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## Forschungszentrum für Umweltpolitik

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# The role of the state laboratories in multi-level climate policy research - considering India

Kirsten Jörgensen

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## The role of the state laboratories in multi-level climate policy research - considering India

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In der Schriftenreihe FFU-Report werden seit 1993 Diskussionspapiere aus dem Forschungsprogramm des FFU veröffentlicht. Ergebnisse sollen so frühzeitig einer interessierten Öffentlichkeit zugänglich gemacht werden. Die Reports durchlaufen einen internen fachlichen Review-Prozess. Die vertretenen Positionen liegen in der Verantwortung der Autoren und spiegeln nicht notwendigerweise die Position des gesamten FFU wider.

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## Abstract

The federal state of India is among the most vulnerable countries in the world with regard to climate change. Despite its low per capita emissions, India is the world's third largest emitter of greenhouse gases. Accordingly, the country's domestic climate policy requires substantial problem solving capacities to respond to these huge challenges involving different levels of government. This paper considers the question of whether comparative climate policy research should explore the role of India's states in climate policy. Should state climate action in India be considered and even investigated through the "laboratories of experimentation" lens? By considering this question from a theoretical perspective, this paper aims at encouraging a more intense discussion of the topic. The paper presents a synopsis of the current state of research reviewing three strands of discussion: first, the laboratories of experimentation literature, second, comparative climate policy analysis dealing with the role of federal states in multi-level climate governance in the USA and Germany; and third, literature on the role of the Union states in India's federal system. Moreover, to assess the scope for subnational state climate action, the institutional context of India's multi-level climate governance structure is scrutinized. Using anecdotal examples of progress in Indian states, the paper calls attention to important areas of research which appear to hold key information but have not yet been adequately explored. It concludes that there are good reasons to include India's states in comparative subnational climate policy research and, in particular, for considering interstate competition as a potential driver behind subnational climate action and energy policy in India.

**Keywords:** climate change policies, multi-level governance, bottom-up approaches, India, innovation policy, industrial policy

## 1 Comparative subnational states climate policy

Global warming raises specific questions about the emission reduction of greenhouse gases and relates to the need for profound industrial and societal changes, including a large-scale transition to low-carbon technologies. It involves complicated collective action problems (Stern, 2006). Policy change reflecting these enormous challenges of climate mitigation is still in the genesis phase. A breakthrough in solving the complex collective action problems involved has been lacking so far, particularly at the level of international climate negotiations, where binding emission reduction commitments are still missing. Fortunately climate governance “operates simultaneously at several levels” (Gupta, 2007) involving governmental and private actors. Objectives that have been identified by the scientific community are expected to be implemented through strategies, processes and institutions operating both at and between different government levels (Ibid.).

Positive features can be seen, for example, in the efforts made by a number of nation states such as Germany, in which climate policy has been framed as industrial policy in the sense of a policy-induced market formation for climate-friendly technical innovations (Jänicke, 2012). India’s emerging market economy belongs to this group of countries with a policy-driven increase in the diffusion of photovoltaic (Jänicke, 2012). Surprisingly impressive progress has also been made at the subnational state level with a large number of best practice cases “across different federal or multilevel governance systems” (Rabe, 2008, 106). Subnational states pursue climate action for perceived economic as well as political advantages. Among the political considerations that shape state action are “regulatory predictions” (Rabe et al., 2006, 19) concerning future regulation from higher levels.

Knowledge about the potentials and constraints of multi-level climate governance and the role of different policy levels and particularly of the subnational state level therein is still “under construction”. For quite some time, the international climate process and the related international institution building have been receiving more scientific attention than

other levels of governance and their interactions (Gupta, 2007). As for the role of the sub-national state level in multi-level climate governance, scholarly interest has been unfolding since the 2000s. Existing literature includes an elaborate research strand interested in the role that the subnational state level in the U.S. plays in climate governance, paving the way for additional comparative research.

As a matter of course, the subnational state level in federal systems is interesting in terms of the implementation of national policies. This is particularly true for environmental, climate and energy governance. Moreover, subnational states can also be regarded as independent and potentially innovative policy makers beyond the notion of mere execution of federal regulation. Classically, the metaphor of “laboratories of experimentation” has been used to label the innovation potential of the subnational state level in the USA.

The questions explored here from a theoretical perspective are whether, in the newly industrializing country of India, the Union states might also share commonalities in subnational climate policy and whether they might also be researched as a driver of multi-level climate policy. The paper aims at providing a synopsis of different scientific debates including literature on subnational laboratories, multi-level climate governance and federalism which can contribute to a better understanding of these questions. It will first focus on the concept of the subnational laboratories of policy experimentation. Second, it will draw on what international comparative research has revealed about the function of the subnational state level in climate and environmental policy and the role it plays in multi-level climate governance. Third the methodological advantages of researching subnational climate action through the lens of economic and political competition will be emphasized. Fourth, the role of the Indian states will be discussed against the background of India’s federal system as well as emerging climate policy and politics in India. Finally, referring to illustrative examples, states’ actions will be viewed through the lens of economic competition regarding climate policy as economic stimulus.

## 1.1 Laboratories of experimentation

The notion of policy experimentation at the subnational state level was brought up during the USA federalism debates in the 1930s (Gardner, 1996), and referred to a pioneer-like function of the subnational level in policy initiation as well as implementation. This is based on the idea that subnational states may serve as laboratories (Osborne, 1988; Volden, 1997) by a) independently developing new problem-solutions in different policy domains and b) experimenting with the implementation of these new problem-solutions. Therefore, these policies might serve as a model for “other states or the nation as a whole” (Volden, 1997, 79). They may spread horizontally or even vertically, resulting in a “diffusion of innovations” (Rogers, 1962). Such action would be driven by voter choices in addition to political will. The innovative role of the subnational state laboratories in political problem-solving has been and remains an import peculiarity in federal systems. Subnational leadership has therefore been perceived as an advantage. In the words of Brandeis (1932), “a single, courageous State may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country” (cited in Gardner, 1996, 475).

Indeed, empirical research has shown that experimentation by the U.S. states occurred recurrently not only in theory but also in practice. Both innovation and the diffusion of state policies have taken place in a number of policy domains such as economic development, education, environment and industrial innovation (Osborne, 1988). According to a study by Gray, innovativeness could not be regarded as a pervasive factor but as an “issue-and time-specific” one (Gray, 1973, 1185). Also the diffusion of innovations has taken place, differing “by issue area” (ibid., 1185) and - interestingly - the degree of federal government involvement.

Not only can experimentation take the form of independent state action, but it can involve intergovernmental interdependencies as well. In the context of multi-level governance

structures, subnational experimentation is also regarded as a test of federal policies “where prospective federal policies may be tried out on a smaller scale and where existing federal programs can be adapted to the conditions and needs of individual states” (Rinquist, 1993, 9). During the 1990s, the notion of the U.S. states as a driver for environmental performance and innovation was explored in environmental studies about subnational state capacities (Rinquist, 1993; Rabe, 2000) and the diffusion of subnational state environmental policy innovations in the United States (Kern 2000).

The opposite role of subnational states in federal systems - thought to be the ones that apply “the brakes” and weaken political standards - has been discussed in the race-to-the-bottom debates since the 1960s (cf. Esty 1996; Engel 1997; Ferejohn and Weingast 1997). Driven by economic interstate competition and wanting to attract industry, they would lower environmental standards in the absence of federal environmental regulation. In the academic environmental federalism debates, the race-to-the-bottom rationale could not be confirmed in empirical studies but could also not entirely be ruled out (Engel, 1997). Other factors have been found that have influence on interstate competition and may even spur ambition by U.S. states in terms of environmental performance. Following up this debate, scholars moved to the question of the drivers and motives behind subnational states climate policy (cf. Rabe et al. 2006, 3; Engel and Orbach, 2008).

## **1.2 The role of subnational climate initiatives in multi-level governance**

Since 2000, the comparative intra- as well as international research regarding subnational states' climate policy initiatives has been expanding (Rabe, 2004, 2008, 2011; Rabe et al. 2006; Engel 2006, 2009; Gupta 2007, Gupta et al. 2007; Schreurs and Epstein, 2007; Schreurs, 2008; Betsill and Rabe 2009; Happaerts et al., 2012). This research strand is interested in a better understanding of subnational state potentials for innovation and ex-



perimentation, the drivers for policy change, and the multi-level governance context. A number of research strands, including international relations and Europeanization research, federalism literature, and policy diffusion and convergence research, have found indication of the relevance of subnational actors in environmental, energy and climate policies in this context.

According to a comparative study of convergence and divergence in the relationships between the European Union and the United States, subnational actors have been found to be influential in environmental policy convergence. According to Schreurs et al., the subnational level serves as a pathway toward national and supra-national politics, providing a channel for norm diffusion and learning (Schreurs et al., 2009, 13).

It may indeed happen that, in the absence of central government leadership, the subnational level significantly compensates for the lack of national policies by instituting separate climate policies during times of national gridlock (Rabe, 2004). When this lack of national leadership occurred in the U.S., a number of states began to inventory their emissions, create climate action plans and formulate their own GHG-reduction goals and standards. In the U.S., for example, the subnational state level did in fact set up its own regulatory frameworks and funding mechanism for energy efficiency and renewable energy.

Research has also shown that heterogeneous state policies converged over time. Building on Rabe's systematic description and analysis of state climate change policies from the year 2004, Lutsey and Sperling examined the advantages and limitations of the decentralized climate policy measures implemented in the U.S. states. They observed a "consistent set of actions being undertaken by the state governments" (Lutsey and Sperling 2007, 675).

The subnational level might encourage and inspire action on different policy levels. For instance, Rabe, Roman and Dobelis assert that "such regulation will take maximum advantage of these mitigation assets, because the states that own these assets will have explored their potential in advance of the legislation and will push for an embrative inclusion of these different mitigation strategies" (Rabe et al., 2006, 44). For the US case of low

federal dominance in climate change policy from 1998-2007 (Rabe, 2011, 497) it has been discussed since 2004 whether the policies developed in the U.S. states will provide templates for national initiatives or not (Rabe, 2004/11; Engel, 2009). Based on their predictions of future federal regulation, the states have developed their own strategic approaches to climate protection (Rabe et al., 2006, 44).

State climate policy action has been systematically analyzed in the U.S. federal states. A comparable debate, also more generally, regarding the overall political innovation potential of the federal states in Germany has been largely missing. This topic did not receive much attention in the federalism debates that had their focus instead on the constraints of federal policy-making - for example, the decision-trap (cf. Blancke, 2004). In the Regional Authority Index the degree of self-rule in the Bundesländer has been assessed only slightly lower than that of the U.S. states, reaching 12 out of 15 points while the U.S. states had 14 (Hooghe, Marks and Schakel, 2010). The Bundesländer are equipped with broad rights to act and execute national and European regulation under their own responsibility. Yet the Bundesländer governments are not able to conduct self-designed policies with a broad thematic scope. Since the 1970s, a large and growing body of environmental and climate legislation has been formulated and decided upon at the federal and European levels (Jordan 2005). Single case studies have, however, demonstrated a certain degree of environmental experimentation (Jørgensen, 2002). In a Bundesländer-comparison dating from 2010, the new Bundesländer Brandenburg and Thuringia were ranked highly with respect to their renewable energy policies (DIW/ZSW, 2010). Measures which can be taken at the subnational level include the setting of ambitious targets, the removal of planning barriers, instituting strong heating laws and ambitious research and education policies. The Bundesländer do apply a variety of non-hierarchical forms of governance, in particular cooperation with target groups in business and society. In Baden-Württemberg, Berlin, Schleswig-Holstein and a number of other Bundesländer, win-win constellations have been found through energy conservation in the building and housing sector and through the pro-

motion of renewable energy (Jørgensen, 2012). Recently the government of Baden-Württemberg has been aspiring to unleash its technical, economic and scientific capacities through a competitive strategy, thus making it “Europe’s Environmental Innovation Laboratory” (EU Commission, CORDIS, 2010).

On the whole, subnational state policies have been found to be an important factor in climate issues and closely-related areas such as energy security. The subnational state level provides an important interface between the federal and the local level. It administers a variety of functions, executing federal regulation as well as exercising state competencies spelled out in the constitution. Most importantly, subnational states can also be researched as innovators. Driven by motives of economic and political competition, they try out novel problem-solving methods that serve both prosperity and climate protection.

### **1.3 Researching the drivers for climate action - interstate competition**

Understanding these dynamics and taking them into account when designing and implementing strategic approaches to climate mitigation can be a powerful tool and can help to spur innovation. Drawing on Michael Porter’s writings on competition and economic development, as well as following the interstate competition approach, Rabe, Roman, Dobelis (2006) developed an analytical framework for the research of the drivers and motives of subnational states climate policies in federal systems. Their point of departure was the question of why single states would ignore the collective action problem involved in climate mitigation and act independently of other states and the federal level. How could it be explained that, in the absence of a national climate policy framework, the states developed proactive climate policies without having a way to internalize the benefits of their actions (ibid. 7). The analysis of the U.S. cases revealed insights about strategic criteria that shape state policy as well as the specific regional motives behind climate policies.

They showed that, one by one, the drivers of proactive climate change policies are related to the competitive assets of the states and maximize their “economic stability and welfare” (ibid. 43), such as for example energy security.

Overall, Rabe et.al. emphasize that these competitive states strategies, which are driven by a number of economic and political goals, “may truly serve as laboratories, if not of democracy, then at least of climate change regulation” (Rabe et al., 2006, 44). In the absence of federal leadership in the U.S., the individual states explored and identified their own particular assets as well as maximizing their political and economic advantages. For example, agricultural states preferred carbon sequestration strategies and the promotion of renewable energy generation has been chosen by states with great potential for this (ibid., 44).

One important advantage of researching subnational climate action through the lens of economic and political competition is that it provides for flexible applicability to other institutional settings. It allows for a comparison of subnational state climate action that is taking place in a) varying institutional structures of the respective federal systems, in b) varying stages of economic development of the countries and c) varying constellations of collaboration between the federal and the subnational governmental level in the initiation, adoption and implementation of climate policy. Through a review of the existing research, this paper will explore whether this analytical lens is useful for researching the climate performance of the Indian Union states. As will be shown, the motives that propel U.S. states’ action are quite plausible in the cases of both the Indian Union government and the states as well. In particular, energy security is a characteristic feature therein. Beforehand a brief introduction to the state and structure of India’s domestic climate policy will be provided.

## 2 Climate policy in India

India has become an important actor in the processes of global climate governance. Despite its low per capita emission, it is the world's fourth largest economy and third largest greenhouse gas (GHG) emitter (PBL, 2011, 13). At the same time, India, which is divided into 28 subnational states and 7 union territories, belongs to the group of the world's most vulnerable countries with regard to climate change (Yohe et al., 2006, Malone and Brenkert, 2008). Challenged in a variety of ways, India is expected to experience widespread damage as a result of climate change (IPCC, 2007). India's vulnerability to climate change is particularly demonstrated by: a) the impending melting of the Himalayan glaciers, b) the increasing scarcity of water as well as c) the changing monsoon patterns and their impact on agriculture, which affects the livelihoods of a major part of the population (ibid.). Hence, climate change is an urgent and visible problem, one that is currently causing heavy social and economic pressures and, concomitantly, one that calls for climate policies.

### 2.1 Development, energy security and greenhouse gas mitigation

India's climate policy is unfolding against the background of both a development-first paradigm as well as the threatening scenario of climate change impacting many economic sectors and hampering human livelihoods. Thus India's current National Action Plan on Climate Change, which has been in place since 2008, sets political priorities for climate policy on protecting the poor and vulnerable through sustainable development and the achievement of national growth objectives (GOI 2008).

Within the context of international negotiations, India has repeatedly resisted binding mitigation targets. As a developing country with low per capita emissions, India demands the right to catch-up economically and resists greenhouse gas mitigation obligations that

could interfere with this goal. This official governmental stance is shared by a broad domestic advocacy-coalition that has been called the “growth-first stonewallers” (Dubash, 2009). However, other voices from the civil society, the scientific community and the political arena are calling for an active climate protection policy and involvement in internationally binding targets to cope with climate change (Rai, Victor 2009; Lele 2012).

Despite this reluctance to accept binding targets, India has taken significant steps to mitigate greenhouse gas emissions and develop low carbon strategies. The National Action Plan on Climate Change states national objectives such as the promotion of renewable energies (“Solar Mission”) as well as energy efficiency (“Enhanced Energy Efficiency”) (GOI 2008). India’s climate policy includes a range of sector-based mitigation policies (Sant and Gambhir ,2012) and builds on long established institutions. The transition of the energy sector has been pursued for nearly five decades (Anumakonda, 2007, 540, cf. IPCC 2011) with a variety of programs, administrative agencies and regulatory frameworks, including ones that have promoted renewable energies and increased energy conservation (Pew, 2008). These, however, were driven not by climate concerns, but rather by energy security concerns.

As in other developing countries, renewable energy policy that contributes to climate mitigation is driven by economic opportunities (IPCC, 2011, 879). In fact, renewable energy policies are the ones with the greatest socio-economic potential, including the development of infrastructure in rural areas and employment. They can be regarded as a central element of climate policy in India. Of particular importance therein is the growing market for renewable energy producers in India (IPCC, 2011) - an important driving force behind mitigation policies. India’s National Action Plan on Climate Change specifically deals with the deployment of appropriate technology as well as new and innovative forms of governance. These include market, regulatory and voluntary mechanisms and efficient as well as cost effective strategies (GOI, 2008).

Considering the opportunity structures as well as win-win constellations and constraints, one wonders whether the Indian states, as is the case elsewhere, should also be regarded as relevant players and institutions. In the following section, the division of tasks and the institutional set up for multi-level climate policy in India's federal system will be scrutinized, thereby providing for a better understanding of the scope for states to take independent initiatives.

## **2.2 Multi-level and multi-actor climate governance in India**

India is described in the academic literature as well as the political discourse as a heavily centralized quasi-federal system (cf. Lijphart, 1996, 259) or as a minimal federalism (Parikh and Weingast, 1997) and a majoritarian democracy with the Union Government taking the lead. India's constitution contains centralizing features with regard to "legislative, administrative, financial and emergency provisions." (Saéz, 2002, 35) As in other policy domains, centralized policy-making has also been confirmed for the environment (Gupta, 2001; Jasanoff, 1993; Reich and Bowonder, 1992).

India lacks clear-cut legislative responsibility for climate protection. In such a case, the rule is applied that the centre has the residual power to legislate on any subject not covered in the constitution (Saez, 2002). Due to the international scope of the problem, as well as the constitutional competency of the Union Government for international agreements and treaties, the main responsibility for climate change agreements lies with the Union Government. As is the case in other areas of international affairs, the national legislature is rather powerful - a noteworthy aspect with regard to climate policy, for the legislature may make any law for implementing international treaties, agreements or conventions and even international conferences (Gupta, 2001). Furthermore, legislative responsibilities for climate policy derive from different legal sources as will be addressed below.

Not surprisingly, the major arenas for climate politics and the formulation of an overall national strategy in India are located at the federal level - no different from other countries in the world. Involved in the overall climate policy and, more broadly, the governance structures are the Prime Minister, a number of federal ministries, the Union parliament, expert groups, the business sector, civil society actors, research institutes and international organizations (Das, 2012; Pulver, 2012; Lele, 2012). Moreover, the Planning Commission and the Financial Commission are highly relevant actors with respect to formulating and choosing policy alternatives as well as their implementation. They work at the interface between the Centre and the states, and are involved in the implementation of national targets at the subnational level. In India's centralized policy-making, the five-year planning is performed by the Planning Commission. In connection thereto, the budgeting of the centralised public revenues is done by the Financial Commission (Sáez, 2002).

Despite the obvious dominance of the centre, the Indian states might still be researched as more significant climate policy players, for, as it appears at first glance, they are equipped with a considerable degree of self-rule. Their role results from the wide-ranging legislative powers that have been afforded to them. These powers relate to issue areas relevant to climate policy - indeed, cross-cutting ones - such as water, land use and agriculture. They might use these legislative powers despite the fact that "anything on the State List is fair game as far as the centre is concerned" (Gupta, 2001, 4) The Indian Constitution lists three groups of legislative issue areas and distinguishes them according to legislative powers (Constitution of India, 1950). The Union list comprises 97 subjects over which the national legislator has exclusive powers. Amongst the few issue areas relevant to climate policy are trade representation, the United Nations Organisation, agreements and conventions with foreign countries, atomic power, mineral and oil resources and control of industries. The State List comprises 66 issue areas over which the state governments have exclusive jurisdiction, including public health and sanitation, agriculture, land improvement and water. Energy falls under concurrent legislation involving both levels of government. As will



be shown later, the states are busy setting up independent incentive systems in the energy sector.

As for the system of implementation - comparable with Germany's - little progress could be achieved in the prioritized areas of the Indian National Action Plan on Climate Change without the federal state's implementation efforts. A similar dynamic can be seen in Germany: the implementation efforts of the Bundesländer have been crucial to progress in the prioritized areas of the German sustainability strategy, such as energy, climate, environmentally-friendly mobility, healthy production and nutrition, innovation, reducing land use and conserving open spaces. This also applies to the implementation of European policies related to climate policy.

Summing up the brief description of the institutional set up, it can be said that, despite the centre's strong legislative powers and executive rights, the subnational state level possesses a number of important legislative powers relevant to climate policy. The following section shall shed light on the question of whether or not the subnational state level in India could theoretically be regarded as a laboratory of experimentation. It will review literature dealing with the role of the Union states in India's federal system, the implementation structure of India's National Action Plan on Climate Change and state policies in the area of renewable energy.

### **2.3 Should India's states be researched through the laboratories of experimentation lens?**

The notion of state laboratories of experimentation is not entirely incompatible with India's federal state structure as well as the ideas behind its constitution and the ongoing political discourse about it. India's Constituent Assembly and debates during the 1960s and 1980s reflected on coordination problems between the centre and the states and the continuous intergovernmental frictions (Saéz, 2002). One topic of the political and theoretical

discourses was the best possible division of tasks within the state machinery and the need for decentralization. Concepts of cooperative federalism and states experimentation, as developed by U.S. scholars during the 1930s and 40s, have become a Leitmotiv in these debates influencing institution building. According to Saéz (2002), “the Indian model encapsulated some of the tenets of what has come to be known as cooperative federalism” (29) in terms of more intense forms of intergovernmental problem-solving. Thus the states possess a certain degree of self-rule, as has been shown above when describing their legislative powers in a number of environmentally relevant policy areas.

Yet it is important to note that the scope for bottom-up action should not be overestimated **either**, as it is limited by financial bottlenecks. Not considered in the early debates about the Indian constitution was, according to Parikh and Weingast (1997), the issue of a certain degree of economic self-rule, which would provide lower levels with resources needed for independent action. “While political decentralization was seen as inevitable, economic decentralization was never seriously contemplated.” (Parikh and, Weingast, 1997, 1609). India’s financial federalism interferes with independent **states’** political experimentation. Mainly controlled by the Planning Commission and the Finance Commission, the financial transfers system “places states at the mercy of the central government”(ibid., 1607).

When exploring the question of whether the Indian states might function as laboratories of experimentation, another aspect worth checking is inter-state competition. Interjurisdictional competition is a condition that propels political experimentation. Since economic liberalization, interjurisdictional competition by the states pursuing economic goals has been observed, particularly for foreign investments. (Sáez, 2002, 135). With reference to the states of Gujarat and Karnataka, Parikh and Weingast (1997) maintain that “a certain amount of economic decentralization and state innovation is taking place” and that “their advantages over other states, such as an educated labour force and a history of indigenous capital, have helped them attract foreign investment.” (1593). Political competition be-

tween the states is further supported through research on multi-level industrial policy in India (Sinha, 2005) before and after liberalization. Sinha's comparison of the Indian states Gujarat, West Bengal and Tamil Nadu showed that state industrial policies are shaped by regional political competition (ibid., 13)

As the sections above suggest that the Indian states possess a certain degree of self-rule, it appears reasonable to pursue the question of whether subnational state-level climate experimentation is taking place. Building on the insights about the specifics of India's environmental federalism and the centralized nature of policy formulation and implementation, it can be assumed that experimentation would occur foremost in the context of multi-level policy.

One type of experimentation would be closely related to the implementation of national climate policy. This would happen in a multi-level context involving a number of organisations such as the Planning Commission and the Finance Commission, federal ministries and expert networks.

Another type of experimentation would be reflected in more independent initiatives. Both types of experimentation can be regarded as parts of competitive state climate strategies.

### **2.3.1 Experimentation closely related to the implementation of national climate policy**

As for the first type of experimentation, which would - once it happens - take place in the context of implementing federal policies, the National Action Plan on Climate Change has been the overall framework guiding India's climate policy since 2008. Because climate change is a cross-cutting issue, it requires policy change in many sectors such as energy supply and conservation, industrial production and agriculture, as well as transportation. In fact, India's National Action Plan on Climate Change addresses relevant sectors with eight

“National Missions”, amongst them the promotion of solar energy, enhanced energy efficiency, sustainable habitat and sustainable agriculture. The goal formulation as well as implementation of the National Missions is under the aegis of the respective ministries at the national level (Mishra et al., 2011)

A first signal to the states had been sent at a conference of state ministers held on August 19, 2009, when Prime Minister Manmohan Singh requested that the states devise state-level climate action plans. These were to have been consistent with the strategies identified in the National Action Plan on Climate Change 2008 and were to have included investments in new clean technologies.<sup>1</sup> The state action plans are supposed to receive final approval from the National Steering Committee. By September 2011, 16 states had submitted their strategies (ibid., 7)

The mainstreaming of the national climate objectives and the coordination of the state-wide implementation is taking place in a rather hierarchical two-level policy-making structure. The right to decide on the national goals lies predominantly at the Union government level and the obligation to implement at the subnational level (ibid., 2011). According to Vivekanandan (2009), the centralized policy-formulation for the eight National Missions at the Union level lacked input from lower levels: “ the Plan remains a centrally coordinated enterprise that benefited little from the expertise and views of other stakeholders at the time of formulation” (11). In a report on “Low Carbon Policies for Inclusive Growth”, the Planning Commission emphasized a multi-level governance structure. It argues that multiple levels, including the sub-national governments such as the States, the Municipalities, the Sectoral Regulators and the Panchayats and private actors will be involved and that “capacity building will have to be tailored to these levels” (GOI, Planning Commission 2011, 110).

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<sup>1</sup> DNA, Dec 2 2009. [http://www.dnaindia.com/india/report\\_centre-asks-states-to-prepare-action-plans-on-](http://www.dnaindia.com/india/report_centre-asks-states-to-prepare-action-plans-on-)

A study undertaken in 2011 which compared six out of 16 states climate action plans showed that the institutional arrangements for subnational climate planning varied, as did the involvement of public and private stakeholders (Mishra et.al., 2011, 6). The states chose their priority sectors according to their development concerns (ibid., 12). In accordance with the National Action Plan on Climate Change, among the subjects singled out were energy efficient power generation, industrial energy efficiency and renewable energy generation. This shouldn't come as a surprise. The fact that the states' plans emphasize an ecological modernization of the energy sector does not, however, necessarily imply a pure top-down implementation of national climate action goals. It might also be driven by the regional objectives of the subnational governments to encourage productivity growth and promote local renewable energy industry. Moreover, it may also document that once again the state governments are increasingly involved in policies that attempt to make their energy sectors more competitive. The states' plans accentuated the promotion of energy efficiency and generation of green energy, which are regarded as an "important tool for spurring regional economic development" (ibid., 15) Karnataka's Plan in particular featured elements of a political strategy (ibid., 18).

Future researchers may also regard states' subnational climate action plans and related political programs and institutions through the lens of Porter's theorizing on regional competitiveness. The questions could be posed as to whether the state plans provide for more than an implementation of centrally devised-strategies and whether they include rudiments of politically motivated competitive climate strategies. According to Porter's writings, economic progress often suffers from the lack of governance action and consensus on what needs to be done next. Accordingly, the change process needs to be approached strategically, involving public and private actors, the "key constituencies" The process "must rise above the interests of any particular administration or government. Ideally, such an action program will occur not only at the national level but also at the level of states and cities."(Porter, 2000, 26). He describes the role of subnational governments and institu-

tions in enhancing competitiveness by implementing “a positive, distinctive, long-term economic action program, or change process that mobilizes government, business, institutions, and citizens.” (ibid., 26) The subnational variation of India’s states climate action plan might reflect such a nucleus of competitive strategies.

### 2.3.2 Experimenting with competitive states climate strategies

Another question this paper calls attention to for further research is whether state action in Indian climate politics might be more than mere implementation of top-down policies and might involve individual bottom-up state policies as well. Literature on renewable energy policies, ones closely related to climate protection, shows that the **states’** performances vary with respect to energy policy. As opposed to sheer implementation of national policies, renewable energy policies in a number of Indian states include additional policy instruments (Sharma et al., 2011; Anumakonda, 2007). These go beyond the **Union** government policies and “follow their own policies” (Rao and Kishore 2009, 984). Ten out of the twenty-eight Indian states (Tamil Nadu, Karnataka, Andhra Pradesh, Gujarat, Rajasthan, Maharashtra, Madhya Pradesh, West Bengal, Kerala, Orissa) “are implementing major wind energy programmes.”(ibid., 984). Policy measures in the states include preferential tariffs, wheeling and banking charges, as well as third party sales. Other state specific issues analysed by Rao and Kishore in 2009 include grid quality, availability of land for installations and distance from the generation point to feed-in point. Maharashtra state action includes for instance the designation of Special Economic Zones (SEZs) for wind energy farms, a single window system for the allocation of sites for wind power, and considerations for incentive packages (Sharma et al., 2011).

Rao and Kishore also found that the rates of diffusion of wind power technologies and achievements have been different for different states and can be explained through “a general correlation between diffusion parameters and policy parameters.” (Rao and

Kishore, 2009, 987) Four Indian states out of the ten - Gujarat, Tamil Nadu, Maharashtra and Andhra Pradesh - account for 60% of the total potential and have 90% of the total installed wind generation capacity (ibid., 984). Thus the Indian states are obviously becoming a driver for the diversification of the energy sector. The best practice case Tamil Nadu could induce the rapid expansion of wind power in the state through a policy mix (Sharma, 2011), strong political will and functioning renewable energy networks consisting of governmental actors, bureaucrats as well as private actors (Benecke, 2011). Tamil Nadu's share in India's overall installed wind power was 43.94 % in 2011 (Sharma, 2011, 1161).

Also other states like Himachal Pradesh are beginning to discuss their own strategic approaches to low carbon paths involving public and private actors. Indeed, the state is in the process of establishing a low carbon strategy. Gujarat also institutionalized a governmental climate protection department in 2009 in order to attract more renewable energy generation projects to the state.

### 3 Conclusions

As the literature review demonstrates the laboratories of experimentation debate is a useful lens when studying problem-solving capacities of multi-level climate policy in federal systems. It points at two important dimensions, first the laboratorial role of the subnational state level in the implementation and trying out of national climate policies and second the pioneer-like function of the subnational level in policy initiation. As the thoroughly researched U.S. case and the examples from the German Bundesländer indicate, subnational state levels can serve as laboratories of climate policy experimentation. Driven by economic and political motives, they can accelerate policy change.

The question posed in this paper was whether state climate action in India should be investigated through the “laboratories of experimentation” lens as well. A number of arguments and observations suggest that for a country of India’s vast size, as well as diverse economic and political dynamics, it appears plausible that policy change will not be driven solely by the Union government. As argued above the notion of state laboratories of experimentation is not entirely incompatible with India’s federal state structure as well as the ideas behind its constitution. First, in regard to the institutional scope for action as concerns climate policy India’s states possess a certain degree of self-rule. Second, at least for the area of economic and industrial policy since economic liberalization regional competition by the states, a variation in subnational policies and a certain amount of state innovation has been observed. It is important to note that particularly in respect to energy climate policy can be framed as industrial policy and India’s National Action Plan on Climate Change frames climate policy as such. Third, although states climate action is still understudied, a few energy policy studies indicate that the rapid expansion of wind power in a number of states is related to individual programs for the promotion of renewable energies. Therefore more indepth research is needed about the questions whether, how and why the states experiment with climate action in different policy areas. The objective of future research could be to explore the notion of an increasingly important role of the subnational



state level in the initiation, experimentation and implementation of climate policy against the backdrop of the Indian federalism.

Research could contribute to an advanced interstate competition framework for the analysis of the economic and political drivers for subnational climate action in emerging countries. Are actions taking place in areas in which the states have competitive advantages? Do competitive advantages drive subnational action and thus create win-win constellations? Do economic benefits of climate policies appear to spark interest in policies promoting climate friendly technologies?

Another important research perspective relates to the potentials and constraints of multi-level climate policy in India. More research is needed for a better understanding of intergovernmental relations, vertical and horizontal coordination and the impact of the fiscal federalism on states climate innovation.

Because climate governance relies on effective multi-level governance, the dynamics of federal policy-making, the appraisalment of intergovernmental relations and the exploration of modes of policy coordination as well as the involvement of civil society and business actors will be of particular interest.

Exploring climate policy in India's federal system, and in particular the role of the subnational Indian states therein, will be an interesting and valuable contribution to comparative multi-level climate governance research. It can shed light on a number of important issue areas, including the specifics of federalist climate governance in a quickly emerging market economy.

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