

Multi-stakeholder Workshop on
De-risking Investments in decentralized Solar Solutions
29th January 2020, New Delhi

The National Action Plan on Climate Change (NAPCC) and India's Nationally Determined Contributions (NDCs 2030) draw the framework for a low carbon pathway. Keeping energy security and environmental protection in mind, India has worked towards increasing renewable energy capacity in the country with a heavy reliance on the Solar Energy sector. The Government, through its strong and transformative initiative, Jawaharlal Nehru National Solar Mission and subsequent policies, regulations and acts at the central and state levels, has achieved a cumulative commissioned solar capacity of over 33.8 GW by December 2019.

It was in the preparation of COP-21 in Paris that PM Mr. Narendra Modi announced India's ambitious target of 175 GW of renewable energy by 2022, which recently was raised to 227 GW for 2022. Setting this ambitious target, it was highlighted that it would be important to get foreign investment inflows so as to achieve these targets and the developed nations would have a huge role in enabling this transition. It was also opined that foreign investment inflows may be difficult at the scale required to meet India's solar energy targets if investors perceive Indian solar projects to be risky. Some of the policy measures which came into effect in the recent past have raised concerns on the risk profile of the sector. Some of these included GST regime, imposition of safeguard duty, tariff ceilings in the biddings, and timely availability of land, besides payment delays. Though Government of India is making efforts to address these issues, there is still a gap in putting effective risk management mechanisms in place, which would not only facilitate foreign institutional investors, but also uplift the sector and its actors, especially DISCOMS from financially difficult positions.

In keeping with the above, The Energy and Resources Institute (TERI) and Germanwatch, in association with Climate Action Network-South Asia (CANSAs), Vasudha Foundation, and the Centre for Study of Science, Technology and Policy (CSTEP) are working towards "*De-risking Foreign Investments in the Indian Solar Energy Sector*" through a multi-stakeholder approach. The objective is to identify and formulate effective risk management instruments, with inputs from policy makers, financial institutions, civil society and sectoral stakeholders.

The proposed thematic track is the sixth in a series of workshops held across India. The first workshop in New Delhi conducted on 30th April 2018, focussed on identifying key challenges and categorization of risk in the solar sector. The second workshop in Mumbai conducted on 30th August 2018, focussed on identifying key financial risks and potential de-risking strategies, along with roles and responsibilities of key actors in this endeavour. The third conducted at Intersolar 2018, Bengaluru focused on financial barriers to solar

financing. The fourth held as part of WSDS 2019 dealt with barriers in solar financing. Another workshop organised during Intersolar 2019, Bengaluru focussed on new and emerging business opportunities.

In this thematic track, we delve into key risks associated and their mitigation strategies. with the decentralised applications like Solar PV Rooftop, Solar Pumps, which is seen as one of the important strategies to scale up installation of solar capacities.

SPV Roof Top – Changing Scenario

Energy demand patterns are changing, due to consumer preferences, energy efficient practices, adaptation of smart appliances, and digitalization. Owners of systems in agricultural sector, roof top segment are transforming as “PROSUMERS” from simple consumers. Decentralised energy demand and supply modes change the current business practices.

Enhancing the slow moving roof top installations, currently at about 4.06 GW capacity accounting only up to about 12 % of the all solar power installations, needs comprehensive approach overcoming the challenges. About 12 GW per annum of roof top business is a tall order of the day to meet the ambitious 40 GW target by the year 2022. Commercial and Industrial segments considering better cost economics of solar power vis-à-vis grid power lead the roof top installations with a share of 70%. Grid power tariffs at Rs. 7.1 per kWh for commercial and Rs. 6.2 per kWh for industrial, clearly makes way for solar with tariffs at about Rs. 3- to 4 per kWh providing approx. 50 % saving and with higher potential in future to the C&I segment. Implementing roof top business thru CAPEX and OPEX models, for commercial and industrial sectors, with CAPEX leading at 65 % share, are moving in the direction of OPEX due to high upfront costs and lack of O&M capabilities among roof top owners. State DISCOMS resistance as they lose their potential customers, lack of standardization and proper implementation of the regulations of different states pose challenges to roof top segment.

Residential sector, at a national average tariff of Rs. 4.97 per kWh still needs better motivation in terms of financial benefits. Low awareness of the benefits of green power compared to the grid power is one of the limitations for lack of penetration.

Financing roof top project developers and consumers is a potential challenge. Complexity of lending to roof top segment in particular and energy sector as a whole is increasing and is associated with risks. Addressing the risks on a long term and proposing measures to address would be beneficial. Assessing companies seeking loans is, for certain a stupendous task for FIs to understand their credit worthiness, due to lack of strong balance sheets. In addition, assessing EPC contractors, quality of modules and BOS equipment, AEP and return projections puts FIs in complex situations.

Innovations like containerized solar PV, PV port are being introduced in to the market. A knowledge sharing platform, State Rooftop Solar Attractiveness Index (SARAL) developed help investors identify states that are attractive for rooftop solar investments.

Solar PV based water pumping

Water is essential for daily drinking and other needs, besides agricultural requirements. It demands huge power for pumping and that too at competitive prices. Diesel pumping is ubiquitous. Substituting diesel and conventional power by SPV pumping, saving environment contributing towards carbon reduction, is increasing rapidly across globe. Solar photovoltaic pumping systems offer reliability, flexibility and low maintenance for a wide range of applications such as irrigation, livestock and potable water. Solar photovoltaic water-based water pumping systems such as surface, floating, and submersibles can provide a wide range of solutions to the problem of finding a reliable power for irrigation and drinking water in India and elsewhere.

Approximately 86% of India's typical pump systems are DC surface suction type, 2 percent are DC submersible type, 2 percent are DC floating type, and rest are AC submersible type. The type of solar pumping system needed is determined by the nature of the well either being deep well, bore well or open well.

The Ministry of New and Renewable Energy (MNRE) has recently rolled out a massive solar-pump programme called the PM-KUSUM scheme. The scheme has a goal of setting up solar capacity of 25,750 MW to power irrigation pumps by 2022, with central financial support of around \$4834 million. It includes installation of 1.75 million off-grid and 1 million on-grid solar pumps. Another 10,000 MW of solar capacity in rural areas by means of 0.5 MW to 2 MW of decentralized ground-mounted plants are part of the scheme. This power will also help solarising the grid and meeting the states RPO mandates.

Apart from this, the International Solar Alliance (ISA) has achieved global attention by bringing down the cost of solar-powered agricultural pumps by half (Approx.\$800/HP) through the largest global price discovery exercise rolled out across 22 member nations via India's state-run EESL, in a potential order valued at \$2.7 billion.

Assessing risks, providing proper data to FIs and all the stake holders and giving comfort to their decision making, is pertinent. Accelerating the roof top, pumping and other applications business and help achieve the national targets need a multi- pronged approach, with innovations in financing, technology and new business models is the need of the hour. The thematic facilitates debate on this, resulting in deriving appropriate out comes.