Mexico. *Global Environmental Politics* **15**(3): 95-117.
- Keohane RO, Victor DG 2011. The Regime Complex for Climate Change. *Perspectives on Politics* **9**(1): 7-23.
- Kern K, Bulkeley H 2009. Cities, Europeanization and Multi-Level Governance: Governing Climate Change through Transnational Municipal Networks. *Journal of Common Market Studies* **47**(2): 309-332.
- King G, Keohane RO, Verba S 1994. Designing Social Inquiry. Scientific Inference in Qualitative Research. Princeton University Press: Princeton.
- Larson AM 2003. Decentralisation and Forest Management in Latin America: Towards a Working Model. *Public Administration and Development* **23**(3): 211-226.
- Lee D, Pistorius T 2015. The Impacts of International REDD+ Finance. Climate and Land Use Alliance: San Francisco, CA.
- Lewis BD 2015. Decentralising to Villages in Indonesia: Money (and Other) Mistakes. *Public Administration and Development* **35**(5): 347-359.
- Luttrell C, Resosudarmo IAP, Muharrom E, Brockhaus M, Seymour F 2014. The Political Context of REDD+ in Indonesia: Constituencies for Change. *Environmental Science & Policy* **35**: 67-75.
- Matose F, Watts S 2010. Towards Community-Based Forest Management in Southern Africa: Do Decentralization Experiments Work for Local Livelihoods? *Environmental Conservation* **37**(3): 310-319.
- May P, Millikan B, Gebara MF 2011. The context of REDD+ in Brazil: Drivers, Agents and Institutions. CIFOR Occasional Paper 55. Center for International Forestry Research: Bogor.
- Ministry of Environment and Forests 2010. National Mission for a Green India. Draft Submitted to Prime Minister's Council on Climate Change. Available at <http://naeb.nic.in/documents/GIM-Report-PMCCC.pdf> Accessed on May 9, 2016.
- Ministry of Environment Forests and Climate Change 2014. National Policy on REDD+. Final Draft. Government of India: New Delhi.
- Moeliono TP 2011. Spatial Management in Indonesia: From Planning to Implementation. Cases from West Java and Bandung. A socio-legal study. University of Leiden: Leiden.
- Nachmany M, Fankhauser S, Davidová J, Kingsmill N, Landesman T, Roppongi H, Schleifer P, Setzer J, Sharman A, Singleton CS, Sundaresan J, Townshend T 2015. Climate Change Legislation in India. London School of Economics: London.
- Nandi S, Gamkhar S 2013. Urban Challenges in India: A Review of Recent Policy Measures. *Habitat International* **39**: 55-61.
- National Constituent Assembly 1988. Constituição da República federativa do Brasil de 1988. Government of Brazil: Brasília.
- Nepstad D, McGrath D, Stickler C, Alencar A, Azevedo A, Swette B, Bezerra T, DiGiano M, Shimada J, da Motta RS, Armijo E, Castello L, Brando P, Hansen MC, McGrath-Horn M, Carvalho O, Hess L 2014. Slowing Amazon Deforestation through Public Policy and Interventions in Beef and Soy Supply Chains. *Science* **344**(6188): 1118-1123.
- Ostrom E 2010. Polycentric Systems for Coping with Collective Action and Global Environmental Change. *Global Environmental Change* **20**(4): 550-557.
- Pasquini L, Shearing C 2014. Municipalities, Politics, and Climate Change: An Example of the Process of Institutionalizing an Environmental Agenda Within Local Government. *The Journal of Environment & Development*: 1-26.
- Pattberg P 2012. The Role and Relevance of Networked Climate Governance. In Global Climate Governance Beyond 2012: Architecture, Agency and Adaptation, Biermann F, Pattberg P, Zelli F (eds). Cambridge University Press: Cambridge, UK; 146-164.
- Pattberg P, Stripple J 2008. Beyond the Public and Private Divide: Remapping Transnational Climate Governance in the 21st Century. *International Environmental Agreements: Politics, Law and Economics* **8**(4): 367-388.
- Phadke M, Waghmode V 2016. Smart Cities Funding: Mumbai, Navi Mumbai Fail to Feature in Top 20. Available at <http://indianexpress.com/article/cities/mumbai/smart-cities-funding-mumbai-navi-mumbai-fail-to-feature-in-top-20/> Accessed on April 20, 2016.

- Pinto RF, De Oliveira JAP 2008. Implementation Challenges in Protecting the Global Environmental Commons: The Case of Climate Change Policies in Brazil. *Public Administration and Development* **28**(5): 340-350.
- Pistorius T 2012. From RED to REDD+: The Evolution of a Forest-Based Mitigation Approach for Developing Countries. *Current Opinion in Environmental Sustainability* **4**(6): 638-645.
- Pollit C 2005. Decentralization: A Central Concept in Contemporary Public Management. In The Oxford Handbook of Public Management, Ferlie E, Lynn Jr LE, Pollit C (eds). Oxford University Press: Oxford; 371-397.
- Prime Minister's Council on Climate Change 2008. National Action Plan on Climate Change, India. Available at http://www.moef.nic.in/modules/about-the-ministry/CCD/NAP_E.pdf Accessed on May 9, 2016.
- Prip C, Wallbott L 2014. REDD+ in India: Managing Carbon Storage and Biodiversity Safeguarding in National Forest Politics? FNI Report 13/2014. Fridtjof Nansen Institute: Lysaker.
- Purdon M 2015. Advancing Comparative Climate Change Politics: Theory and Method. *Global Environmental Politics* **15**(3): 1-26.
- Rahlao S, Mantlana B, Winkler H, Knowles T 2012. South Africa's National REDD+ Initiative: Assessing the Potential of the Forestry Sector on Climate Change Mitigation. *Environmental Science & Policy* **17**: 24-32.
- Rajão R, Azevedo A, Stabile MCC 2012. Institutional Subversion and Deforestation: Learning Lessons from the System for the Environmental Licensing of Rural Properties in Mato Grosso. *Public Administration and Development* **32**(3): 229-244.
- Republic of Indonesia 2004. Law of the Republic of Indonesia Number 32, Year 2004 Concerning Regional Administration. Government of Indonesia: Jakarta.
- Republic of Indonesia 2007. Government Regulation of the Republic of Indonesia Number 38 Year 2007 on Allocation of Governmental Matters between the (Central) Government, Provincial Governments and District/Municipal Governments. Government of Indonesia: Jakarta.
- Republic of Indonesia 2011. Presidential Regulation of the Republic of Indonesia No. 61 Year 2011 on the National Action Plan for Greenhouse Gas Emissions Reduction. Government of Indonesia: Jakarta.
- Republic of Indonesia 2014. Law of the Republic of Indonesia Number 23 of 2014 about Local Government. Government of Indonesia: Jakarta.
- Republic of South Africa 1996. Constitution of the Republic of South Africa. Government of South Africa: Pretoria.
- Republic of South Africa 1998. National Environmental Management Act. Government of South Africa: Pretoria.
- Republic of South Africa 2011. National Climate Change Response Policy White Paper. Government of South Africa: Pretoria.
- Resnick D, Tarp F, Thurlow J 2012. The Political Economy of Green Growth: Cases from Southern Africa. *Public Administration and Development* **32**(3): 215-228.
- Resosudarmo BP, Ardiansyah F, Napitupulu L 2013. The Dynamics of Climate Change Governance in Indonesia. In Climate Governance in the Developing World, Held D, Roger C, Nag E-M (eds). Polity Press: Cambridge, UK; 72-90.
- Ribot JC 2003. Democratic Decentralisation of Natural Resources: Institutional Choice and Discretionary Power Transfers in Sub-Saharan Africa. *Public Administration and Development* **23**(1): 53-65.
- Rio de Janeiro 2011. Law No. 5.248/2011 - Municipal Policy on Climate Change and Sustainable Development. City of Rio de Janeiro: Rio de Janeiro.
- Roberts D 2010. Prioritizing Climate Change Adaptation and Local Level Resilience in Durban, South Africa. *Environment and Urbanization* **22**(2): 397-413.
- Roberts D, O'Donoghue S 2013. Urban Environmental Challenges and Climate Change Action in Durban, South Africa. *Environment and Urbanization* **25**(2): 299-319.
- Rockström J, Schellnhuber HJ, Hoskins B, Ramanathan V, Schlosser P, Brasseur GP, Gaffney O, Nobre C, Meinshausen M, Rogelj J 2016. The World's Biggest Gamble. *Earth's Future* **4**(10): 465-470.
- Romeiro V, Parente V 2011. Climate Change Regulation in Brazil and the Role of Subnational Governments. In Climate Change in Brazil: Economic, Social and Regulatory Aspects, da Motta RS, Hargrave J, Luedemann G, Gutierrez MBS (eds). Instituto de Pesquisa Econômica Aplicada: Brasília.
- Rondinelli DA 1981. Government Decentralization in Comparative Perspective Theory and Practice in Developing Countries. *International Review of Administrative Sciences* **47**(2): 133-145.

- Rondinelli DA, McCullough JS, Johnson RW 1989. Analyzing Decentralization Policies in Developing-Countries: A Political-Economy Framework. *Development and Change* **20**(1): 57-87.
- Rothbauer P 2008. Triangulation. In *The SAGE Encyclopedia of Qualitative Research Methods*, Given LM (ed). Sage: Los Angeles; 892-894.
- São Paulo 2009. Lei Municipal no 14.933, de junho de 2009. Institui a Política de Mudança do Clima (PMMC) no município de São Paulo. City of São Paulo: São Paulo.
- Schreurs MA 2008. From the Bottom Up: Local and Subnational Climate Change Politics. *The Journal of Environment and Development* **17**(4): 343-355.
- Selin H, VanDeveer SD 2012. Federalism, Multilevel Governance, and Climate Change Politics across the Atlantic. In *Comparative Environmental Politics. Theory, Practice and Prospects*, Steinberg PF, VanDeveer SD (eds). MIT Press: Boston; 341-368.
- Shah A 2005. Fiscal Decentralization And Fiscal Performance. World Bank Policy Research Working Paper 3786. The World Bank: Washington D.C.
- Simarmata HA, Dimastanto A, Santoso SI, Kalsuma D 2014. Institutional Barriers of Low Carbon Development Planning in Indonesian Small Cities. *Low Carbon Economy* **5**: 105-116.
- Smoke P 2015. Rethinking Decentralization: Assessing Challenges to a Popular Public Sector Reform. *Public Administration and Development* **35**(2): 97-112.
- Souza C 2005. Brazilian Metropolitan Regions: Regime Change and Governance Vacuum. *Public Administration and Development* **25**(4): 341-350.
- Turnhout E, Gupta A, Weatherley-Singh J, Vijge MJ, De Koning J, Visseren-Hamakers IJ, Herold M, Lederer M 2016. Envisioning REDD+ in a post-Paris Era: Between Evolving Expectations and Current Practice. *Wiley Interdisciplinary Reviews: Climate Change*: Early View.
- Van de Graaf T, De Ville F 2013. Regime Complexes and Interplay Management. *International Studies Review* **15**(4): 562-589.
- Venugopal V, Yilmaz S 2009. Decentralization in Kerala: Panchayat Government Discretion and Accountability. *Public Administration and Development* **29**(4): 316-329.
- Vijge MJ, Gupta A 2014. Framing REDD+ in India: Carbonizing and Centralizing Indian Forest Governance? *Environmental Science & Policy* **38**: 17-27.
- Werlin H 1992. Linking Decentralization and Centralization: A Critique of the New Development Administration. *Public Administration and Development* **12**(3): 223-235.
- Wily LA 2002. Participatory Forest Management in Africa: An Overview of Progress and Issues. Paper presented at the Second International Workshop on Participatory Forestry in Africa, held in Arusha, Tanzania.
- Zelli F 2011. The Fragmentation of the Global Climate Governance Architecture. *Wiley Interdisciplinary Reviews: Climate Change* **2**(2): 255-270.
- Zelli F, van Asselt H 2013. Introduction: The Institutional Fragmentation of Global Environmental Governance: Causes, Consequences, and Responses. *Global Environmental Politics* **13**(3): 1-13.