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Website : www.yojana.gov.in
<https://www.facebook.com/pages/Yojana-Journal>

Let noble thoughts come to us from all sides
Rig Veda

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EDITORIAL OFFICE : Yojana Bhavan, Sansad Marg, New Delhi-110001 Tel.: 23096738, 23042511.

Business Manager (Hqs.) : Ph :24367260, 24365609, 24365610

For new subscriptions, renewals, enquiries please contact : Business Manager (Circulation & Advt.), Publications Division, Min. of I&B, East Block-IV, Level-VII, R.K. Puram, New Delhi-110066, Tel.: 26100207;] Sales Emporia : Publications Division: *Soochna Bhavan, CGO Complex, Lodhi Road, New Delhi -110003 (Ph 24365610) *Hall No.196, Old Secretariat, Delhi 110054(Ph 23890205) * 701, B Wing, 7th Floor, Kendriya Sadan, Belapur, Navi Mumbai 400614 (Ph 27570686)*8, Esplanade East, Kolkata-700069 (Ph 22488030) *'A' Wing, Rajaji Bhawan, Basant Nagar, Chennai-600090 (Ph 24917673) *Press road, Near Govt. Press, Thiruvananthapuram-695001 (Ph 2330650) *Block No.4, 1st Floor, Gruhakalpa Complex, M G Road, Nampally, Hyderabad-500001 (Ph 24605383) *1st Floor, 'F' Wing, Kendriya Sadan, Koramangala, Bangalore-560034 (Ph 25537244) *Bihar State Co-operative Bank Building, Ashoka Rajpath, Patna-800004 (Ph 2683407) *Hall No 1, 2nd floor, Kendriya Bhawan, Sector-H, Aliganj, Lucknow-226024(Ph 2225455) *Ambica Complex, 1st Floor, above UCO Bank, Paldi, Ahmedabad-380007 (Ph 26588669) *KKB Road, New Colony, House No.7, Chenikuthi, Guwahati 781003 (Ph 2665090)

SUBSCRIPTION : 1 year ₹ 100, 2 years ₹ 180, 3 years ₹ 250. For SAARC countries by Air Mail ₹ 530 yearly; for European and other countries ₹ 730 yearly.

No. of Pages : 64

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Regulating the Race to Renewables

Ashwini K Swain



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 RE does not make electricity service unaffordable to the poor (both connected and unconnected)

RENEWABLE ENERGY (RE) seems to be considered as a panacea for global climate challenge, while it is perceived to offer developmental co-benefits like energy security. Consequently, there is a race among nations to raise their respective renewable portfolios. More recently, investment on RE capacity addition has exceeded the investment on additional fossil-fuel based generating capacity addition worldwide. Global investment in RE has gone up from US\$ 39.6 billion in 2004 to US\$ 279 billion in 2011. Though it has dropped to US\$ 244.4 billion in 2012, it is largely because of the drop in investment by developed countries and may be partly because of the drop in cost of RE technology. However, investment made by developing countries has been progressively increasing over years. In 2012, the gap between the developed and the developing economies in terms of overall investment shrunk to just 15 per cent. By end of 2012, at least 138 countries had set up RE targets. In early 2013, 127 countries had RE support policies in place, more than two-third of which are developing countries¹.

India's Approach and Aspiration

Keeping with the global trend, India has been an active player in the race to renewables, seeking to expand

its RE portfolio. The country has set a target to raise its RE capacity to 74 gigawatt (GW) by 2022, including 20 GW of solar capacity, and procure 15 per cent of consumable electricity from RE sources by 2020.² With renewable installed capacity of about 30 GW, the country is already a global frontrunner. Over the 12th Five Year Plan period, it aims to install additional 30 GW renewable capacities with a federal outlay of around US\$4 billion. The country has certainly set an ambitious target for RE development. The underlying objective is to achieve domestic energy security while attaining spin-off benefits like regional development, employment generation, globally competitive domestic industries, improved energy access and climate mitigation.³

India started its renewable energy program in 1981 with the establishment of the Commission for Additional Sources of Energy, with the responsibility of formulating policies and programmes, coordinating and intensifying research and development and ensuring implementation of government policies in regard to all matters concerning new and renewable energy sources. The Commission resulted in the creation of an independent Department of Non-Conventional Energy Sources in 1982, which was converted to

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an independent Ministry of Non-Conventional Energy Sources in 1992. In 2006, it was renamed as Ministry of New and Renewable Energy (MNRE). Besides, the Indian Renewable Energy Development Agency was established in 1987 to provide financial assistance for renewable energy projects, followed by creation of State Renewable Energy Development Agencies to implement projects at state level.⁴

India's existing RE development strategy prioritises wind and solar energy technologies. Wind energy has a major share in current and future development as the technology is well mastered and some of the major global manufacturers are based in India. Though solar technology has contributed less so far, it is expected to be the second contributor to India's RE portfolio by 2022 (See Table 1).

Considering limits of state capacity and resources, private sector will play a vibrant role in executing India's RE aspirations. In fact, much of RE development so far has taken place due to the private sector. Under the 12th Five-Year Plan, nearly one-third of the planned investment in infrastructure sectors has been earmarked for the electricity sector, about half of which is sought from private sector.

Proposed mode of private participation is an evolution from the past experiences. Failure of public electrification and limits of market-

first approach has forced the state to implement a partnership model, pairing the public sector with private sector. 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.

Given its role, the state seeks to promote RE development through market players by setting up a favourable policy environment, with complementary policies, incentive mechanisms and R&D support. India has adopted a unique approach to RE development by combining all the policy and regulatory drivers practised globally (See Table 2). It offers the RE producers feed-in tariffs, based on the cost of generation for each technology. Renewable Purchase Obligation (RPO) is a key policy to create demand for RE. Each subnational electricity regulatory commission has set a specific RPO for the utilities in respective states.⁶ The Renewable Energy Certificate (REC) programme is being implemented to penalise the utilities who fail to meet their RPO; they have to compensate by purchasing equivalent RECs or pay a forbearance price. Furthermore, pursuing its aim to be a RE manufacturing hub, the state has employed policy instruments like Domestic Content Requirement (DCR), particularly for the solar, to support

and promote domestic RE technology manufacturing industries.⁷

Stumbling Blocks

Are these policy initiatives enough to achieve India's renewable ambitions? These state initiatives are susceptible to failures and rent-seeking, which will affect India's energy security scenario as well as the development perspectives, let alone climate mitigation. Considering the current scenario, India's approach appears far from its RE aspirations.

Access to private finance is crucial for the development of RE industries, but current interest rates are too high and financing institutions remain reluctant to invest. Moreover, as many of the lenders are nearing the verge of their lending share for RE, they may withdraw from the market, restricting further project development.⁸The government does not yet have a comprehensive strategy so that RE developers can access money to invest.

At the same time, expected return on equity for the developers is significantly low in India as compared to other global leaders in RE. Although India has adopted market-based trading mechanism (like REC) and mandatory policy (like RPO), it has failed to attract investors due to low execution and participation in these schemes. Since its inception in March 2011, 1,22,44,174 RECs have been issued to 2,452

Table 1: Estimated Potential and Development of Grid-Connected Renewable Energy in India (in MW)

Resource	Estimated Potential	9 th Plan (Cumulative Achievement)	10 th Plan Addition	11 th Plan Addition	12 th Plan Addition	January 2014 (Cumulative Achievement)	13 th Plan (Anticipated Cumulative)
Wind Power	1,02,500	1,628	5,464	10,260	1,965	20,298.83	40,000
Small Hydro Power	19,750	1,434	542	1,419	276	3,774.15	6,500
Biomass Power	23,700	389	795	2,021	467	3,798.48	7,500
Solar Power	20-30 MW/sq. KM	2	1	938	828	2,208.36	20,000
Waste to Energy	2,700	--	15	74	7	99.08	--
Total	1,68,950	3,453	6,817	14,712	3,548	30,178.90	74,000

Source: [Tripathi, 2013⁵; MNRE (www.mnre.gov.in)]

Table 2: Key Regulatory Policies in India for Promotion of Renewable Energies

Policies	Year of Enactment	Significant Features/Mandates
Electricity Act, 2003	2003	– Promotion of Renewable Energy by State Electricity Regulatory Commissions (SERCs). [Section 61(h) & Section 86(1) (e)]
National Electricity Policy	February 12, 2005	– Encouraging private sector participation. – Thrust on procurement of renewable energy through competitive bidding process. – Differential tariffs to promote non-conventional technologies.
National Tariff Policy	January 6, 2006	– Directions to SERC’s for taking into account, availability of renewable energy resources in their region and its impact on retail tariffs, while fixing a minimum percentage for purchase of energy from such sources.
National Action Plan on Climate Change (NAPCC)	June 30, 2008	– Renewable energy procurement to be set at five per cent of the total grid purchase, which should be increased by one per cent each year for the next 10 years.
Policies on Renewables: A Report by Forum of Regulators & CERC	November 2008	– Uniformity in regulatory approach to clean energy development. – Promotion of co-generation and generation of electricity from renewable sources of energy.
Jawaharlal Nehru National Solar Mission (JNNSM)	November 23, 2009	– Enhance indigenous manufacturing capacity of solar energy. – 20 GW grid-connected and 2 GW off-grid solar capacity additions by 2022.
CERC Regulations on Renewable Energy Tariff	December 3, 2009	– Following a cost-plus approach in deciding the power purchase tariff. – Generation based incentives. – Sharing clean development tariffs. – 100% proceeds from CDM to be retained by the developer.
CERC Regulations on Renewable Energy Certificates	January 2010	– REC was introduced as a tradable commodity and the states deficient in renewable energy source can purchase the same to meet their RPO requirement. – Encourage competition to reduce costs.

registered RE generators, but only 63,54,206 RECs had been redeemed by April 2014.⁹ 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 RE sources, the cumulative achievement for the year was 5.01 per cent.¹⁰ There is 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 RE development.¹¹

Even when finance and compliance issues are addressed, lack of transparency in RE market can be a major barrier, impeding competitiveness in the sector. The lack of market transparency that prevails in the sector may result in rent-seeking and market distortion. A study by the Centre for Science and Environment reveals how a major conglomerate has subverted the rules to acquire a stake

in the JNNSM that is much larger than legally allowed.¹²

Need for Regulatory Proactiveness

Most of these deterrents can be removed through proper monitoring, evaluation and impact assessments. Any country’s ability to devote resources to RE 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 RE development. Although India has been able to adopt favourable policies with incentive mechanisms for RE developers, RE 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 in facilitating RE would depend on the laws and policies established by the government.

While the existing policy instruments for RE promotion are being executed by the sector regulators, there is a 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 RE based 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 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 RE 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 RE technology. In that case, it is the 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 RE technology varies, 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 make 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 RE does not make electricity service unaffordable to the poor (both connected and unconnected).

Regulating the race to renewables will require creative manoeuvres and bundling of interests and policies, and may help to build private sector capacity and foster state-business relations. If successful, India could lay out a path for promotion and regulatory governance of RE in other developing countries.

Endnotes

- 1 However, as the sector has matured, there is an increasing trend of revisions to existing RE policies than adoption of new policies and targets.
- 2 The target includes only grid-connected RE capacity. However, India has separate off-grid RE targets, including two GW off-grid solar capacities by 2022.

- 3 Swain, A. K. & Charnoz, O. (2012): ‘India’s Clean Energy Paradox’, *Business Standard*, 7th December, New Delhi.
- 4 Charnoz, O. & Swain, A. (2012): ‘High Returns, Low Attention, Slow Implementation: The Policy Paradoxes of India’s Clean Energy Development’, *AFD Working Paper 125*, Paris: Agence Française de Développement.
- 5 Tripathi, A. K. (2013): ‘Three Decades of Renewables in India’, *AkshayUrja*, 6(5&6): 10-17.
- 6 The national target was set at 5 per cent for the FY 2009-10 and to be increased by 1 per cent for the next 10 years, with the aim to procure 15 per cent of consumable electricity from RE sources by 2020. The policy also makes a provision for solar-specific RPO set at 0.25 per cent in 2012 and to be raised to 3 per cent by 2022.
- 7 In the second phase of JNSSM, 50 per cent of the capacity addition is allocated for projects with DCR, where the developers are required to procure Indian made solar cells and modules.
- 8 Nelson, D., Shrimali, G., Goel, S., Konda, C., & Kumar, R. (2012): *Meeting India’s Renewable Energy Targets: The Finance Challenge*, San Francisco & Hyderabad: Climate Policy Initiative & Indian School of Business.
- 9 Renewable Energy Certificate Registry of India, available at www.recregistryindia.nic.in, accessed on 07th April 2014.
- 10 Greenpeace (2013): *Powering Ahead with Renewables: Leaders & Laggards*, Greenpeace India.
- 11 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. 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.
- 12 Bhusan, C. & Hamberg, J. (2012): ‘The Truth about Solar Mission’, *Down to Earth*, 20 (16). □

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