

Summary Report of the Structured Dialogue on Policy and Regulatory Interventions required for supporting Distributed Renewable Energy (DRE) Projects organized by Prayas Energy Group along with NCPRE, IIT-B and held in IIT-Bombay on 2nd April 2012.

Introduction and Background: Nearly 33% of the total Indian Households (HHs), mainly residing in rural India still have no access to electricity. As per the latest 2011 census data, 55% of rural HHs and 93% of urban HHs have been electrified.¹ Similarly roughly 42,000 villages (7%) in the country still remain un-electrified.² The Central Government's initiative in electrifying rural households primarily involves extending the centralized grid (which is based on large conventional and renewable energy sources) to villages under the Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY). The scheme includes installation of distribution infrastructure and free connections to BPL HHs. While RGGVY has managed to provide a significant number of connections in a short time, the lack of reliable and sustainable electricity supply remains an issue with rural electrification. The reason for this is the structural disincentive that the Distribution Company (DISCOM) faces while supplying power to the rural poor, which makes electricity supply to the rural poor a commercially losing proposition. This structural disincentive for DISCOMs to supply electricity to rural HHs can be overcome through targeted policy measures like allocation of low cost power.

In addition to providing access through the centralized grid, an important area which merits attention is that of **Distributed Renewable Electricity (DRE) systems**, (typically a few kW to a few hundred kW capacity) for specific areas, which if implemented effectively can have a large positive impact of local development. In this regard, both Ministry of Power (MoP), through its DDG (Decentralized Distributed Generation) Policy and Ministry of New and Renewable Energy (MNRE) through its various schemes have been promoting DRE. MNRE plays a role in rural electrification by implementing renewable energy projects in off-grid decentralized mode at the locations where extending grid electricity have been deemed unsuitable (economically or technically). Presently MNRE has managed to electrify over 9000 villages with a mixture of biomass gasifiers (16 MW), small wind/hybrid systems (1.5 MW), SPV systems > 1 kW (81 MW) and 2025 micro hydro projects.

Given the high specific costs (lakhs/kW) of small scale renewables and the much higher O&M costs in remote locations, the resulting cost of generation and hence the tariffs are quite high in comparison to the grid based tariffs. High cost of generation is a reality in spite of the capital subsidies availed by the implementing agencies/developers. Battery replacement costs (solar PV) and arrangements for assured affordable biomass supply add to the challenge of affordability. The variety of business models in vogue coupled with a weak implementation and Monitoring and Verification framework adds to the complexity of the DRE sector. There is also a perceived risk for developers that their projects may lie defunct once the centralized grid reaches such villages. Integrating DRE systems to the grid would address some of these issues, but currently there are many barriers to this. There is a need to provide a multi-dimensional push - in the technical, financing, policy and regulatory dimensions – to ensure

¹Source of Lighting; Houselisting and Housing Census Data Highlights – 2011; available at http://www.censusindia.gov.in/2011census/hlo/hlo_highlights.html

²Progress report of village electrification as on 31.12.2011, Central Electricity Authority (CEA), Govt of India.

successful grid integration of DRE systems so as to compliment conventional grid based electricity access initiatives.

Present DDG guidelines as well as guidelines of the Remote Village Electrification (RVE) Program of the MNRE also state that consumer tariffs for DRE electrification projects should be in line with existing tariffs in neighbouring areas (as per DDG) and those electrified through grid (as per RVE). Presently there is no policy or regulatory mechanism to de-link the project financial viability from the high consumer tariffs being levied on the off-grid consumers to ensure adherence to such guidelines. High tariffs reflect a willingness to pay, (at least of few HHs in the community and for very essential services like lighting), especially is one considers it against the backdrop of high cost of kerosene based lighting, however the long term sustainability of such projects remains a question.

All these issues give such off-grid projects a very high risk factor and hence there is very little financing available for off-grid DRE projects, which limits the scale of the program in spite of several enabling legal and policy provisions. Financing is currently limited to government subsidies or through donor-driven programs. Hence it is observed that while DRE has significant potential for socio-economic development by providing quick access to electricity, ground experience shows that a number of DRE systems are non-functional on account of a variety of reasons, leading to a loss of effectiveness of the projects/programs.

To address some of the above issues, Central Electricity Regulatory Commission (CERC) and Forum of Regulators (FoR) are currently evaluating possible options under the regulatory framework to support DRE programmes to enable effective electricity access to remote rural households in India. ABPS Infrastructure Advisory Pvt Ltd., with support from Shakti Sustainable Energy Foundation, recently submitted a report³ on policy and regulatory changes required to support community level off-grid projects to CERC/FoR. The framework proposed under the report has been accepted by FOR, and it is expected that FoR will come up with regulatory guidelines for DRE projects in future.

It was in this context that the Prayas Energy Group, along with the National Centre for Photovoltaic Research and Education (NCPRE), Indian Institute of Technology Bombay (IITB) organized a structured dialogue with an objective to share emerging policy and regulatory options and new business models for the effective and large scale deployment of DRE. The event was attended by nearly 50 people representing academia, policy makers, project developers, regulators, civil society groups, utility and funding agencies.

The dialogue began with Mr. Balawant Joshi (Director, ABPS) presenting the findings of the above mentioned study report, *“Policy and regulatory interventions to support community level off-grid projects”*. He began by expounding the existing policy and regulatory provisions for DRE and described the challenges in rural electrification through the DRE route. He further explained the results of the techno-economic analysis done for the four major DRE sources, namely solar PV, SHP, biomass gasifiers and PV-small wind hybrids. This clearly brought of the high cost of generation and the need to cover the incremental costs if consumer tariffs were to be kept equitable as demanded by policy. After nothing

³ The full report is available at <http://www.shaktifoundation.in/Reports_Details.asp?mnu=x_resources_Reports&rid=75>

the pros and cons of the existing business models, he also pointed out that any generic future business model should be such that, (a) it must work both with grid and off-grid setup, (b) should be compliant with EA 2003 and existing policies, (c) as far as possible allow for internalization of costs of rural electrification, (d) avoid conflict between programmes of two ministries, and (e) should promote private sector involvement. The presentation recommended a new business model for off-grid DRE, namely ***“Off-grid distributed generation based distribution franchise model (ODGBDF)”*** in which the project developer shall provide electricity service to consumers and collect revenue (consumer tariffs). DISCOMs will provide generation tariff (decided by the SERC) to project developer and receive financial assistance from the Government of India if any. This new business model provides more revenue certainty to the developer and further allows for effective grid integration of off-grid projects.

The presentation was followed by in depth discussions with all present stakeholders on various issues such as selection of project developer and village, private sector participation, role of utility, utility - operator interface, role of village energy committee (VECs), monitoring and verification (M&V), service obligations for DRE projects, nature of subsidies (capital vs. revenue) etc.

Important issues/comments emerging from the discussion:

1. The proposed model has enhanced remote rural electricity access with equitable tariffs as its central focus. This framework has the added benefits of allowing the DISCOM to meet two objectives of remote area electrification under its Universal Service Obligation (USO) and Renewable Purchase Obligation (RPO) compliance to some extent. It has the promise of large scale deployment due to higher revenue certainty, policy compliance and therefore higher bankability.
2. Some participants expressed concern over whether new regulation in the DRE space will help the growth of the sector or will act as an additional barrier. There were suggestions to the effect that the new off-grid regulations should be facilitating, simple, self-explanatory, and flexible to adapt to local conditions and allow for continued innovation in this rather nascent field. However the counter to this argument was that regulation brings in much needed policy and operational clarity with market and revenue certainty through PPAs and hence would in fact allow stronger growth. Hence some key aspects of the regulations, especially with regard to tariffs, M&V, selection of area and developer and performance standards etc have to be clearly defined.
3. With regard to electricity pricing, especially in remote areas, one needs to distinguish between cost of generation and cost of delivery. There was a view among a few practitioners that actual costs on the ground were much higher than those considered in techno-commercial analysis and hence the need for higher tariffs to allow for private sector participation. There was concern over deciding biomass tariffs, since biomass rates vary widely and tend to increase once the project comes online. Another common concern for all developers was getting subsidies and incentives released in a time bound and procedurally simple manner. There was some apprehension with regard to getting payments from DISCOMs on time and hence the specific suggestion that such an express provision should be provided for in the PPA.
4. On the question of selection of Project Developer, the draft model suggests First Come First Serve (FCFS) selection to be done by the local DISCOM. FCFS was proposed since it was easier to implement with a decentralized decision making process, since top-down centralized schemes have not worked

that well. Also FCFS would have an early mover advantage. There was a suggestion of having an empanelled list of developers to select developers. There was some discussion around the possibility of competitive bidding as a route for selection. With regard to the selection criteria, the parameters would be the discount offered under the reverse auction or the viability gap needed, the earlier track record and the social acceptance. However it appeared that this would be procedurally involved and complex.

5. Closely linked to the question of developer selection is that of optimal development with regard to choice of technology/resource deployed. FCFS might lead to non-optimal deployment of technologies, for e.g.: solar PV might be deployed in villages where there is sufficient low cost biomass/micro-hydro potential. One line of thinking was of having third party independent area resource reviews done prior to selecting technologies, especially with regard to biomass and micro-hydro which require more lead time.
6. With regard to village selection, many participants suggested that while it is alright to start with un-electrified remote villages, DRE should also be seen as complementing grid access, especially where supply is limited and hence even villages which are certified as “electrified” but have limited supply can also be included. The proposed model allows for this, subject to SERCs making provisions to that effect in their regulations. Another suggestion was to select areas rather than villages where clusters of households do not have access even in electrified villages or areas which use significant diesel based pumps for irrigation if feasible. The project developer should strive for universal service obligation in the given area for a new DRE project.
7. Another important issue discussed was State rural electricity plans. States need to publish up to date plans which need to study the comparative cost of line extensions and DRE for a particular areas, based on which states could give guidelines on which villages/areas can be explored for DRE and which technologies are more suited for such areas. If no developer comes forward for any area then it would be the responsibility of the DISCOM under USO to provide access.
8. On the question of preferred mode of subsidy, there was near unanimous consensus that it is time to move to performance based revenue incentives rather than capital subsidies. Additionally incentives should not be based on fiscal disbursements but rather it is better to leverage the DISCOM’s ARR and internalize DRE costs. Revenue incentives also ensure that the developer has a long term interest in sustaining the DRE project.
9. The model suggests that the Distribution franchisee framework under RGGVY could be adopted for DRE projects but there was concern that such input based franchisee models have not worked satisfactorily in the field and hence there was doubt whether they will work in the given case. There is need to review this issue and provide for large flexibility on this front.
10. Everyone agreed that quality, performance and service standards/codes are very important and should be put in place urgently. Service standards should be enforceable and should be linked to specific incentives/disincentives. This is closely associated with the need for a strong Monitoring and Verification (M&V) framework which is currently missing. Such a framework is a must to go forward, instil confidence in the program and scale it up. With regard to M&V of electricity generation, the DISCOM should certify actual generation. A review from a group of experts, especially at the construction and installation stages could be very helpful for the effective long term operation of the DRE project.

11. With specific contractual foresight, the proposed model allows for proper integration of off-grid projects with the grid as and when feasible. However it was felt that with respect to weak Indian rural grids, integration is not at all easy and leads to a significant loss of generation when the grid is not live and would further lead to questions over compensation to Developer over loss of generation. With respect to solar PV, it was noted that integration would need the shift to on-grid inverters and the cost of this switch-over should be borne in mind.
12. Some other points which were mentioned were that (1) electricity generated in DRE projects should be used locally and only surplus should be allowed to be fed into grid, (2) the model regulations should incentivize market aggregation and the use of Super Efficient Appliances in such projects, (3) that the DISCOM should be sufficiently incentivized to take part in this scheme and that it should be mandatory on the DISCOMs to sign the PPAs and (4) according priority lending status for DRE to make financing more accessible and the removal of service tax on electricity distribution to reduce costs.
13. There was broad consensus that much more stakeholder discussions and interactions are needed to work out finer details and specifics of the proposed model and regulations and that it is essential to leverage the experiences of developers and social entrepreneurs who have worked extensively in the area of DRE based rural electrification and use their insights.

The second half of the dialogue saw a presentation on a new initiative titled, “**Smart Power for Environmentally-sound Economic Development**” (SPEED)⁴ and was followed by discussion. Mr Shrashant Patara from TARA presented the SPEED initiative. He began by stating that the long term goal of the initiative was to make a *“positive impact on lives of poor by providing affordable, reliable clean energy to rural communities, thereby improving the quality of life and enhancing livelihood security”*. It also aims to establish a replicable mechanism through the delivery of reliable, affordable and clean electricity. The central idea behind the model is to make use of an anchor load, in this case the telecom tower load to make the economics of the project work. The SPEED framework envisages an ESCO-Aggregator concept with a local plant operator, a system more suited considering the needs of investments and the *“financial imperatives for scale-up”*. The initiative would like to implement successful pilot projects in 30-50 villages and demonstrate sustainability of the model and would like to focus on the states of Jharkhand, Bihar, MP, Chattisgarh, Orissa and West Bengal.

The presentations made during the event can be downloaded from the following link (<http://www.prayaspune.org/peg/publications/item/169-structured-dialogue-on-policy-and-regulatory-interventions-required-for-supporting-distributed-renewable-energy-dre-projects.html>).

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For more information on Prayas activities and its publications please see www.prayaspune.org/peg

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⁴A new initiative titled, Smart Power for Environmentally-sound Economic Development (SPEED) has been launched by the Rockefeller Foundation which aims to develop new scalable business models to address energy access. More information at the following link <<http://www.rockefellerfoundation.org/news/publications/speed-smart-power-environmentally-2>>