



Green Growth and Energy Transformation

Solar for Education

Outreach Meeting

October 11th, 2018, Kolkata

Report of Proceedings

1. Background and Introduction:

CUTS International in collaboration with Bask Research Foundation, Earth Day Network and Seva Kendra Kolkata organized an Outreach Meeting on 11th October, 2018 in Kolkata. The workshop witnessed participation from educational institutions, solar project developers, financial institutions, media and Civil Society Organizations. CUTS International in association with Bask Research Foundation, launched a training manual for consumers on installation of rooftop solar for both Grid Connected and Off-Grid system. The manual would be an open source document that can be used by any stakeholder interested in installing rooftop solar to better understand its various technical and financial aspects.

2. Summary of Proceedings

Abhishek Kumar, Director, CUTS International while delivering his welcome address said that the key feature of the module is that it was not solely developed by either CUTS or BASK, but rather it has evolved through a series of discussion with stakeholders and the Seed Community Members (SCM). He mentioned that CUTS and all the Seed Community members, who has been a part of the project, believe that by addressing the various information gaps regarding rooftop solar, the manual would be effective in facilitating greater uptake of rooftop solar system, not only in the states of West Bengal and Rajasthan but also in other parts of India. Dr. Karuna Singh, Regional Director Asia & Country Director, India, Earth Day Network, set the tone of the meeting by referring to the recent special report released by IPCC on 08th October, 2018. She told that that the initiative of Rooftop solar for educational institutes has a multiplier effect in terms

Box 1. Apprehensions expressed by Educational Institutions regarding Rooftop Solar during Forum of Grassroots Meeting

Some of the biggest challenges facing these Institutions is the lack of awareness pertaining to the following issues:

- Cost of installation which requires changing from single phase system to three phase system among others;
- The procedures involved in installation of GRSPV i.e. documents to be submitted, approvals required etc.;
- The Government / Private Agencies to be approached for installation of GRSPV;
- The monetary benefits accruing to the Institutions after installation of GRSPV i.e. how much investment will be required, what would be the approximate cost savings, what would be the average payback period; and
- The cost and process of maintenance of the solar panels.



of making the future generation more aware about the various renewable energy options and also through them, make their families informed that installation of rooftop solar is possible. The training manual, she added, would be a tool to address various apprehensions among stakeholders regarding rooftop solar.

Arnab Ganguly, Assistant Policy Analyst, CUTS International alongwith two Seed Community members Simran Grover, CEO, Bask Research Foundation and Satrajit Sanyal, Chief Advisor - Knowledge Management & Communication, Optima Solutions Consulting, made a small presentation explaining the approach, methodology, key learnings and way forward for the Grow Get project.

Following the presentation there was a panel discussion on what are the challenges and opportunities for promoting rooftop solar and also what are the emerging issues in the sector.

Key aspects that emerged from the meeting are as follows:

2.1. About the Training manual: An overview of the training manual - purpose, structure and who all can benefit from the manual

Training manual was developed to help address the lack of awareness among educational institutions, financial institutions, solar project developers and civil society organisations on rooftop solar. The overall objective was to address the stakeholder concerns effectively and help them to adopt solar as an alternative source of electricity. The training manual would be an open source document and can be used by all category of stakeholders including the Government.

The training module encapsulates following aspects:

- How to evaluate different models
- Technical and engineering aspects, practices as well as challenges
- Discussion on quality of the modules as well as other components
- What are crucial components of the system
- Source of finance
- Ways to optimize cost
- Permissions required
- How to estimate return on investment
- Essential components of the contract to be signed between customer and developer
- Maintenance procedures of solar panels.

While the manual will help potential consumers to understand the technical and financial nitty gritty of installing rooftop solar, it will also help them in evaluating different project and to understand how to ensure maximum generation from the installed system. The project developers can refer to it for technical and operational usage. Financial institutions can refer the manual to identify the technical and financial risk involved in financing rooftop solar projects and how to mitigate those risk. The Government can use the manual as a means to generate awareness and



build capacities of the potential consumers on rooftop solar. In addition, since the manual will function as a business blue print, it would be instrumental for investors who are willing to invest in the area of greater uptake of solar.

2.2. Storage Solutions: Future of Solar

One of the constraints of solar energy is that it is available only in day time. So, if any institution needs to use solar power at night too, batteries have to be established to store the energy. Initially, lead acid batteries were used, but at present the most popular technology available in the market is Lithium-ion batteries for storage. It was argued that the Lithium-ion batteries not only have a longer battery compared to the lead acid batteries, but they also allow fast charging. More and more solar project developers are presently preferring Lithium-ion batteries instead of the lead acid batteries. It was also highlighted that the Government is presently considering policies to facilitate popularizing the use of lithium-ion batteries.

It was also pointed out that while storage is feasible but it adds to the cost to consumers. The cost of storage alone ranges from Rs 8-10 per unit. Assuming that on an average cost of generating electricity from solar is Rs 4 per unit, the total cost for using solar at night ranges between Rs 12-14 per unit making the project not viable compared to coal-based electricity projects. As per market projections, the cost of storage by 2020 is expected to be Rs 6 per unit, but even this rate is considered as high except in few cases. Moreover, disposal of batteries is hazardous so based on concern for environment use of batteries is not advocated.

These concerns, as underlined, should be considered before a consumer chooses whether to go for grid connected solar (without storage), or, to go for off-grid systems (that required storage).

It was suggested that depending on the quality of electricity available, a consumer should choose which model to choose. In this regard, it was suggested that batteries could not be avoided where grid connectivity is not stable or absent. But in places where the grid is stable and consumers get good quality of electricity round the clock. In addition, the consumers need also to base their installation decisions on the cost of implementation. It was emphasized that to minimize the cost of off grid systems with storage, the developer needs to identify accurately the amount of electrical load required and choose capacity of batteries accordingly, to minimize battery usage and hence cost of project.

2.3. Scaling up the idea of rooftop solar: Suggestions from the participants

Few ideas to scale up the project those evolved during the discussion are as follows:

- Often many initiatives of installation of rooftop solar fail at the implementation level itself owing to lack of shared ownership among the stakeholders. Therefore, there is a need to create the required demand pull and corresponding supply push to facilitate greater uptake of solar.



An ideal situation could be like Scotland, where households keep getting proposals from solar project developers to rent out their rooftop for solar installation.

- There is a need to reachout to various potential consumers and not only to educational institutions and demystify how these potential consumers can benefit from installation of rooftop solar. This is especially imperative to convince electricity consumers in cities like Kolkata that faces minimal power outages. In this regard, the training manual could be instrumental.
- Religion can also play a major role in mobilizing people and convincing people to adopt solar.
- Successful models and case studies should be highlighted more and more to convince people. Moreover, the implementers of the successful models should come forward and highlight their experience of installation, implementation challenges as well as their feel about the entire project. Installation of rooftop solar in educational institution should be given utmost priority. Our future being in the hands of the Students and they being exposed to the concept of renewable energy will help them to weight its importance. This will create social mass that will take lead in social transformation.
- It was pointed out that different sector and/or communities will have different requirements for installing rooftop solar. Facilitating greater uptake of rooftop solar would require identifying community/income group specific needs. To this end, one of the strategies to promote rooftop solar could be to set up task force that would understand, document sector/community specific requirements and communicate the same to the Governments. The task force could take a step forward and carry out cost-benefit analysis in those clusters. Further they would identify capacity of the systems so as to make the systems complementary and not substitute to grid electricity. This in a way also help in keeping the DISCOMs into confidence, as they often fear loss of revenue.
- Regulatory interventions in the following areas were also underlined for greater uptake of solar in the state:
 - According to the State Regulation, a consumer can only install GRSTPV if his/her minimum installed capacity is 5KW. The same needs to be revised to 1KW to encourage even individual consumers to install GRSTPV. This will also be important since an institution might consider starting with a small load and then later on step up capacity if he/she find it profitable;
 - The Net Metering Policy was often considered restrictive. This is because, as per the regulations a consumer can sell only 90% of the electricity consumed from the grid. An institution/consumer will not get paid for the balance 10% of the electricity injected to the grid. Such kind of restrictions need to be addressed.



3. Way forward

The participants suggested the following as way forward for the Grow Get project

- CUTS International will deepen their work in the area of rooftop solar and identify strategies to do the same;
- CUTS International to look into other areas where renewable energy interventions are an imperative viz. electric mobility;