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Manoeuvres for a Low-Carbon State in India

Identifying Agency, Authority and Accountability in Governance of Clean Energy Development

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Abstract

More recently, India has been claiming to undertake a transition to a low-carbon electricity sector. This alleged transition comes as a response to a range of competing agendas and simultaneous constraints in energising development without compromising the climate. The transition is based on two strategies involving renewable energy development and promotion of energy efficiency. India has been following a 'market-plus' approach based on the narrative of co-benefit. Consequently, a set of new actors have emerged to implement these strategies and gain from it. These actors are not confined to lobbying and advising national government in creation and implementation of rules; rather, they frequently become agents of change in that they substantively participate in and/or set their own rules related to clean energy development.

This paper identifies these agents of change and their authority and accountability within the clean energy governance structure. It aims to find out the level of influence exerted by these agents on India's strategy and action on clean energy development and thus its capacity to reduce GHG emission. By focusing on the role of agency, authority and accountability in governance of clean energy, this paper unpacks the neglected question of what forms of state capacity and political strategy are needed to low-carbon development within Indian electricity sector.

I. Introduction

The debate on responses to climate change has been focused on the difficulties in reaching at binding national targets for emission reductions, and hence on the question of how to achieve an equitable response to climate change (Roberts & Parks 2007; Held & Hervey 2011). By concentrating on the obstacles to reach at an international agreement, the current debate tends to obscure the question of what enables states to bring about low-carbon development and emissions reductions or what obstructs them. With the assumption that the main obstacle to climate mitigation lies in the inability to reach at a global agreement, the current debate takes for granted that national governments would be able to deliver emission reductions if only they could agree on credible binding targets. Yet, emission reduction is far from a straightforward goal; it challenges the capacity of traditional state structure of governance and requires creative manoeuvres at local level. These manoeuvres include strategies to create, relocate and align actors and agencies within climate governance structure and ensure mechanisms of accountability between them.

Global climate change governance structure is proliferated with various state and non-state actors from local, domestic and transnational level. But there is less clarity on their authority and legitimacy and to whom and to what extent these actors are accountable for their action on climate mitigation. This paper is an attempt to identify agency, authority and accountability in governance of clean energy[1]

[1] In this paper, 'energy' is used as a synonym for 'electricity', unless otherwise stated. Electricity production is a major source of GHG emission in India, accounting for about 40 per cent of the emission in the country. If we add to this the emission caused by use of other energy sources, total emissions from the broader energy sector would be higher than two-third of GHG emission in India. All of these emissions can be mitigated by shifting to clean energy production and consumption, while ensuring much needed energy

development in India and how they affect state capacity to respond to climate change. By focusing on the role of agency, authority and accountability in governance of clean energy development, this paper unpacks the neglected question of what forms of state capacity and political strategy are needed to pursue low-carbon development within energy sector.

More recently, India has been claiming to undertake a transition to a low carbon electricity sector. This alleged transition comes as a response to a range of competing agendas and simultaneous constraints in energising development without compromising the climate. The transition is based on two strategies involving renewable energy development and promotion of energy efficiency. Consequently, a set of new actors (both state and non-state) are created and/or emerged to implement these strategies and gain from it. These actors are not confined to lobbying and advising the governments in creation and implementation of rules; rather, they frequently become agents of change in that they substantively participate in and/or set their own rules related to clean energy development and its benefits. This paper identifies these agents of change and analyses their authority and accountability within the governance structure for clean energy development.

The paper is organised as follows. Section II offers a brief analysis of the shifting pattern of electricity governance in India to understand emergence of institutions, actors and agencies in Indian electricity sector. The current phase of electricity governance is discussed in detail in the Section III, to present a detail account of clean energy development in India. The following section discusses agency, authority and accountability in governance of clean energy development in India and how they, in their current form, shape India's policy and action on clean energy. The final section provides concluding thoughts and, based on the analysis, suggests methods to strengthen capacity and political strategy required for a low-carbon electricity.

II. Shifting Patterns of Electricity Governance in India

At the time of independence, India inherited a nascent electricity sector, largely organised around small private companies and concentrated in a few urban pockets. Following the global trend, and with a desire to bridge the rural-urban gap, the Constituent Assembly of India chose the path of public electrification by enacting the Electricity (Supply) Act 1948 and making provision for 'autonomous' State Electricity Boards (SEBs). State-owned utilities and public electrification produced good results during initial few decades. However, the outcomes also included some lock-in effects and perverse governance structures (Kale 2004; Swain 2006).

Over time, the SEBs lost their autonomy, as the sector increasingly became an instrument of political process and populist policies (Badiani *et. al.* 2012). Electricity was progressively put under government control and the state governments were authorised to set electricity prices. Successive amendments to the 1948 Act eroded SEB autonomy by gradually diminishing the SEBs' freedom to set tariffs and by imposing greater political oversight in personnel decision. Over the period of 1970s and 1980s, the SEBs were

security. Consequently, clean energy development is prioritised in India under its low-carbon development strategy. Therefore, the paper focuses on emerging governance challenges and opportunities in the sector to analyse its impacts on development and mitigation aspirations of India.

used for political considerations by governments, political parties and politicians.[2]

State control over the sector and monopoly provision of electricity service resulted in a distorted tariff pattern that was substantially delinked from the cost of supply and thus from global practice.[3] Consequently, the SEBs plunged into financial crisis and their performance declined. At the same time, aggressive electrification and irrigation pump energisation resulted in an elevated demand that was difficult for the SEBs to cater. Consequently, India entered into a severe power crisis with a huge gap between available supply and demand that was largely unaccounted and unpaid.

By early 1990s, there was an agreement that Indian electricity was in terrible crisis and major policy changes were required to come out of it. At the moment, the global trend was in favour of restructuring and privatisation (Dubash & Rajan 2001). In response to a severe crisis, in 1991, the Central Government opened up the generation segment for private investment, altering the existing policies in favour of public sector led development in the sector. With the objective to encourage the entry of private generating companies into the electricity sector, India's new Independent Power Producer (IPP) policy made provisions for allowing private sector to set up power plants of any size; allowing foreign investors up to 100 per cent ownership of power projects subject to government approval; setting new price structure; offering a five-year tax holiday and considerable reduction on duties on the import of equipment for power projects.

However, within a few years, the IPP policy turned out to be a failure. For all the enthusiasms with which it was launched, the IPP programme significantly under-performed. By the mid-1990s, it was realised that neither the IPP policy would ensure significant private sector participation in generation nor private presence in generation would address India's power crisis. Consequently, India plunged into the second phase of reform with a focus on restructuring and privatisation of the loss making distribution segment. These distribution reforms, implemented at the state level, were clearly drawn from the World Bank policies on private participation in electricity sector. Though the Bank had some initial success in propagating the finance-linked restructuring, the success in actual implementation has been limited. While many states experimented the reforms, most of unbundled the sector, only two states could privatise the distribution segment. As part of the reforms, another significant measure

[2] There were two forms of political interference in SEBs' functioning: first, through 'policy directions' issued by governments that was legally allowed by the Section 78A of the 1948 Act; second, through executive instructions issued by politicians, which worked through an informal nexus between the employees of the SEBs and politicians that was based on a relationship of fear (of being transferred) (Swain 2006).

[3] Globally, retail electricity tariff is largely based on load factor and economics of distribution cost, where the industrial consumers pay less and domestic consumers pay more owing to low load and high distribution cost. Nevertheless, some countries have subsidised the domestic consumers through cross-subsidisation from commercial consumers, but have kept the industrial tariff close to marginal cost. However, in India, agricultural consumers form a unique category that seeks significantly higher subsidies. Agricultural consumers pay the lowest tariff and domestic consumers pay a little more. While the tariffs for domestic and agricultural consumers are far below the cost to serve, the industrial and commercial consumers are charged significantly more to cross-subsidise. Consequently, agricultural consumers, accounting for about a quarter of total consumption, contribute less than five per cent of total revenue, while the industrial consumers contribute half of the revenue even when they consume one-third of total electricity (Swain 2011).

taken was establishment of independent sector regulators- Central electricity Regulatory Commission (CERC) at the central level and State Electricity Regulatory Commissions (SERCs) at state level. The goal was to depoliticise the sector by transferring the tariff-setting power from state governments to the 'independent' regulators; however, independence of the regulators from governments is still doubted. Though the states established regulatory commissions within a few years, restructuring and privatisation proceeded very slowly, keeping the sector far from the expected result.

In response to the hesitant reforms at the state level, in early 2000s, the central government stepped in to replace the legal framework for electricity governance that has been in place for more than five decades. After a push and pull for two years among the policy makers on what to retain from the draft bill and what to change, the Electricity Act 2003 was enacted in May 2003. The thrust of the Act was to lead the sector towards a market dominated by private players. The policy makers expected that private sector participation, with competitive profit motives, would unwind the system of perverse incentives in the sector. However, the act was unsuccessful in addressing the poor infrastructure, lack of transparency and the political-economy context in the sector that was responsible for prevailing crisis. While the states have largely segregated the different segments of electricity system, corporatized them and established independent regulators, they are far from the desired reform outcomes. In the absence of much needed political reforms in the sector, these measures have failed to transform the sector and achieve the reform objectives (Dubash & Singh 2005).

Over the two decades of reform experiments, the pursuit of market-based and private centric electricity sector has proved futile. As the hands-off and market-first approach has proved to be inadequate to address the power crisis, there seems to be a shift towards a partnership model, i.e. public-private partnership, to smoothen the path of electrical development. The current approach seeks to incentivise private investment by striking a balance between public and private sector responsibilities. Even though the rhetoric remains that of market reformism, with actual implementation done by the private players, emerging electricity governance architecture seems to be a pragmatic hybrid with the state playing a stronger role of steering and guiding (Dubash 2011). Unlike the hands-off and market-first approach, where the state participation was expected to decline, the current approach seeks greater engagement from the state and its agencies in varying capacity.

While the current approach to electrical development in India is an evolution from past experiences, it has significantly been influenced by two contemporary drivers. With about one-third of the population not yet electrified, let alone the poor quality of supply for those electrified, the most pressing need for India is energy supply security. Internal contemplation on the issue over years has resulted in some significant actions in last decade, notably enactment of the Energy Conservation Act in 2001, establishment of the Bureau of Energy Efficiency (BEE) in 2002 and development of an Integrated Energy Policy (IEP) in 2006.

Though in a subsidiary role, climate change has emerged as a significant driver for India's energy policy in last few years. With launch of National Action Plan on Climate Change (NAPCC) in 2008, that seeks to promote production and use of clean energy, there is a change in the discussion around energy, design and implementation of energy policies and institutional architecture. Although initially driven by external pressure, climate

change has substantially been internalised in India's energy policy.

Like in many other developing countries, energy policy in India is confronted with the challenge of balancing four competing objectives: (i) powering industrialisation (ii) improving energy access for the poor (iii) enhancing domestic energy security, and (iv) protecting the environment. This challenge is not insurmountable, but it requires creative manoeuvres to be addressed. At the same time, it offers new institutional opportunities, a scope for emergence of new agents of change and trade-offs.

III. Governance of Clean Energy Development: Biases, Challenges & Opportunities

Building on the past experiences and prevailing trends, the IEP and the NAPCC define two approaches to low-carbon electricity development. The first one focuses on clean electricity production by utilising renewable potential, while the second is based on more efficient consumption of the available electricity. In addition to existing institutional mechanisms for promotion of renewable energies and energy efficiency, two specific missions- Jawaharlal Nehru National Solar Mission (JNNSM) and National Mission for Enhanced Energy Efficiency (NMEEE) - have been set up by the federal government to implement India's plan for clean electricity development. While India aims to raise its renewable capacity from 17,000 MW to 74,000 MW by 2022, it has set a target to install 20,000 MW solar capacities through JNNSM by the same year. At the same time, India aims to save 10,000 MW by 2014-15 through NMEEE, which should avoid the installation of 19,000 MW generation capacity, a substantial part of India's rising energy demand in next five years. This clearly shows that India does have a plan for clean energy development. In this section, the paper discusses the potentials of these two approaches, as well as biases in design and implementation.

Though renewable energy has been a part of the Indian electricity sector since the 1980s, it has gained an increased importance in the last decade. The country has made several important efforts to promote these new energy sources. Quite symbolically, India was the first country in the world to establish (in 1992) a separate ministry to promote renewable energies. In the last ten years, installed capacity additions from renewables comprise nearly a quarter of total additions in the Indian power sector. Consequently, India is one of the frontrunners in renewable energy development with about 30.5 GW of installed capacity (i.e. more than 10 per cent of total installed generation capacity in the country). Though there is uncertainty about the overall potential, India definitely has high potential owing to its vast renewable resources like consistent sunshine, wind and various biomasses. The country aims to generate 15 per cent of its consumable electricity from renewable sources by 2020. The government has enacted several policies to support this expansion, including the 2003 Electricity Act, the 2005 National Electricity Policy, the 2006 National Tariff Policy, the Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY) in 2005, the Eleventh Five Year Plan (2007-2012) and the JNNSM.

The current policy structure has set a time-bound target and provides a range of mandatory, enabling, and incentivising provisions for renewable energy development. The SERCs are mandated to specify a renewable purchase obligation (RPO) for the utilities in a time-bound manner with purchases to be made through a competitive bidding process. They are also allowed to set a preferential tariff for renewable electricity. Existing policies have made provisions for single-window clearances, simplified regulation (particularly for the smaller

projects), central, state and regional capital subsidies and tax incentives to accelerate renewable energy development. The Eleventh Five Year Plan has set a target of 10 per cent of generating capacity from renewable by 2012, a target already achieved by 2010. However, it promotes the phasing out of investment subsidies in favour of performance-based incentives.

India has been arguably aggressive in renewable energy development, as demonstrated by its strong legal, policy and regulatory frameworks and their relatively strong implementation records. Most of the SERCs have issued orders for RPO varying from 1 per cent to 15 per cent of total electricity sales.[4] The Renewable Energy Certificate (REC) Programme is implemented to reward utilities that go beyond the set RPO and provides renewable generators with a choice to trade electricity at a preferential tariff or trade the environmental attributes of renewable electricity. On the other hand, utilities that fail to meet the RPO have to compensate by purchasing these RECs. This creates an incentive structure where good performers are rewarded for their achievement, while poor performers are penalised.

India has thus been quite serious about renewable energy. Yet, there are some governance issues and scepticism about its development. First, one of the most controversial issues in renewable energy development is tariff setting. While the tariff is set on the basis of cost-plus approach, both the capital cost and the variable costs of these projects are based on inadequate data and ambiguous claims of project developers (PEG, 2010). This has frequently led to high renewable energy tariff that translates into an unjustifiable burden on the consumers. Second major problem lies in the lack of transparency and civil society participation in its various processes. Knowledge and information related to renewable energy development is kept confined to developers and public agencies. There is no public engagement in regulatory and policy processes. Thirdly, mechanisms are inadequate to monitor actual performance of renewable energy projects. Though the state level renewable energy development agencies are expected to monitor performance of renewable energy projects, it seems, they give primacy to promotion of new projects than monitoring the existing projects. Fourthly, the social and environmental impacts of renewable energy generation are almost completely ignored. While the renewable projects are exempted from environmental impact assessment, some of these projects have caused local strife owing to land acquisition, use of common property resources and fuel procurement. Developers and state agencies have done little to overcome these problems (PEG, 2010). Finally, lack of coordination between various state programs and incentives make it difficult to adopt an economics-based least-cost development approach to tapping India's renewable energy potential (World Bank, 2010). In future, these problems may well stall the growth of renewable energy in India.

If we just consider past experiences in Indian electricity sector, there is every reason to doubt India's ambitious renewable energy target for 2020, i.e. 15 per cent renewable in its energy mix, as it has frequently failed to achieve its goals. While India has a decent success in adding renewable capacity, compliance of RPOs and operation of market mechanisms has been inadequate in recent

[4] The national target was set at 5% for the FY 2009-10 and to be increased by 1% for the next 10 years, with the aim to procure 15% of consumable electricity from RE sources by 2020. The policy also makes a provision for solar-specific RPO set at 0.25% in 2012 and to be raised to 3% by 2022.

years.[5] Yet, there are a few good reasons to believe that India may achieve indeed its ambitious renewable energy growth rate. Firstly, the country has a vast potential, of which a little has been tapped and the set target is much below the potential. Secondly, with energy security being a key concern, renewable energy is one of the best solutions for alleviating energy import dependency and meeting the growing energy demand (Dubash & Bardley, 2005). Thirdly, India aspires to be a renewable energy technology manufacturing hub, which requires and pushes for an increased demand within the country. Indian companies already have a presence in wind turbine industry globally, and India aspires to promote industries in solar energy. Finally, India seems to bundle promotion of renewable energy with various other developmental objectives like energy security, industrial development, regional economic development, employment generation and raising state income. This policy bundling, when it is implemented successfully, has potential to foster sustained renewable energy development in India.

India's aim to reduce the carbon intensity of its economy by 25 per cent by 2020 (by unit of GPD) would certainly require aggressive promotion of renewable energy. Considering the severity and complexity this challenge and India's energy scenario, however, renewable energy alone will not address the problem adequately. There is also an immense need for energy saving through energy efficiency. India again has a huge potential for energy saving, which is estimated between 15 to 25 per cent of total consumption by different studies. In many ways, energy efficiency should be looked at as a "low hanging fruit", as it can be accessed with far less investment compared to renewable energy.

Although an energy efficiency strategy has developed in India over the past four decades, it is only in the last one that it has gained prominence. Since 2001, the central government has taken several initiatives to promote energy efficiency, which include enactment of a specific Act, set up of a dedicated agency as well as a national mission. The nodal agency, the BEE, has taken a range of initiatives which have resulted in demand savings of 8720.83 million units in 2009-10, resulting in avoidance of 2868.01 generation capacity addition (NPC 2010). Under the National Mission for Enhanced Energy Efficiency, India targets to save 10,000 MW by 2015, which should avoid the installation of 19,000 MW of generation capacities. These are ambitious goals.

However, the policy and actual practice of promotion of energy efficiency is not at par with the efforts devoted to renewable energies. While there are mandatory policy provisions regarding the latter, like Renewable Purchase Obligation, there is no such mandatory provision for energy

[5] Since its inception in March 2011, only half of the issued RECs had been redeemed by October 2013. Nonetheless, 22 out of 29 states failed to meet their RPO target set by their respective SERCs. Only seven states have achieved their RPO targets since 2009, while six states have zero per cent achievement. Whereas the national target for 2012 was to procure seven per cent of consumable electricity from renewable sources, the cumulative achievement for the year was 5.01 per cent (Greenpeace, 2013). There is a provision for forbearance price or penalty, but it is neither clear nor being followed. Moreover, national RPO target set under NAPCC is not coherent with the state RPO targets fixed by SERCs. Essentially, India lacks an effective compliance mechanism within the realm of RPO regulation, which may obstruct further renewable development. Ascertaining the situation, recently MNRE has issued a letter to Ministry of Power (MoP) suggesting to make it mandatory for states to meet their RPO targets, in order to receive central assistance for financial restructuring of their discoms. However, MoP is yet to accept the suggestion (Mohan, 2013). In July 2013, Maharashtra Electricity Regulatory Commission has directed all discoms to meet their RPOs in the past four years by March 2014, or else pay a stiff penalty.

efficiency implementation. Many of the energy services companies (ESCOs) find it difficult to motivate clients to implement energy efficiency measures in the absence of such mandatory provisions. Similarly, electricity regulatory commissions have been proactive in promoting new incentive structures in favour of renewable energies. Though regulators have capability to create such incentives for energy efficiency, proactiveness is clearly missing in this case. While national targets for both approaches are equally ambitious on paper, state level action for them varies and is largely biased in favour of renewable energy development (Swain & Charnoz 2012).

Yet, renewable energy and energy efficiency are complementary agendas laying environmental benefits and contributing to energy security. It may even be said that energy efficiency enjoys a marginal advantage over renewables given lower levels of investment usually required, as well as immediate and reliable returns for both consumers and the utilities. Table below summarises the key implications of renewable energy development and energy efficiency for different stakeholders. Having strong energy efficiency policies in place would also make renewable energy development more effective. As the demand for energy reduces or at least grows slower, as a consequence of energy efficiency practice, renewable energy plants may cater for a higher number of consumers and the share of renewable in further capacity addition may go up. If one follows this line of reasoning, then energy efficiency should be prioritised. Yet, reality goes right counter to this. Utilities are mandated to purchase significant amounts of renewable energy at a high premium, even under highly resource strained situations; meanwhile, energy efficiency measures that would cost much less to utilities are largely ignored (PEG, 2010).

Qualitative Comparison of the Likely Implications for Various Stakeholders of Renewable Energy vs. Energy Efficiency Policies

Stakeholders	Renewable Energy	Energy Efficiency
Consumer	• Increased electricity availability • Improved quality of supply • Increased electricity access • Increased electricity tariff	• Increased electricity availability • Improved quality of supply • Increased electricity access • Energy savings & reduced electricity bill • Mitigation of impacts of higher tariff • Need for an initial investment in energy efficient equipment
Utility	• Increased capital needs • Increased cost of electricity supply • Reduced electricity deficit	• Reduced cost of electricity supply • Reduced capital needs • Peak load reduction • Reduced electricity deficit
Government	• Increased public expenditure • Contributes to fiscal deficits • Improved energy security	• Reduced public expenditure • Reduced fiscal deficit • Improved energy security
Environment	• Reduction in local pollution and in GHG emission	• Reduction in local pollution and in GHG emission

(Source: Charnoz & Swain 2012)

What explains this paradoxical situation? Why there is low attention to energy efficiency while there are strong rationales? The possible explanations are:

First, there is the issue of the number of stakeholders involved in implementation and thus the ease with which decisions and coordination may take place. Renewable energy development is a top-down approach to clean energy development where generating plants are connected to the grid at the top (supply) end. Meanwhile, energy efficiency is a more bottom-up approach that requires action on the part of the consumers at the bottom (demand) level. Theoretically, even though bottom-up approaches are typically more sustainable, it is much easier to implement top-down approaches through the investment decisions of a central or local government. Setting up a renewable energy plant and connecting it to the grid is a decision taken by public authorities and does not require consent of consumers. On the contrary, energy efficiency measures require the consent and contribution of all the consumers affected.

Secondly, it seems that the biasness in India's clean energy development is, to a large extent, explained by the presence of "concentrated interests" in the renewable energy landscape while there are only "diffuse interests" when it comes to energy efficiency measures. The immediate benefits of renewable energy development is concentrated among few players including manufacturers, project developers, generators and the state, while the immediate benefits of energy efficiency is diffused and much more fragmented across all of the consumers, utilities, manufacturers as well as the state. As a consequence, there is a concentrated support and push for renewable energy development, which is missing in the case of energy efficiency. The existence of large industries in renewable technology production has greatly worked in favour of renewable energy development.

Thirdly, the institutional architecture for implementing renewable energy and energy efficiency are different, and it is stronger in case of the former. While the nodal agency for promotion renewable energy is an independent ministry, the nodal agency for promotion of energy efficiency remains under the administrative control of the Ministry of Power (MoP), whose priority and mandate is to expand energy generation capacities. In the same line, there is a dedicated financing institution at the federal level (i.e. IREDA) to promote renewable energies, as well as state level renewable energy development agencies are established in all the states. Though there is provision for state level designated agencies for energy efficiency, there is in practice no independent agency for this stake. In most cases, state level renewable energy development agencies are selected as the designated agencies for energy efficiency. These agencies, evolving from organisations set up to address earlier policy priorities, consider promotion of energy efficiency as a secondary function and often lack the capacity to promote energy efficiency strategies throughout their states. As a consequence, implementation of renewable energy projects is way better in states compared to energy efficiency projects.

Fourthly, the development of renewable energy is widely perceived as carrying higher developmental benefit compared to energy efficiency. It is expected to increase employment opportunities and revenue in India. It is also expected to spur regional economic development, particularly for many underdeveloped states, some of which have the greatest potential for developing renewable resources (World Bank 2010). At the same time, even though less exploited, decentralised renewable energy development

is expected to accelerate rural electrification and improve access to electricity.

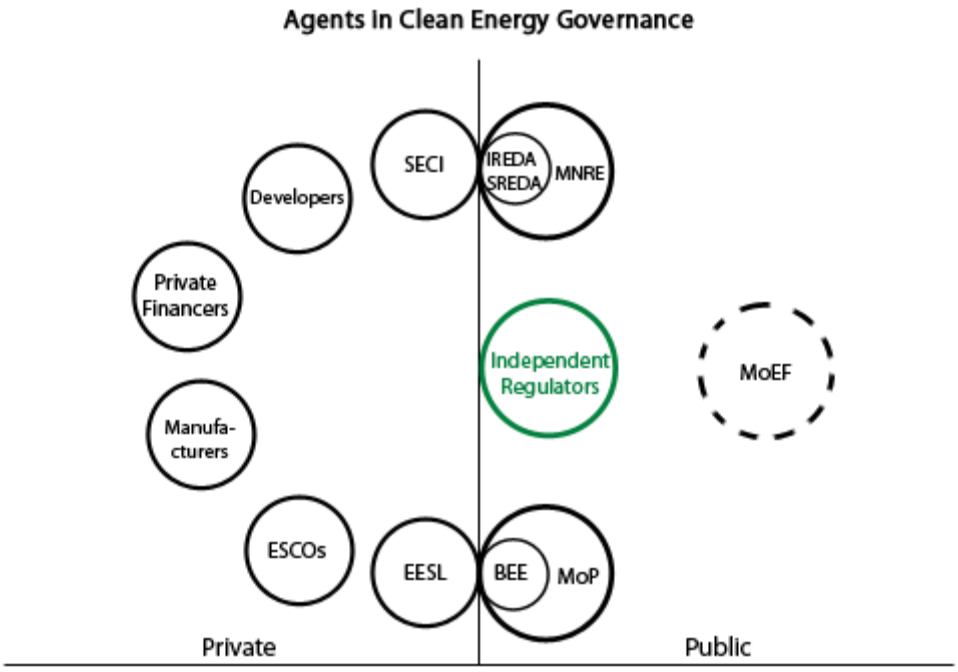
Fifthly, given its diffuse incentives, there appears to be missing vested interests pushing for energy efficiency. Given the lack of government's receptiveness to the benefits of energy efficiency and given the high perceived benefit from renewable energy development, the political will to support energy efficiency is missing. The government seems to be ignoring its high collective return in the form of avoided capacity addition, although it would carry simultaneous individual return in the form of reduced electricity bills. Moreover, low per capita electricity consumption in India is sometimes taken as a justification for lower action on energy efficiency, while growing energy demand makes a strong justification for aggressive renewable energy development. However, the latter could be an equally valid justification for promotion of energy efficiency (Charnoz & Swain 2012).

Finally, energy efficiency is lacking a global governance framework, which could help promote, mandate, motivate and monitor energy efficiency initiatives at global and national levels. Whereas, such a global governance framework is building up for renewable energy with the formation of the International Renewable Energy Agency, the Renewable Energy Policy Network for the 21st Century and regular inter-ministerial international renewable energy conference.

IV. Agency, Authority and Accountability in Clean Energy Governance

In the era of new energy governance, that seeks to achieve multiple objectives of energy security, climate mitigation, energy poverty alleviation and reliable energy for growth, a range of new institutions and actors have been created and/or emerged to take over the responsibilities. These new actors in energy governance, primarily non-state, are not confined to lobbying and advising governments on policy-making and implementation. Rather, they seek a greater role in the clean energy governance by substantive engagement and setting rules for clean energy development. As the Earth System Governance framework suggests, a credible, stable, adaptive and inclusive governance system requires active involvement of these non-state actors (Biermann *et. al.* 2009). This section of the paper discusses who these new actors are, their emergence and engagement in energy governance, what level of authority they hold and whom they are accountable.

These new actors include several public institutions created to perform specific mandates related to clean energy development. For renewable energy development, the state has established an independent ministry (MNRE) and a public agency (IREDA) at national level, and State Renewable Development Agencies (SREDAs) at subnational level to implement mandates forwarded by national agencies. Similarly, for energy efficiency, the state has set up an independent agency (BEE) at the national level to assist the government in developing policies and strategies and coordinate with designated consumers and agencies. However, there is no dedicated agency at the subnational level to implement BEE's mandates, which is as yet being done by the designated agencies.



Even in the presence of these public agencies, a set of non-state actor have been emerged and promoted, primarily for two reasons. First, it comes from the realisation that the elite institutions at the national and subnational level remain sound and functional, but they have less control over their field agents (Pritchett, 2009). As a consequence, national agencies in India are less confident that national policies will be implemented effectively at the local level. In response, the state has taken up a 'market-plus' approach to clean energy development: while clean energy is promoted on market principles, the state has been intensively involved in seeking to build the players and rules that enable these market mechanism to operate (Harrison & Kostka, 2013). Second, the private actors have seen this development as a business opportunity, who have come forward to take up new responsibilities within energy sector. This has further been facilitated by India's shift towards a partnership model, pairing the public sector with the private sector, for energy development.

These non-state actors in clean energy governance include manufacturers, project developers, financing institutions, proactive consumer groups and a handful of energy NGOs. While the manufacturers, project developers and financing institutions have been encouraged (by the state) to take up the business opportunity in clean energy development, the proactive consumers are the direct clients of clean energy and energy NGOs have been trying to keep a watch on the process. What is distinct about the emergence of these non-state actors is that they do not confine to lobbying and implementing mandates of public agencies. Rather, they seek a greater role in clean energy governance by setting the rules for their operation and influencing national policy by providing local inputs. This has been partly possible due to absence of a stringent state policy on the role and responsibilities of these new actors.

However, the proliferation of non-state actors and their involvement have not undermined the relevance of the state in clean energy development. Rather, it has created and sought a greater role from the state in setting

the rules for these non-state actors as well as monitoring them. Besides, when it comes to a public service like electricity, citizens expect the state to deliver and hold it accountable. It is evident in the fact that several elections are own and lost on the grounds of electricity service and price. At the other hand, it is the state agencies who have the authority to make decisions. Though the non-state actors are capable of and often engaged in manipulating state mandated, being relatively new in energy governance they do not have the authority to set norms. The non-state actors can certainly gain the authority through continued engagement in the process over time and across contexts.

Lack of authority in part of the non-state actors is partly an outcome of absence of a proper accountability mechanism. In a pluralised governance system, like the one in Indian energy sector, accountability and legitimacy of the actors are key to sustainability of the governance system. However, as with many other countries (Dubash & Florini, 2011), Indian energy governance is byzantine and fragmented. The sector is controlled by two independent ministries (MoP & MNRE) and a number of state-owned enterprises engaged in everything from generation to financing to marketing of energy. That not only impairs coordination among these state agencies, but also weakens their capability to hold the non-state actors accountable. To make the problem worse, lack of a proper monitoring mechanism provides the opportunity for perverse incentives. For example, a study by the Centre for Science and Environment revealed how a major renewable energy conglomerate has subverted the rules to acquire a stake in the solar incentive scheme that is much larger than legally allowed (Bhushan & Hamberg 2012). Similarly, the ESCOs are keen for businesses that have secure return without any sort of risk. Consequently, they end up conducting only energy audits in most cases rather than executing and investing in actual implementation.

The emergent partnership model is far from being a simple paring between two agencies for a shared goal. Rather it is a complex partnership of multiple agencies with varying capacity and responsibilities. For example, in case of an energy efficiency project, the rules/norms are set by the BEE, implementation is done by the ESCOs, equipment provided by the manufacturer, funding is sought from a financer and above all, it requires consent/willingness of the consumer. The complexity is further aggravated by the fact that neither there is any mechanism for risk sharing nor any of the partners are willing to take the risk. Moreover, clean energy governance lacks an adequate mechanism to ensure accountability among the partners, effective monitoring and evaluation mechanism and proper coordination among the partners.

V. Conclusion: Need for Regulatory Proactiveness

Clean energy governance in India is certainly at an evolving stage. How it evolves in coming years will determine not only India's capability to reduce carbon emission, but also India's energy future and its global stand in climate debates. So, Indian state needs to be cautious in including different actors and interests in clean energy governance and setting rules for their functioning. The proliferation of non-state actors in energy governance and state encouragement is unquestionably useful, particularly when the state agencies are not capable of taking up the daunting task of clean energy development. But it has its share of dangers. It might lead to control by perverse interests making the sector vulnerable to rent-seeking, as it has happened in past.

Most of these deterrents can be removed through proper monitoring, evaluation and

impact assessments. The state needs to prioritise certain issues. There is need to signal clear mandates for the non-state actors with defined role and responsibility. The current mechanisms of monitoring and evaluation are inadequate and allow manipulation. The state needs to strengthen mechanisms of monitoring and evaluation. This can be achieved by strengthening state agencies as well as engaging the civil society and consumers in the process. At the same time, there is a need for ensuring accountability between different actors engaged in the sector. This can bring in coherence in clean energy governance in India.

Any country's ability to devote resources to clean energy development depends on its political-economic context, particularly national income level and perceived developmental co-benefits. For a developing country like India, that has to grapple with other developmental agendas, availability of external funding (private sector investment and transfers from developed countries) would be a key driver for clean energy development. Although India has been able to adopt favourable policies with incentive mechanisms, clean energy development is plagued by low execution of these policies. This calls for a stronger role to be played by the sector regulators. However, the role of regulators would depend on the laws and policies established by the government.

While the existing policy instruments for clean energy promotion are being executed by the sector regulators, there is need for their proactive engagement in monitoring, evaluation and impact assessment. Since the policies are not self-implementing, the independent electricity regulators would emerge as key facilitators (or blockers). The regulators have crucial roles to play in implementing these policies and would affect the pace and pattern of transition from a fossil-fuel driven electricity sector to low-carbon electricity sector.

Moreover, private participation will depend upon the extent to which private sector shares the state goals and the way they are organised and their capacity for collective action. At the same time, the state needs to build the confidence that private activities will be supported- not frustrated- and rent-seeking will be avoided. Being apolitical institutions, the sector regulators can play a crucial role of an arbitrator and help to instil confidence among the private actors. However, to be an effective arbitrator, the regulators need to build their credibility and legitimacy of their decisions among the investors, utilities and consumers.

As discussed earlier, low level of transparency is a major hurdle in Indian clean energy market that promotes rent-seeking and affects competitiveness. The sector regulators must address it by ensuring real-time, credible and usable information dissemination through periodic progress reports that the stakeholders can trust. In that regard, the regulators must be authorised by the state to request information from relevant parties and receive appropriate response.

The governments are usually engaged in designing macro policies that cannot be expected to identify and address all micro issues pertaining to specific technology. In that case, it is responsibility of the regulators to craft rules (or micro policies) while addressing specific cases or disputes as part of their regulatory functions. Though the issues associated with each technology vary, the regulators need not become specialists in each technology. Nevertheless, they need to be aware of the strengths and limits of each technology as policies are developed and employed.

Finally, the governments often tend to pick 'winners', by favouring a particular

technology, and they do mistakes in selecting winners. The regulators must focus on cost-effectiveness of public spending, through proper monitoring and evaluation, and find ways to let the loser go. It is important to recognise the mistakes and withdraw state support to losing technologies before they become too costly. Moreover, considering the social obligations of a developing country and low affordability of Indian consumers, the regulators must make sure that high cost of renewables does not make electricity service unaffordable to the poor.

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