



Institute for Energy Economics
and Financial Analysis

Scaling up Rooftop Solar Deployment in Bangladesh

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Agenda



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01. Snapshot of IEEFA
 02. Background of the Study
 03. Bangladesh's Rooftop Solar Sector
 04. Factors Affecting Rooftop Solar Expansion
 05. Changing the Status Quo
 06. Way Forward

Snapshot of IEEFA



The Institute for Energy Economics and Financial Analysis (IEEFA) is a non-profit global impact think tank that produces a significant volume of original independent public interest research and analyses on issues related to sustainable energy markets, trends, regulations, and policies.



Intellectual leadership

We produce cutting-edge, solutions-focused analyses. We don't just highlight the problems – we offer ways to resolve the issues and roadblocks that stand in the way of a zero-emissions future.



Independence

We are an independent non-profit think tank. Our analyses are thoroughly researched, fact-based, and data driven. Our work is free from political influence, corporate and sectoral interests.



Nimble

We act on signals across the energy and finance spectrums in South Asia and worldwide. Our analyses are timely and relevant. We can learn, adapt, and move quickly.



Trust

IEEFA is a trusted voice on issues related to sustainable energy markets, trends, regulations, and policies.



Impact

Our work makes a positive impact in the world. We aim to accelerate the energy transition to help achieve a cleaner future for humankind and the planet.

Background



- Roofs are a great resource for generating highly cost-competitive solar energy; Yet the progress on the ground (Bangladesh) appears slow;
- The interest in taking up rooftop solar systems among building owners of different categories seems scattershot;
- Information asymmetry and capacity gap persist in the sector; Among other things, Interested parties also experience challenges in arranging finance;
- Against the background, the study “Towards a rooftop solar transition in Bangladesh” assessed the rooftop solar sector holistically, identified challenges and offered probable solutions;



Focus of the Study and Methodology



Key focus of the report

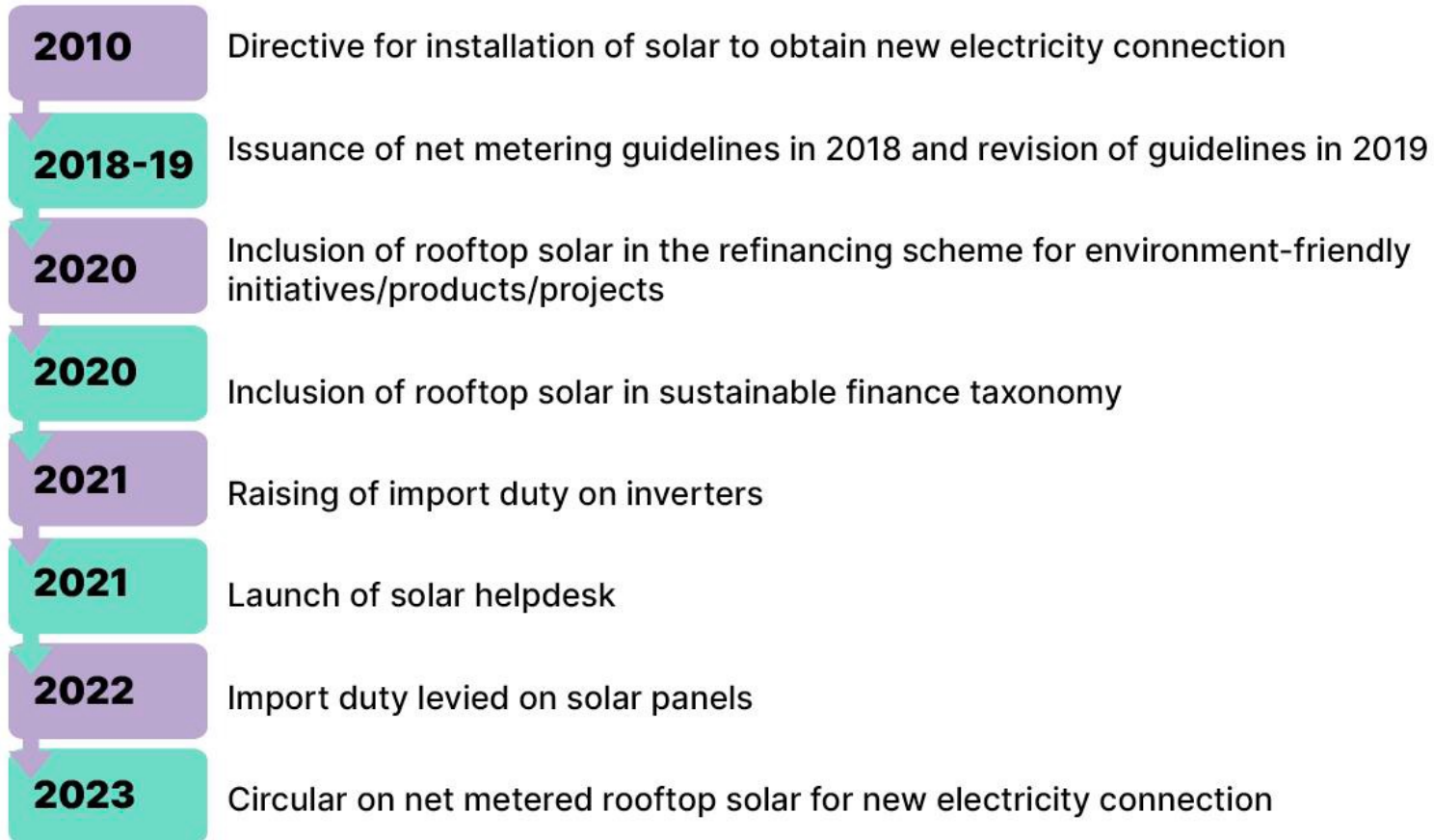
- a. Major challenges of the rooftop solar sector.
- b. Measures to address the challenges.
- c. Policy-level interventions to change the status-quo.

Steps followed



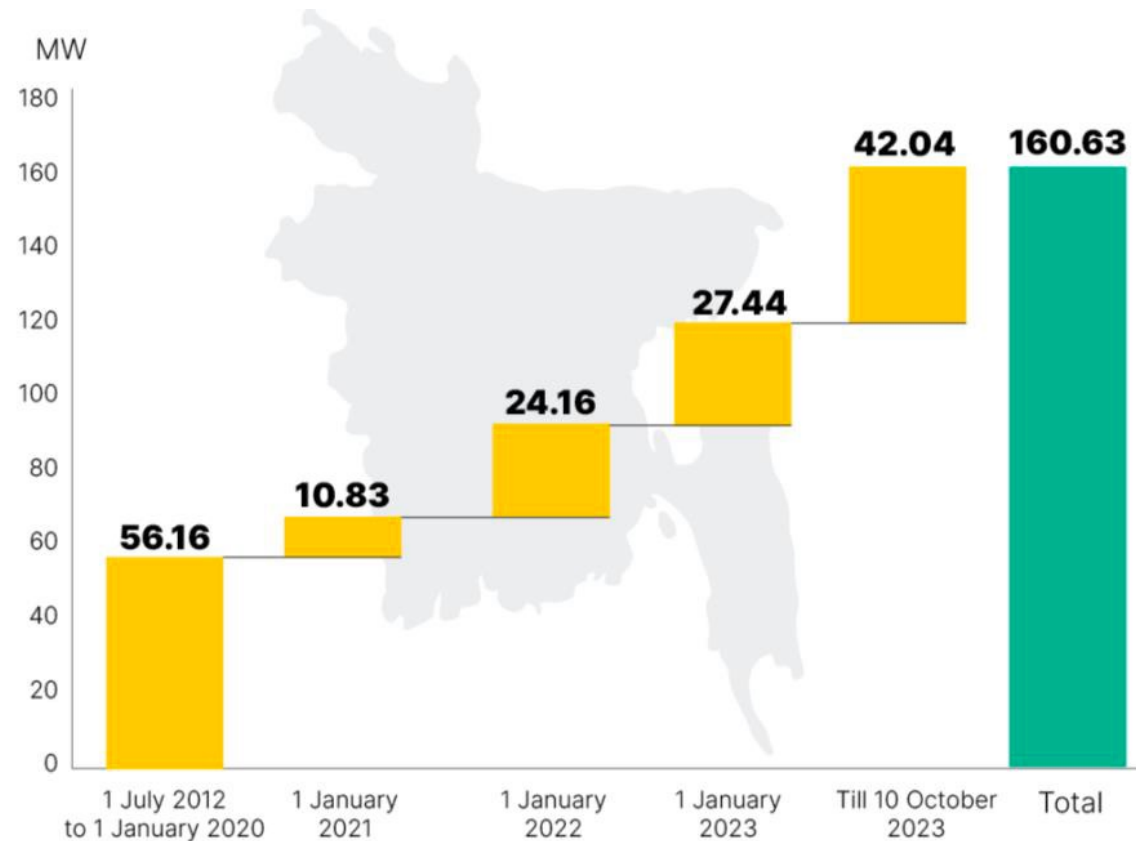
Source: IEEFA's Report Towards a Rooftop Solar Transition in Bangladesh, 2023

Bangladesh's Rooftop Solar Sector – Existing Framework



Source: IEEFA's Report Towards a Rooftop Solar Transition in Bangladesh, 2023

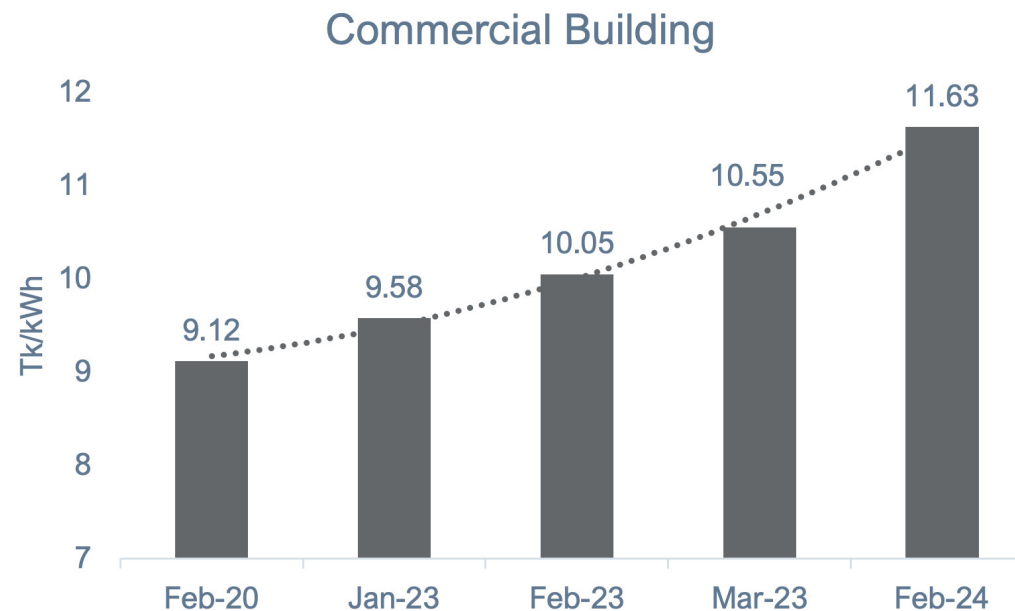
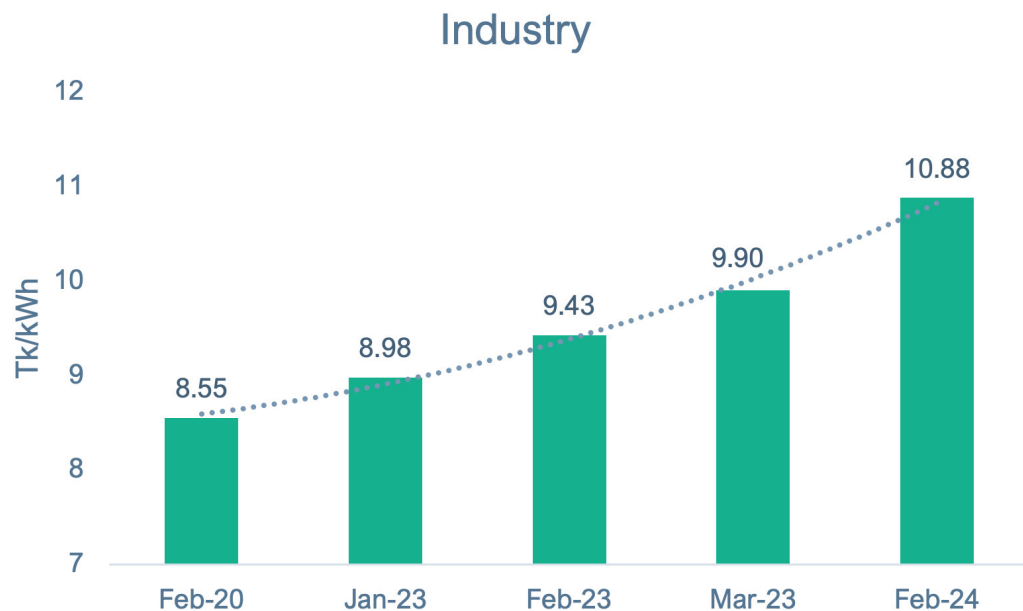
Present Status of Rooftop Solar in Bangladesh



** Combined capacity reached 166.28MW on 1 March 2024*

Sources: SREDA; IEEFA's Report Towards a Rooftop Solar Transition in Bangladesh, 2023

Economics of Rooftop Solar – Rising Energy Tariffs



* Tariffs increased by 27.5% since December 2022

Note: Tariffs considered for industries and commercial buildings that have sanctioned loads between 50KW and 5MW

Sources: Power Division; IEEFA's Report Towards a Rooftop Solar Transition in Bangladesh , 2023

Economics of Rooftop Solar (cont'd) – Attractive LCOE, Cost Savings etc.



- LCOE of rooftop solar currently hovers around Tk5/kWh (US\$0.046/kWh) – this means industries can reduce Tk5.88/kWh (US\$0.054/kWh) by installing rooftop solar systems;
- Savings will be more for commercial buildings;
- A combined rooftop solar capacity of 2,000MW could help Bangladesh save between US\$476 million and US\$1 billion per annum by reducing expensive oil-based power generation (based on 2021-22 data);
- Rooftop solar can also help reduce load shedding etc.

Factors Affecting Rooftop Solar Expansion



- Stakeholders' priority and motivation;
- Finance and associated challenges;
- Market and quality assurance;
- Lack of business models/revenue stream for utilities;
- Regulatory support, policy and incentive;

Factors Affecting Rooftop Solar Expansion – Priority and Motivation



- Although the government formulated the net metering guidelines in 2018 and conducts events to raise awareness, the current priority level in rooftop solar is primarily due to the lack of awareness
- “People are unaware of the benefits of rooftop solar or hold doubts about the rooftop solar’s viability due to negative experiences in the past”;
- This priority level is also a reflection of the lack of availability of sufficient finance;

Figure: Rooftop solar priority level

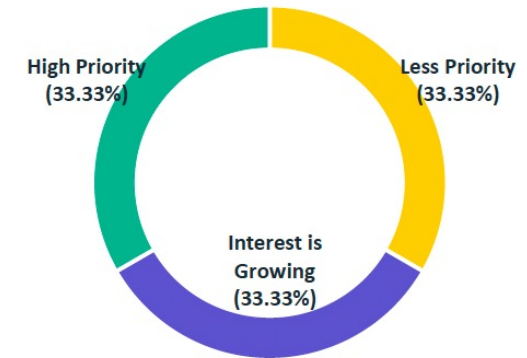
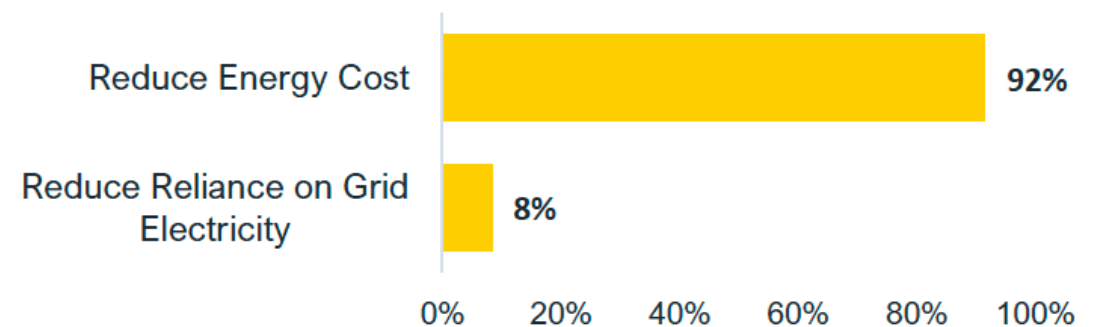


Figure: Motivation to install Rooftop solar



Source: IEEFA's Report Towards a Rooftop Solar Transition in Bangladesh , 2023

Factors Affecting Rooftop Solar Expansion – Finance and Associated Challenges



- There is a deeply ingrained assumption that the market will drive the shift to rooftop solar, a cheaper electricity source than fossil fuels.
- However, financial institutions have little motivation to extend loans to rooftop solar projects.
- While IDCOL considers rooftop solar a priority, other financial institutions do not. IDCOL alone can meet only a fraction of the funding needs of the rooftop solar sector.
- Financial institutions prefer fresh security since existing industries are already mortgaged to other lenders against their previous loans. For instance, to make the loan fully secured, bank guarantees, personal guarantees and/or assets, such as land, are sought.

Factors Affecting Rooftop Solar Expansion – Finance and Associated Challenges



- Lack of risk-mitigating instruments;
- Although projects under the OPEX model are increasing, EPC companies still prefer the CAPEX model. In the OPEX model, EPCs or solar service providers have similar challenges that industries face in accessing finance under the CAPEX model;
- Green refinance scheme is the least costly financing instrument available in the country; However, many stakeholders are still not aware that the scheme has undergone a series of changes and the interest rate is up to 5% now;
- Since the refinancing scheme covers environment-friendly projects across 70 categories, including rooftop solar, the competition for a refinance facility of Tk4 billion (US\$36.4 million) appears too high;

Factors Affecting Rooftop Solar Expansion – Market and Quality Assurance



Market Demand and Related Factors

- Despite receiving increasing requests for rooftop solar project proposals, EPC companies have downgraded their expectations as many investors are dilly-dallying in making the final decision on rooftop solar implementation.
- The delay in issuing letters of credit (LCs) to import rooftop solar accessories also affects project implementation.

Service Quality of EPCs

- Most stakeholders believe that some big EPC companies can deliver quality installation and post-implementation operation and maintenance services, but small companies do not have sufficient capacity.

Factors Affecting Rooftop Solar Expansion – Market and Quality Assurance



- Some small companies make aggressive offers to tempt industries to take up rooftop solar projects. These companies cannot maintain the desired quality, setting a bad precedent for others.
- While the existing solar companies can manage the current level of work orders, a sudden surge in demand for rooftop solar will test their overall capacity to manage a high volume of projects simultaneously.

Quality of Rooftop Solar Accessories

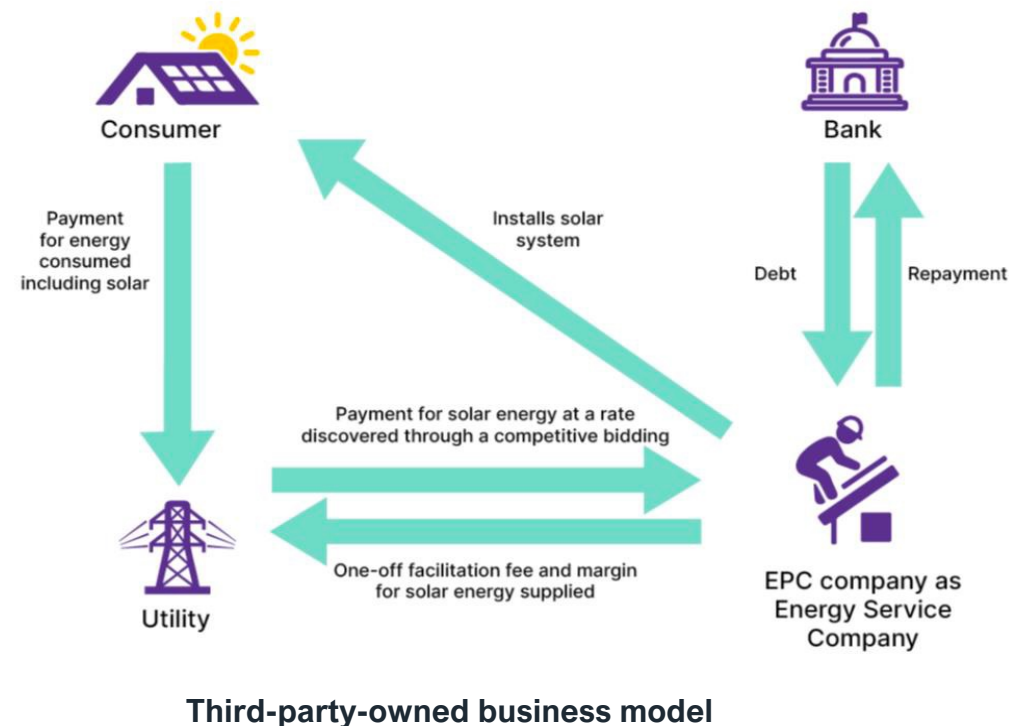
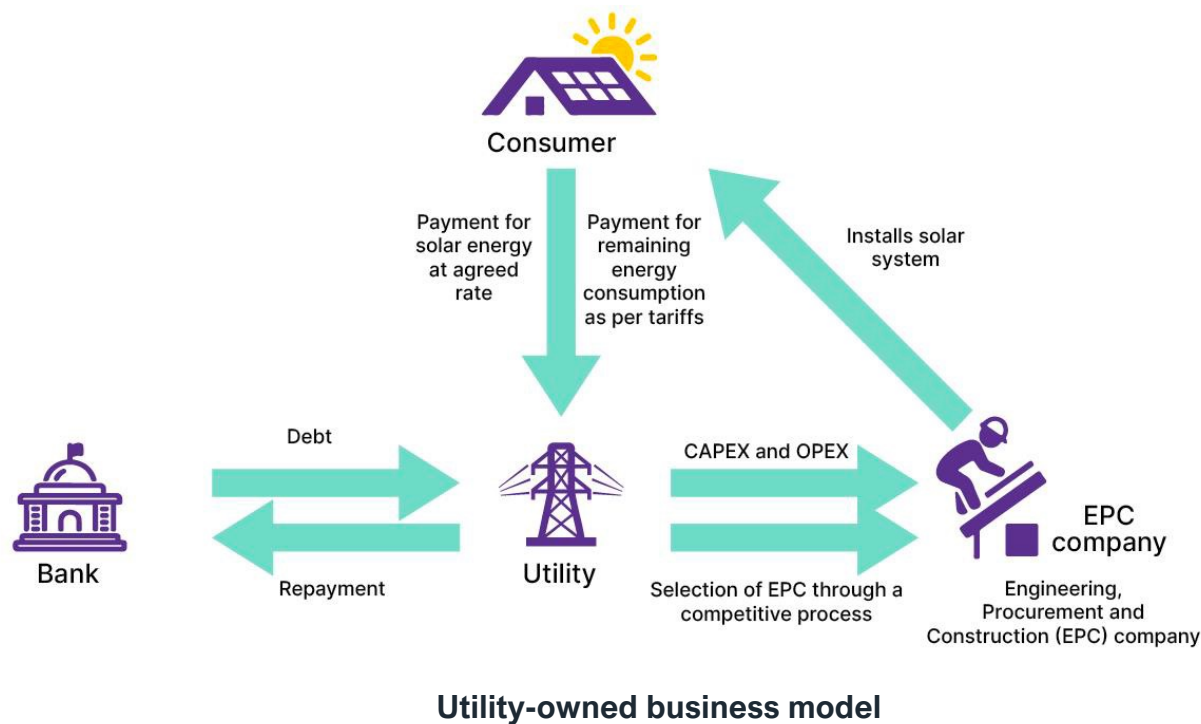
- Small companies often compromise on quality in small-scale projects. The chance of selling substandard accessories is slim in larger projects and those implemented under the OPEX model.
- However, people still have the negative experience that building owners installed rooftop solar to obtain grid connection do not deliver

Factors Affecting Rooftop Solar Expansion – Lack of Revenue Stream for Utilities



- Utilities have been accustomed to sending electricity in one direction from their centralised power plants through their transmission and distribution channels against payments from customers of different tariff categories.
- Now that they allow electricity flow to their network from decentralised systems, they should incorporate favourable business models to enable them to earn revenues.
- With growing rooftop solar systems, utilities will lose revenue from high-paying industrial and commercial consumers, affecting their business.
- Although utilities in Bangladesh are not profit-driven, revenue from rooftop solar will motivate them and ensure their long-term sustainability.

Factors Affecting Rooftop Solar Expansion – Lack of Revenue Stream for Utilities



Sources: ADB, 2022; IEEFA's Report Towards a Rooftop Solar Transition in Bangladesh , 2023

Factors Affecting Rooftop Solar Expansion – Regulatory Support, Policy and Incentive



Renewable Energy Web Portal and Solar Help Desk

- SREDA's solar helpdesk and web portal for renewable energy with essential features, such as policies, standards and a list of solar EPC companies, are fundamental tenets for expanding renewable energy.
- However, stakeholders raise that many investors and bankers are not fully aware of SREDA's services.
- The help desk should pursue follow-up activities to determine how many interested investors have implemented rooftop solar, what holds back the remainder of the investors from their rooftop solar projects, and how the solar helpdesk could assist them.
- Stakeholders feel it is time to assess the helpdesk to gauge how well it has performed, what has not worked and what SREDA needs to improve or incorporate into the service.

Factors Affecting Rooftop Solar Expansion – Regulatory Support, Policy and Incentive



Incentive

- Rooftop solar is disproportionately affected by high import duties as opposed to utility-scale solar projects;
- Total tax incidences of 1% customs duty on imported solar panels eventually become 11.2%. This is because additional taxes are applicable on 1% customs duty.
- Likewise, fibre-reinforced polymer (FRP) walkways, imported inverters, mounting structures and direct current (DC) cables are subject to import duties ranging from 15.25% to 58.6%.

Factors Affecting Rooftop Solar Expansion – Regulatory Support, Policy and Incentive



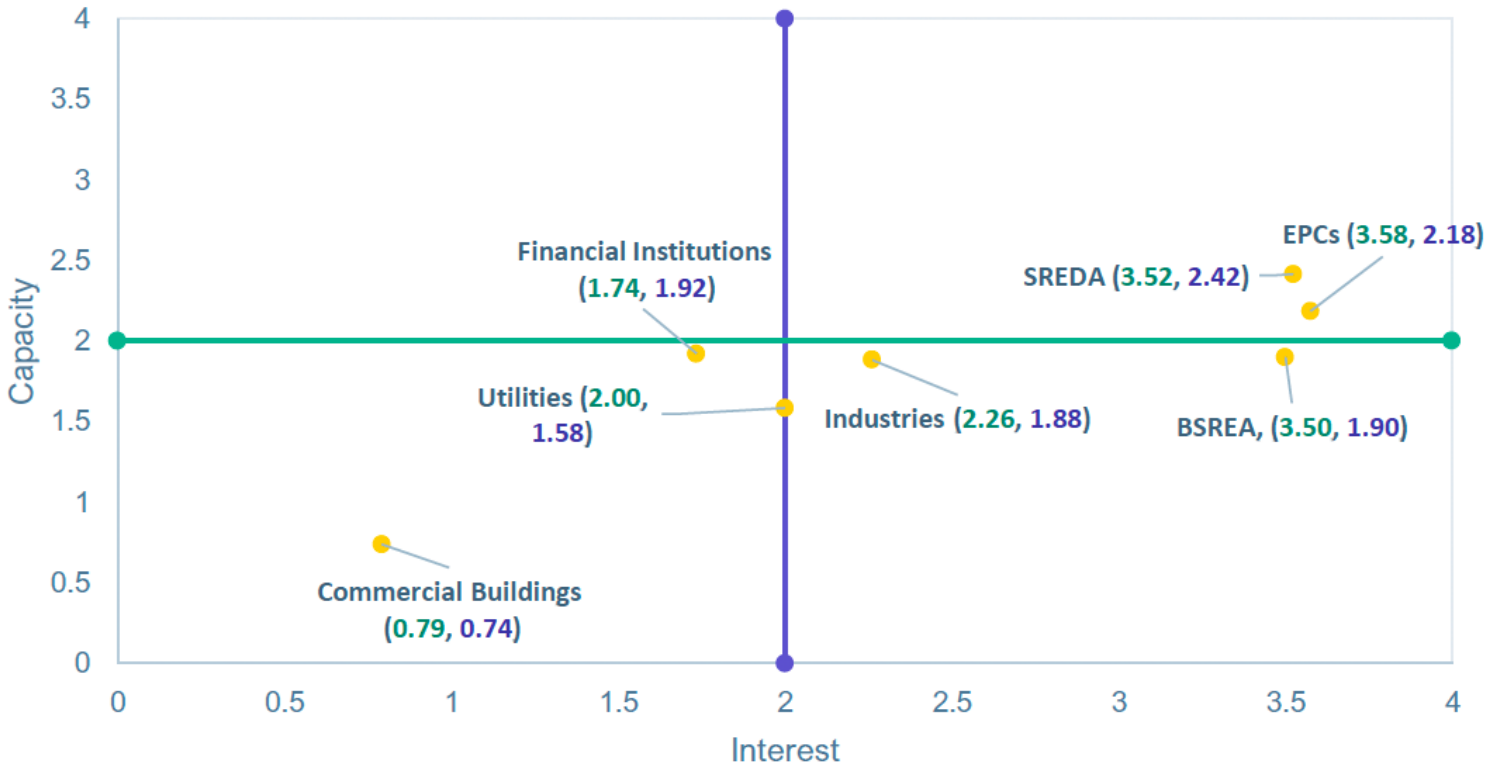
Regulations

- Regulations limit the maximum installed capacity of a rooftop solar system to 70% of the sanctioned load of a building, say industry.
- Although many industries, commercial buildings or relevant establishments cannot even fulfil the 70% cap, some buildings have more capacity to install.
- While the government sticks to the 70% cap to ensure that no building becomes a net electricity exporter to the grid, even with a rooftop solar system capacity equalling the sanctioned load, different buildings will not become net exporters.

Changing the Status Quo



Comparative scoring of stakeholders: Interest vs Capacity



✓ **SREDA should evolve**
[enhancing capacity of the major stakeholders; pursuing measures for regulatory challenges such as waiver of import duties, easing LC issues etc.; Developing own capacity to instill the leadership]

✓ **BSREA should be more effective**
[Policy advocacy; measures for ensuring its own and members' sustainability; developing capacity of stakeholders]

✓ **Other stakeholders should step up**

Source: IEEFA's Report Towards a Rooftop Solar Transition in Bangladesh, 2023

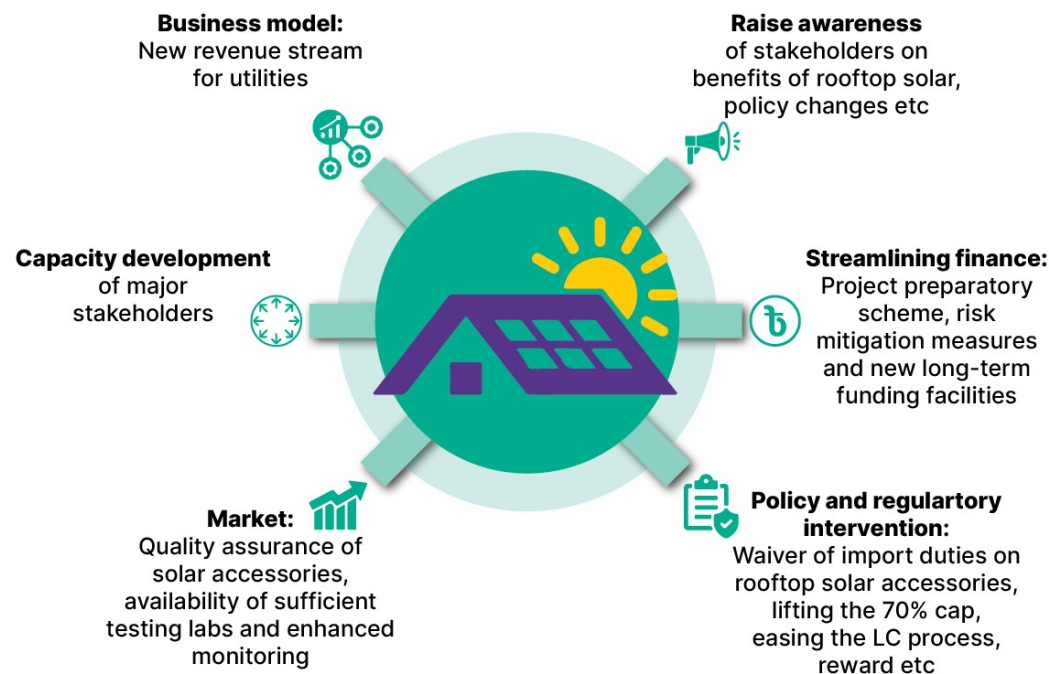
Way Forward



- ✓ Bangladesh needs to design a market that incentivises and de-risks investments in rooftop solar to increase the pace of implementation and achieve scale.
- ✓ The policy and regulatory measures put in place will set the course of rooftop solar for the foreseeable future.

Six levers to help Bangladesh accelerate rooftop solar

Policymakers do not need to start afresh and reinvent the wheel. They should enhance the effectiveness of existing measures and incorporate successful schemes implemented elsewhere



IEEFA

Way Forward (Cont'd)



- These six levers will help create a framework that will result in faster deployment of rooftop solar and deliver benefits to energy consumers, service providers, utilities and the government;
- Notably, import dependence has caused serious upheavals in Bangladesh's energy sector, leading to price hikes during 2022-24 and forcing industries to operate at lower capacities. Speeding up the transition to rooftop solar will help strengthen the power sector's resilience, reduce import dependence, and give consumers some energy independence;
- Of course, rooftop solar is not the panacea; But rooftop solar should be central to our energy sector development; And we need to advance rooftop solar deployment gradually and ensure sustainability while drawing lessons from past examples.

Annex: Thematic Area of the Study



Thematic Area : Key Points	
√ <i>Role of rooftop solar in Bangladesh</i>	Probable role of rooftop solar in Bangladesh's energy sector and the true potential of rooftop solar in the country.
√ <i>Motivation of building owners</i>	What motivates building owners to install a rooftop solar system? Is the intervention a priority for them?
√ <i>Finance</i>	Challenges in obtaining loans from financial institutions. Capacity gaps of financial institutions, de-risking mechanisms to expedite loans, business models, etc.
√ <i>Perspective of utilities</i>	Risk factors for utilities in pursuing rooftop solar and the way out.
√ <i>Quality assurance</i>	Capacity of available solar EPC companies, quality of solar accessories and measures to ensure quality.
√ <i>Policy, regulation and reward</i>	Is it necessary to change policy or regulation and introduce a reward mechanism to incentivise the sector?
√ <i>Change the status quo</i>	Ways to help spur rooftop solar projects in Bangladesh. What roles can relevant organisations play in the transformation of the sector?

Source: IEEFA's Report Towards a Rooftop Solar Transition in Bangladesh, 2023

Annex: Bangladesh's Rooftop Solar Sector – Summary of New Directives



Types of Establishments	Directives
Residential buildings with 1,000 square feet roof space	Single-phase connection: minimum solar system capacity is 1kW.
	Three-phase connection: minimum solar system capacity is 3kW.
Industrial and commercial buildings	Up to 80kW sanctioned load: minimum solar system capacity is 15% of the sanctioned load.
	More than 80kW and up to 500kW sanctioned load: minimum solar system capacity is 12% of the sanctioned load. Net metering guidelines 2018 (revised in 2019) should be followed.
	More than 500kW sanctioned load: minimum solar system capacity is 10% of the sanctioned load. Net metering guidelines 2018 (revised in 2019) should be followed.
Educational institutes, hospitals and charitable organisations	Single-phase connection: minimum solar system capacity is 1kW.
	Three-phase connection: minimum solar system capacity is 3kW.
<p>* If there is a lack of rooftop space, the relevant agency will form a three-member team to fix the implementable solar system capacity based on site visits.</p> <p>** Establishments that already have grid connections but want to increase the sanctioned load should install solar capacity for the additional load based on the rate mentioned above.²⁵</p>	

Sources: Power Division, 2023; IEEFA's Report Towards a Rooftop Solar Transition in Bangladesh, 2023

Thank you

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