

Volume 01 | Issue 05 | July 2021 | ₹250

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Global Solar Funding Rises to \$13.5 Billion in 1H 2021

Global VC funding including venture capital, private equity, and corporate venture capital – in the solar sector increased around 680% to \$1.6 billion in 26 deals



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Global VC funding including venture capital, private equity, and corporate venture capital – in the solar sector increased around 680% to \$1.6 billion in 26 deals

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This is a list of major tenders and auctions from June. A comprehensive list can be found on Mercom's Tender and Auction Tracker and Alerts.

Foreword



The solar industry is on the road to recovery based on Mercom's 1H Funding and M&A Report, which tracks financial trends in the sector globally.

Funding was up across the board in the first half of 2021 compared to last year, which was severely affected by the pandemic. Corporate M&A activity was up significantly with solar developers expanding their pipelines, oil and gas companies

diversifying into renewables, and funds buying up renewable assets. Solar project acquisitions reached a record high in Q2. The transition from fossil fuels to renewables and ESG investing trends made an impact on financing as well as M&A activity.

Global corporate funding in the first half of 2021 was 193% higher, with \$13.5 billion compared to \$4.6 billion raised in 1H 2020. The increase in corporate funding was primarily due to higher debt and public market financing activities.

Solar corporate M&A activity has taken off this year and is on pace for one of the best years to date. Solar M&A transactions for the first half of the year were at a record high since 2014.

Solar projects continue to be acquired in record numbers. Project acquisitions in Q2 2021 were the highest ever, with 25 GWs. In 1H 2021, there were 135 solar project acquisitions totaling 39.3 GW. Project Developers and Independent Power Producers were the most active acquirers in Q2 2021, followed by Oil/Gas Majors, Investment Firms and Funds, Utilities, among others.

Solar projects continue to be in high demand as investors chase quality solar projects for acquisition around the world. Project acquisitions in India have ramped with over 5 GWs in the first half, with the Adani SBI deal making up a substantial portion of the activity.

However, project acquisition deal-making in India is still relatively weak. One way to spur the activity is by removing the one-year equity lock-in period for controlling shareholding.

The concern about developers building and flipping projects is baseless. We are assuming that investors lack the ability to perform proper due diligence and will readily invest millions on low-quality assets. On the contrary, most large-scale solar project investors are sophisticated and understand what they are getting into. Solar is a mature asset class with over a hundred GW of solar projects being built globally every year.

Billions in foreign capital with an ESG investment priority is out there to be deployed with the expectation of higher returns than what is available in developed countries. To tap into this pool, restrictions need to be removed; PSA and PPA signing should be made automatic and guaranteed, which will ramp up foreign investments exponentially.

Indian solar industry needs investments badly, especially after two waves of COVID-19, which has taken a significant toll on the economy. The time is right for the government to remove the equity lock-in period and open up the solar sector for foreign investments.

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Investments in Indian Solar Sector Declined in Q1

According to Mercom India Research, the investments in the Indian solar sector plunged in the first quarter of 2021, impacted by the second wave of the pandemic

By : Rakesh Ranjan Parashar



The investments in the Indian solar sector declined by 30% and stood at \$1.04 billion (-₹76 billion) in the first quarter (Q1) of the calendar year (CY) 2021, compared to \$1.49 billion (-₹109 billion) in Q4 2020. However, in a year-over-year (YoY) comparison, the investments increased by 7% compared to the \$0.97 billion (-₹71 billion) invested in the sector during the same period last year. The data was revealed in Mercom India Research's latest Q1 2021 India Solar Market Update.

The second wave of the Covid-19 pandemic raging in the country has impacted the overall investments in the sector.

Out of the total investments, utility-scale solar projects attracted investments

There were no investments announced in solar manufacturing in the first quarter of 2021

of nearly \$875 million (-₹64.05 billion), up by 48% compared to \$591 million (-₹42.94 billion) in the last quarter. Rooftop projects saw investments of \$159 million (-₹11.66 billion) in Q1 2021, increasing by 11%, compared to \$143 million (-₹10.39 billion) in Q4 2020.

There were no investments announced in solar manufacturing in the first quarter of 2021. However, with the approval of the production-linked incentive program, investments are expected to increase substantially in solar manufacturing. The tender under the program has been released, and the last date to submit the bids is June 30, 2021.

Deal highlights

Some of the deals that grabbed the headlines in Q1 2021:

- Solavio Labs, a start-up providing solar panel cleaning technology, received ₹4.06 million (-\$0.05 million) in funding from the Canadian province New Brunswick through its New Brunswick Innovation Fund. With this investment, the company's total funding stands at ₹20 million (-\$0.26 million).
- Solar monitoring and analytics platform Prescinto announced the closure of \$3.5 million (-₹263 million) in seed round funding. The round

was led by Venture Catalysts, with participation from Inflection Point Ventures, Mumbai Angels, and Lets Venture, amongst other prominent Angel Investors and Funds.

- Adani Green Energy Limited (AGEL), the renewable energy arm of Adani Group, raised a \$1.35 billion (-₹101 billion) debt package for its under-construction renewable asset portfolio in India. According to the agreement, 12 international banks, including Standard Chartered Bank, Intesa Sanpaolo, MUFG Bank, Sumitomo Mitsui Banking Corporation, Coöperatieve Rabobank, DBS Bank, Mizuho Bank, BNP Paribas, Barclays Bank, Deutsche Bank, Siemens Bank, and ING Bank, have committed their participation for the facility.
- Total Eren and EDF Renewables announced that EDEN Renewables India, their equally-owned joint venture dedicated to large-scale Indian solar projects, secured financial closure for its 450 MW SECI III solar PV project with a group of three major international banks. The project, currently under construction in Rajasthan, was awarded to EDEN in a tender launched by SECI.
- Philippines-based AC Energy and Infrastructure (AC Energy), the investment arm of Ayala Corporation,

in association with UPC Solar Asia Pacific, achieved the financial closure of its 100 MW Sitara solar project in India. Located in Rajasthan, the project has an estimated cost of \$67 million (-₹5 billion) and is expected to be operational by the first half of 2021.

Earlier, investments in the Indian solar sector had declined by 66% and stood at approximately \$2.8 billion (-₹203.17 billion) in the CY 2020, compared to \$8.2 billion (-₹595.02 billion) in 2019. ^④

Investments in Indian Solar Sector by Quarter (\$ Billion)



Source: Mercom India Research (March 2021)

Haryana Looks at Solar Park Development

Haryana is inviting private entities to develop solar parks in the state and has issued detailed guidelines on land acquisition, timeline for completion, and allotment of capacities to solar developers

By : Rakesh Ranjan Parashar





The New and Renewable Energy Department, Haryana, has issued guidelines for developing solar parks in the state by private entrepreneurs without central financial assistance.

The solar park developers must submit their proposals to the Haryana Renewable Energy Development Agency (HAREDA) along with the detailed project report and all relevant land documents. After examining the detailed project report, a no-objection certificate for the solar park will be issued.

Once the Agency gives the nod to the program, the developer may apply for the feasibility of connecting to the Haryana Vidyut Prasaran Nigam Limited (HVPNL).

The minimum capacity of such a solar park should be 50 MW. The solar park developer should also submit the agreement to lease or the sale of a minimum of 100% of the required land along with the application.

The minimum land required for the solar parks has been set as 4 acres/ MW, and the cost of developing a 50

MW solar park will be considered at approximately ₹100 million (-\$136,500). The solar park should be constructed within 24 months from the issuance of the no-objection certificate for the solar park's development.

The timeline for the solar parks is given below:

For the development of solar parks, the financial closure may be defined as the arrangement of 90% of the total project cost either by internal resources

The parks have been given 24 months to be completed

or through tie-ups with banks or lending institutions.

After the approval from HVPNL, the solar park developer should submit a document related to financial closure, bank guarantee, and land lease deed or

sale deed within five months for final connectivity.

The developer should issue a tender for the internal infrastructure of the solar park within four months of the issuance of final connectivity by HVPNL, or else the approval for the solar park will be canceled. If the park is not completed within 16 months from the final connectivity approval of HVPNL, the approval may be canceled, and the allotted grid connectivity may be given to another developer. However, for already approved solar parks, the period of 16 months will be counted from the date of the issuance of these guidelines or the approval of HVPNL, whichever is later.

The solar park developer will be responsible for creating pooling stations and an internal transmission network on behalf of the solar project developers. The pooling station will be connected with the state transmission utility. Some of the solar park developer's responsibilities include acquiring land, getting land clearances, developing pooling stations, developing internal electrical transmission systems, making

Haryana: Timeline for Development of Solar Parks

Milestones	Timelines
Date of issue of no-objection certificate for development of solar park by HAREDA	Zero date
Grant of in-principle approval by HVPNL	2 months from date of in-principle approval by HVPNL
100% land acquisition to establish the possession (registered agreement to lease or registered to sale or lease deed or sale deed of the land required). Financial closure, bank guarantee documents as required by HVPNL	Within 5 months from date of in-principle approval by HVPNL
Grant of final connectivity approval by HVPNL	Within 1 month from date of submitting the documents required for final connectivity approval
Completion of the construction of pooling station and all other developments such as road connectivity, water availability, boundary switchyard/office buildings etc.	Within 16 months from final connectivity approval

Source: HAREDA

Mercom India Research



arrangements to connect to the grid, and providing basic drainage and water supply.

The state distribution companies will not be obliged to purchase power from the solar park projects. It has also been clarified that the developers will not receive any central financial assistance for setting up the park.

The solar park will not be transferred up to one year from the commissioning date, with a minimum of 75% of the total capacity of the solar park being commissioned. The solar park developer should provide plug-and-play facilities to the solar project developers for setting up solar projects in the park. The solar park developer should not have any equity shareholding in any solar projects to be developed.

Also, the solar park developer may allot any capacity to the solar project developers with a minimum of 3.5 acres/MW of land. However, if any project developer intends to develop the venture in the solar park in less than 3.5

The cost of developing a 50 MW solar park is estimated at ₹100 million

acres/MW, he will have to provide the technical details, which HAREDA will evaluate.

The solar park developer should have a minimum of two solar project developers in the park, and there will be no maximum cap on the number of project developers in the park. The solar project developer will not require separate connectivity approval from HVPNL for the projects and will use the pooling station of the park to evacuate the solar power through the common pooling station.

However, after the issuance of

the final connectivity by HVPNL, registration of the solar projects with HAREDA will be mandatory, and after that, with HVPNL for the grant of long-term open access agreement and the signing of commissioning agreement on commissioning of the project.

Recently, the New and Renewable Energy Department, Haryana, issued the draft 'Haryana Solar Power Policy, 2021' and requested government stakeholders to send their comments within 15 days from the date of the notification. The draft mentions that the state must focus mainly on rooftop solar projects and small-scale distributed solar systems besides exploring the potential of megawatt-scale solar projects and parks.

In June last year, the Ministry of New and Renewable Energy had modified its guidelines for developing solar parks and ultra-mega solar power projects. The program was initiated in December 2014 to facilitate solar project developers to set up projects through a plug-and-play model. ☺

Rising Commodity Prices Affecting Solar Component Costs

The surge in steel, aluminum, and copper prices over the last six months has pushed solar developers and module manufacturers to look for innovative ways to implement ongoing and upcoming projects

By : Rakesh Ranjan Parashar



On the past six months, the rising price trends in commodities, including steel, aluminum, and copper, have started to take a toll, increasing the burden on solar developers. In addition, the spike in steel prices has exacerbated the situation for engineering, procurement, and construction players and module manufacturers in the solar space.

The trend that started around the beginning of 2021 shows no sign of slowing, and many believe it will continue for another six months. Steel prices have continued to rise and are currently hovering around the ₹36,000 (-\$490)/ton mark, a 25% increase over the price around April.

The increase in metal prices has made the situation harder for developers and manufacturers who are also reeling under the effect of the second wave of the Covid-19 pandemic.

Increase in commodity prices a concern

Speaking on the increase in copper and aluminum prices, Harsh Jain, Director of Citizen Solar, said, “Last August, the price of copper was around ₹600 (-\$8)/kg, and now it is around

₹1,110 (-\$15)/kg. This is an increase of nearly ₹400 (-\$5.5)/kg. A 72-cell solar panel requires 240 gm of copper. The cost per module has increased by ₹100 (-\$1.4)/panel, which comes to ₹0.35 (-\$0.005)/W because of rising copper prices. Such a small change can still have a huge impact on the module prices. Furthermore, the price of aluminum has also spiked in the last six months, and now it is around ₹250 (-\$3.4)/kg. Normally, 2kg-3kg of aluminum is used for a single module, and the increase in prices has been in the range of ₹150 (-\$2)-₹160 (-\$2.2)/panel, which translates to ₹0.45 (-\$0.006)/W. So, when we combine both copper and aluminum, the module prices increase by nearly

The spike in copper prices has resulted in a ₹100 (~\$1.4) increase in cost per module

₹0.75 (-\$0.011)/W, which is not a small number.”

The main reason for the increase in copper prices is the growing use of copper in various sectors and the global increase in demand.

“Most of the copper used in the solar sector is imported from South American countries. While the demand has been growing, there is a need for the supply to cater to the demands, and this has led to an increase in copper prices. The increase in copper and aluminum prices will increase the cost of projects to some extent, as modules account for over 40% of the project cost. It has already impacted the module prices. Compared to last July, module prices are up almost 30%. I don't think it is going to come down soon,” Jain added.

Trend will continue

The increase in steel prices and other raw materials will cut down on the margins of the project developers and increase the payback period for a solar project. While the increase in steel prices has come at an inopportune time when the country is grappling with the second wave of the Covid-9 pandemic, it seems that the demand-supply gap for steel will continue in the second and



third quarter of the calendar year 2021.

Sharing his thoughts on the increase in steel prices and the increase on the overall cost of projects, Vinay Pabba, Founder of VARP Power, said, “For a grid-scale utility project, for a capacity of 250 MW to 300 MW, a large part of the balance of system (BoS) goes into civil structure works, the foundation works, cabling, and ducting, among others. The BoS costs have increased from ₹7 million (-\$95,419)/MW to over ₹10 million (-\$136,314)/MW in the past six months, which is nearly a 50% rise. This is primarily due to the increase in steel and iron prices.”

Such a sharp difference is likely to change the whole dynamics, increasing the overall project cost. This will force bidders for new projects to consider these aspects before committing to a venture.

“The increase in copper prices will also impact the ongoing projects, as it is used in several components. This can be a commodity cycle, but it is rather unusual to have all the commodities peaking simultaneously. Many factors have contributed to the spike in prices. While it is difficult to put the finger on one particular issue, I think this upward trend will continue for some time,”

noted Pabba.

Impact on the manufacturing sector

The manufacturing sector is dependent on the imports of raw materials, and most of the raw materials that go into solar projects are imported from other countries. The price volatility of raw materials creates uncertainty in the market, leading to a supply-demand gap. This cost instability is not favorable for the Indian solar manufacturing sector, which is still nascent.

Commenting on the impact of the spike in raw material prices on the manufacturing sector, Gyanesh Chaudhary, Managing Director of Vikram Solar, said, “The input cost, such as copper, backsheets, and aluminum frames for modules, has risen significantly. Also, the price of solar glass has gone up by around 100-130% since June 2020. Additionally, the prices for copper and silver have also witnessed a

sharp increase. Currently, the majority of the solar energy capacity in India has been built on imports. Though India is one of the largest aluminum producers in the world, we import aluminum frames.”

A solution needed

Many, however, believe that the price rise should not be a cause of concern, and the industry will find a way around it. But if the trend persists, things will become difficult for the developers, who remain skeptical about the future.

According to another executive at a project developer, “Steel prices have spiked, and we need government efforts to bring it down. The price of steel and supply both have turned into a challenge. Right now, steel is exported. If the prices and supply continue to be a challenge, the government has to think about curtailing the export of steel.”

“The rise in raw material cost

The price volatility of raw materials has created uncertainty leading to a supply-demand gap





has caused an overall module cost increase by about 35%. Solar module manufacturers have been unable to fully absorb the steep rise in upstream costs. Additionally, the freight rates have also increased substantially due to a shortage of shipping capacity under Covid-19 regulations, thus increasing module prices further. In such a scenario, the industry urges government support - tax and duty exemption, long-term financial support, and direct incentives to make the domestic solar industry cost-competitive,” added Chaudhary.

A top executive from one of the leading solar developers said, “Steel is an important component for any solar project. On average, 24 tons of steel is required for one MW capacity, and the total quantity of steel required depends on the size of the project. With steel prices hovering around the ₹36,000 (-\$490)/ton mark, it has affected the overall cost of the projects. There has been an increase of nearly 40% in steel prices, and the price of galvanized steel, which is used in module mounting structures, has also gone up by nearly 50-60% in the last three to four months. So, developers bidding for new projects will have to consider this. It is highly unlikely that the prices will drop

anytime soon.”

Manoj Singh from SB Energy opined, “The commodity prices have moved up sharply in the last four to six months, and that has affected the module prices also. The tariffs are decided based on commodity prices and module prices. And if there’s variation in the prices, it is bound to affect the cost modeling for the whole project. The cost of structures accounts for nearly 12-15% of the overall cost of the solar projects, and modules account for 50% of the overall project’s cost. With the increase in steel, copper, and aluminum prices, things are bound to get tricky for the developers, which will reflect in the upcoming bids. This is a cycle that happens every seven to eight years, and it was bound to happen. Curtailing the export of steel is not an

Steel prices were hovering around ₹36,000/ton in June, a 25% increase in two months

option, and it’s not something that can happen overnight. Considering that prices will remain steep for some more time, we will have to find a way around it.”

While the inflation in commodity prices is set to continue, the solar sector is looking for ways to continue the manufacturing process cost-efficiently and devise innovative methods to execute the ongoing and upcoming projects. Although the industry seems to be handling the effects of price rise, for now, it might have a detrimental effect on the solar industry if the trend persists for a longer duration.

“The price behavior of a lot of commodities, products, and services globally have been irrational in the Covid-19 economy. The Indian solar industry has to change the way it does business accordingly. Business strategies need to be based on data and research. If companies bid low just to win a project without taking into consideration how the market will play out over the next 12-18 months or invest in a new business without a thorough analysis of the market, then they have no one to blame but themselves,” commented Raj Prabhu, CEO of Mercom Capital Group. 📍



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Incentives for Large-Scale Manufacturing, MSMEs Sidelined

The fine print in the production-linked incentive program reveals the government's focus on large investments and building a solid supply chain, and exclusion of small manufacturers

By : Rahul Nair



India has launched a performance-linked incentive (PLI) program to support vertically integrated, gigawatt-scale manufacturing of high-efficiency solar modules. The implementing agency - the Indian Renewable Energy Development Agency (IREDA) - has also invited bids for setting up manufacturing capacities. The program aims to set up large-scale manufacturing with cutting-edge technology, promote an ecosystem for local material supplies, and generate employment, resulting in self-sufficiency (Atmanirbhar Bharat).

For more than a decade, India has depended on imported solar PV cells and modules for large-scale projects, as the domestic manufacturing capacity is limited and lagging on technology. The PLI program aims to reduce dependence on imports as India's large-scale solar project pipeline swells with 53.6 GW in various stages of construction and another 24.1 GW tendered and pending auctions.

Mercom spoke with several players in the domestic manufacturing sector to examine the sentiment surrounding PLI.

Huge expectations but insufficient spending

Dr. Hitesh Doshi, Chairman, and Managing Director, Waaree Group, welcomed the government's announcement on the PLI program and feels it is a step to push manufacturing in India, which the country's solar sector needs.

"However, to completely wean off dependence on imports, the allocated fund for PLI program is quite meager, and capacities one is expected to generate with this amount will be very

less. If more funds can be approved, it will allow the manufacturers to set up additional units, which will help in contributing to the country's GDP," Doshi added.

Another major domestic manufacturer told Mercom that manufacturers were excited about the PLI program until they read the fine print.

He said, "The PLI program gives preference to manufacturers who bid for the whole supply chain from ingots to modules. But the PLI amount will be exhausted by the time the funds are given to four to five such manufacturers. The rest of the offers will be on the waiting list. The incentive provided to the manufacturers also is only about 50% of the investment by the manufacturer. It is a very complex program."

According to a manufacturer setting up a new module capacity for a 1 GW module manufacturing plant (without considering land and building), the equipment cost is ₹1 billion (-\$136 million). For a 1 GW cell (210 mm) manufacturing plant, the equipment cost is ₹4.5 billion (-\$613 million). A minimum of ₹600 million (-\$8.17 million) is needed for a GW plant for the land and building.

The working capital need is ₹18 billion (-\$245 million) for 1 GW of cell and module manufacturing, each,

considering a 90-day cycle with 80% plant efficiency (800 MW produced in a 1 GW plant). So, ₹24-25 billion (-\$327-341 million) in investments is needed to be eligible for PLI, and the outlay is just ₹45 billion (-\$619 million), according to the manufacturer.

It's a big players' game

Another manufacturer planning to set up a solar module and cell capacity under the program said, "We plan to install 2 MW each of cell and module facilities. The investment needed for only equipment (without land and building) is \$15 million for 2 GW of modules, and for 2 GW of cells, it is \$40 million (European line) and 40% less if it is a Chinese line. The working capital required for a 60-day cycle at 70% plant efficiency is ₹1.6 billion (-\$218.5 million)/GW of modules and ₹1.1 billion (-\$150.2 million)/GW of cells. The working capital will be higher for a new entrant as he needs to build a credit history with Chinese suppliers. This is a big players' game," he added.

According to a manufacturer, instead of several Chinese players, the market will end up being dominated by a few Indian players. The banks are not ready to fund such a large amount unless the borrowing entities are large corporates. The credit rating of most companies also has gone down in the post-Covid scenario.

The PLI program supports vertically integrated, gigawatt-scale manufacturing of high-efficiency solar modules

PLI Program: Minimum Net worth Criteria to Set Up Solar Manufacturing Capacities

Level of Integration proposed in Application	Net worth/ Equity commitment for project required				Time Allowed for Commissioning (From Date of Approval)	Estimated Commissioning Time Line
	Minimum value to be established at the time of Application (A)		Mandatorily to be established within 90 days from LoA (B)			
	(₹ in million)/GW	(~\$ in million)/GW	(₹ in million)/GW	(~\$ in million)/GW		
Cell + Module	850	11.67	2,350	32.26	Within 1.5 years	Feb-23
Ingot-Wafer + Cell + Module	1,400	19.22	3,850	52.86	Within 2 years	Sep-23
Polysilicon + Ingot-Wafer + Cell + Module	2,200	30.20	6,050	83.06	Within 3 years	Sep-24

*Note: If the auction under the program is held by Aug 2021

Source: IREDA

A top executive from a major domestic cell manufacturer told Mercom, “The government has decided that the PLI program is meant for the bigger players in domestic manufacturing. It is catering to large investments to come in. They are not here to mushroom small players. The plan is to have the latest technology, economies of scale, solid supply chain - the objective of NITI Aayog. They don’t want to incentivize sub-optimum technologies.”

Investors take the risk and pay bank guarantees too?

Another manufacturer commented, “The PLI regulations specify that the manufacturers must pay a security deposit. Why does the government need a security deposit when a company is

investing in production? Why would a private enterprise lock in their money in a security deposit and then make a huge investment in setting up a production plant? That too when the profit margin is just a few paise per watt?”

Smaller players sidelined

Co-founder and director of Goldi Solar, Bharat Bhut, told Mercom that with the PLI program, the government is pushing for the growth of integrated manufacturing from polysilicon, ingots, wafers, and cells to PV modules.

“However, there are some drawbacks with the complex incentive structure. Very few companies or joint ventures will be eligible to apply for the program while also completely leaving out smaller enterprises. Indian businesses usually start as small companies and expand to become larger organizations.

With obligatory vertical integration and the capacity cap, only those with large manufacturing capacities will sustain in such a competitive environment. If the government wants to create a manufacturing ecosystem, it should allow standalone factories of modules, cells, and other raw materials to thrive.”

He further added, “Manufacturers from other countries will have an advantage given their track record, R&D, capital, and experience - Indian companies will have to up the ante through R&D to offer better efficiency modules than the current offerings.”

According to a top domestic module manufacturer, the PLI program has no consideration for micro and small and medium enterprises (SMEs and MSMEs).

Another medium-size domestic manufacturer told Mercom, “We understand that manufacturing units which have imported capital goods for setting up the module manufacturing facility before the last date of bid submission will not be eligible for participation under the PLI program. But the import of capital goods should happen after the last date of submission. This indicates that the program is for new ventures, and they will place the order after this tender while existing ventures with current setup can’t bid.”

According to Aditya Singhania, Director of Navitas Green Solutions, the main issue with PLI is that it is out of reach for the MSME sector.

According to Singhania, with or without the PLI program, any manufacturer will have to increase their production capacity to survive. “We believe 40-50% domestic module manufacturers will close shop by 2023. The capacities big companies have will allow them to flood the market,” he added.

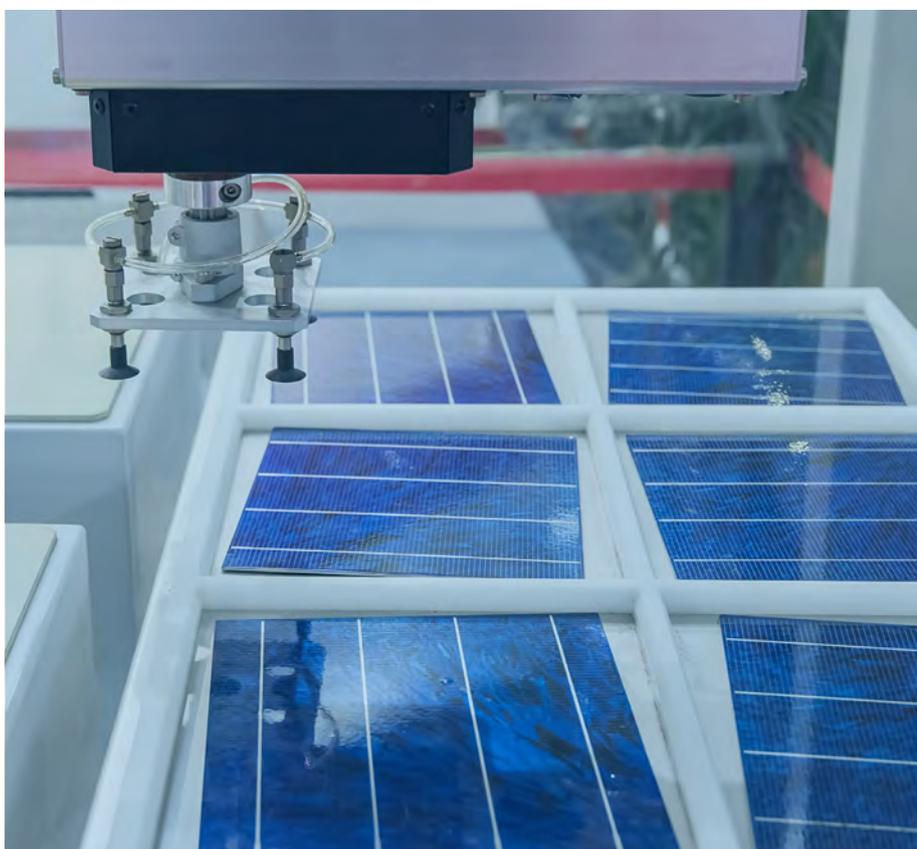
He further added, “Players like us, operating in 200-500 MW capacity range, will need to get into some niche products to meet our profitability rather than depend on selling modules and generating revenues. We are getting into series funding, but that is not an option for everyone. The most profitable 5-10% companies would be able to do that. The majority of the players are not well connected and would not be able to arrange for private equity funding or

PLI Program: Performance Bank Guarantee Requirement

Type of Manufacturing	₹/MW	~\$/MW
Cell + Module	45,000	618
Ingot-Wafer + Cell + Module	70,000	961
Polysilicon + Ingot-Wafer + Cell + Module	110,000	1,510

Source: IREDA

Mercom India Research





series funding.”

Singhania told Mercom that many of the old solar manufacturing companies are declaring bankruptcy. Microsun Solar has been in the market for so many years and has filed for bankruptcy due to the prevailing market conditions.

Mercom spoke with MicroSun’s executive manager Veeren Jain who confirmed that the company had recently filed for bankruptcy. “Yes, we have filed for bankruptcy, but it is

***For a 1 GW
cell (210 mm)
manufacturing,
the equipment
cost is ₹4.5
billion***

not just because of lack of government support. We had some management issues as well, which was getting bottled up, and it eventually came down to this,” Jain said.

According to Jain, the PLI program reflects the pattern followed in China where the few bigger players thrive

and government policies wipe out the smaller players.

On the company’s future and other small and medium-sized players, Jain said, “I feel except for those who can maintain a cash flow, the rest like us will be wiped out. For medium players, the bank asks for collateral security when we approach them. If we had collateral, why would we need loans? During the pandemic, if we go to banks, they ask for our financial records, but with the economy down thanks to the pandemic, how can we show positive markers in our financial records?” he asked.

What about MSMEs?

Shiv Mittal, Managing Director of Rhine Solar, said that the small and medium manufacturers cannot showcase a sustainable costing model. “Our businesses are under threat. Around 10-12 big players can easily swallow the remaining through this incentive program. Some tenders like CPSU mandate domestic content requirement (DCR), which is the only saving grace small players have. But we cannot lose hope, and we believe that there will be a way out for small players to thrive in the market competitively. We think the government will bring some new programs for us. Our manufacturers’ association is

currently working on a mechanism to communicate our grievances to the government.”

Another manufacturer suggested that there has to be an upgradation fund. There should be a fund for setting up a new facility and also upgradation. Upgradation also is like a new investment as none of the old equipment in the existing plant can be used to produce new technology modules - not even the conveyor. The whole plant has to be scrapped and a new one built. For the textile industry, the government gave an upgradation fund. What we need now is an upgradation fund rather than a PLI program.

The Atmanirbhar (self-reliance) initiative of the government aims to create an ecosystem that will aid Indian companies to be extremely competitive on the global stage, and for this scale and advanced technology is considered crucial. The government has addressed one challenge, but a greater one lies in deciding the fate of the numerous small manufacturers. They have been mostly catering to the supplies needed by government projects (DCR) but are on the verge of collapse and cannot keep up with the new investments required to keep pace with the fast-evolving technology. ☹

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India to Get Another Power Exchange

The Bombay Stock Exchange, ICICI Bank, and PTC had approached the CERC for the license to set up a new power exchange in 2018 for which the approval has now been granted

By : Rahul Nair

The Central Electricity Regulatory Commission (CERC) has granted Pranurja Solution Limited (PSL) registration the right to establish and

operate a power exchange.

It would make PSL the third power exchange in India after India Energy Exchange (IEX) and Power Exchange India (PXIL).

PSL was incorporated in 2018 as a consortium of PTC India, BSE Investments, and ICICI Bank. In 2018, The Bombay Stock Exchange, ICICI Bank, and PTC filed a petition with the CERC



for a license grant to set up a new power exchange.

In February this year, the Commission proposed granting registration to PSL to establish and operate a power exchange. The Commission said that it would invite suggestions and comments on its proposal.

PSL had earlier filed a petition for a grant of registration to establish and operate a power exchange under Regulation 16 of the CERC (Power Market) Regulations, 2010. In the interim period, it had requested the Commission to grant provisional registration to align its structure, management, and activities per CERC Regulations, 2010.

The Commission observed that the company had fulfilled the net-worth requirement of ₹250 million (-\$3.4 million) and that its net worth was ₹500 million (-\$6.86 million). The promoter companies are PTC (25%), BSE Investments (25%),

and ICICI Bank (9.99%). Also, there were 11 other shareholders, each of whom had a shareholding of 5% or less.

The Commission is satisfied that PSL, as an applicant, has complied with the shareholding pattern under Regulation 19 of the Power Market Regulations, 2010.

Meanwhile, in a hearing on April 4, 2021, IEX had raised PSL's compliance issues with the provisions of Power Market

Pranurja has been granted license to operate the power exchange for 25 years

Regulations, 2021. IEX argued that PSL's registration as a power exchange should be considered under the Power Market Regulations, 2021, and not 2010. Similarly, PXIL submitted that the software of PSL's proposed power exchange should allow seamless integration regarding market coupling as envisaged in the Power Market Regulations, 2021.

However, the Commission noted that since the Power Market Regulations, 2021, is still not in force, the argument put forth by IEX and PXIL has no merit.

Under Regulation 21(i) and Regulation 16(vii) of the Power Market Regulations, 2010, the Commission granted registration to PSL to establish and operate a power exchange subject to complying with the conditions within three months from the issuance of this order.

PSL's power exchange will operate for 25 years from the date of commencement of operation. ☐

Anti-Dumping Probe on Chinese Solar Cell, Module Imports

Indian Solar Manufacturers Association has alleged that the dumping of imported solar cells and modules from China, Vietnam, and Thailand is causing material injury to the domestic industry

By : Rahul Nair







T

he Ministry of Commerce and Industry, in an official statement, has announced that the Directorate General of Trade Remedies (DGTR) has initiated an anti-dumping probe on solar cells imported from China, Vietnam, and Thailand.

The DGTR has started the inquiry based on the petition filed by the Indian Solar Manufacturers Association (ISMA). ISMA filed the petition on behalf of Mundra Solar PV (Adani) - a unit in a Special Economic Zone; Jupiter Solar Power, a unit in the Domestic Tariff Area (DTA); and Jupiter International Limited (DTA).

The DGTR has considered the scope of domestic industry restricted to DTA units, i.e., Jupiter International and Jupiter Solar Power. Although there are other producers in India, the DGTR has noted that the production of the two DTA units accounts for a 'major proportion' of the total domestic production of solar cells in India.

Thus, the DGTR has determined that the two DTA units mentioned by ISMA constitute the domestic industry and satisfy the criteria for filing an application requesting anti-dumping

duty on imports of solar cells and modules from China, Vietnam, and Thailand.

ISMA alleged that the dumping of imported solar cells from China, Vietnam, and Thailand is causing material injury to the domestic industry and has requested the Ministry to impose anti-dumping duty on the subject goods.

ISMA has claimed no significant differences between the imported goods from the three countries and those produced by the domestic industry.

The probe will cover the period starting from July 2019 to December 2020 (18 months). The injury period under the probe will cover 2016-17, 2017-18, 2018-19, 2019-20, and the

The anti-dumping probe covers the period between July 2019 and December 2020

investigation period.

Injury and causal link

Information furnished by ISMA has been considered for assessment of an injury of the domestic industry. According to the DGTR notification, there is positive evidence of price undercutting, price suppression, and price depression effect on the domestic industry.

According to the filing, the domestic industry can sell under the Central Public Sector Undertaking (CPSU) program but not in India's open market. The sales volume of the companies represented by ISMA is negligible during the investigation period in the open market in which they compete with the imports. Unutilized capacity exists with the applicants, even after selling under the CPSU program. There is prima facie evidence of injury caused to the domestic industry by dumped solar cells from China, Vietnam, and Thailand, according to the filing.

Mercom spoke to some of the stakeholders in the industry who commented that the present cell manufacturing capacity in India is insufficient to fulfill the domestic content requirement proportion under



Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan, CPSU, and other programs, which adds up to more than 20 GW. This move could destroy the market, particularly when the upstream cost is shooting up like never before.

An executive at a manufacturing company also opined that the anti-dumping investigation may have been accepted, but it will not come into force as the pressure on the Ministry is immense to control hike in solar components under 'public interest'.

The previous anti-dumping case On June 5, 2017, ISMA had filed an anti-dumping petition against solar imports from China, Taiwan, and Malaysia with the DGAD, Ministry of Trade and Commerce, requesting the levy of interim duty on solar importers. The case was later withdrawn in March 2018, saying that the petitioners intend to refile the case with an extended date of investigation for the case. The case was not refiled.

Other anti-dumping cases

India has anti-dumping duties on several other component imports, including tempered solar glass, ethylene vinyl acetate sheets used in solar

modules, and aluminum and zinc-coated flat products used in solar module mounting structures.

Earlier this year, the DGTR also initiated an anti-dumping probe on 'fluoro backsheet' imported from China. Fluoro backsheet is a polymer-based component used in the manufacture of solar modules.

Protecting the domestic manufacturers

The Ministry of New and Renewable Energy (MNRE) has also made it mandatory to enlist models and module manufacturers under the Approved List of Models and Manufacturers (ALMM) order. Only the models and

The Power Ministry is under pressure to control hike in solar components in 'public interest'

manufacturers included in the list will be eligible for government or government-assisted projects, including the projects for the sale of electricity to the government under the guidelines laid down by the central government. The MNRE approved the first list under the ALMM order on March 10, 2021. This will apply to projects that have the last date of bid submission on or after April 10, 2021.

To protect the domestic manufacturers, the government had announced a 25% safeguard in July 2018. The duty was 25% for the first year, followed by a phased-down approach for the second year, with the rate reduced by 5% every six months until it ended in July 2020. The duty was extended for another year with 14.90% from July 30, 2020, to January 29, 2021, and 14.50% from January 30, 2021, to July 29, 2021.

There is also a basic customs duty on the import of solar modules (40%) and solar cells (25%) starting April 1, 2022.

The domestic manufacturers were looking at a period of no duty between August 2021 to March 2022. The petition for anti-dumping duty is intended to bring in duty during this gap to protect the domestic manufacturers. ☺





Domestic Module Makers Ready to Meet Demand as ALMM Kicks In

With no foreign manufacturers in the ALMM list issued by MNRE, developers are worried about the supply of solar modules, while local manufacturers seem confident of meeting demands

By : Rakesh Ranjan Parashar

To closely monitor the component solar suppliers and their manufacturing facilities, the Ministry of New and Renewable Energy (MNRE) has made it mandatory for solar cell and module manufacturers to register under the Approved List of Models and Manufacturers (ALMM). Only manufacturers enlisted in ALMM can supply to the projects tendered by the government agencies. On March 10 this year, the Ministry released the first list of module manufacturers. For tenders issued after April 10, 2021, developers have to procure modules only from the list of manufacturers enlisted under ALMM.

While there is a general perception in the industry that the current absence of Chinese manufacturers on the list will encourage domestic manufacturing, many feel that local module makers are not well-equipped to meet the growing demands of the solar industry. They fear that since enlisting the foreign players is going slowly due to the Covid-19 pandemic, developers will have to pay for the increased cost of procuring locally made modules.

When asked to elaborate on the matter, a solar developer noted that none of the domestic manufacturers are in a position to supply more than 50 MW module capacity in a month, adding that it will likely take them more than a year to supply 300 MW. Several disgruntled voices in the industry also added that

Domestic module manufacturers do not have the experience of supplying more than 50 MW capacity per month

when the basic customs duty (BCD) is slated to come in April next year, there is no need to push ALMM. The developers seem to be concerned over how to procure Chinese supplies as none of them are enlisted.

Domestic manufacturers hopeful of meeting demand

Speaking on the issue, Avinash Hiranandani, Chief Executive Officer and Managing Director of RenewSys India, said,

“Every country has different testing procedures and certification process in place for the products. The same is the case with India. One has to comply with certain standards to sell their products in the Indian market. I see no wrong in the directive. It will only ensure the end-users installing the solar panels get standard materials.”

Hiranandani also disagreed to make any correlation between the safeguard duty validity expiring in July and the enlistment of Chinese module manufacturers taking long.

“The ALMM ensures quality. Even after BCD kicks in, ALMM will be there. With the current capacity of 14 GW per annum, which is ever-increasing, we are well-equipped to meet the market’s demands,” he added.





Highlighting the cause for the delay in enlistment, a top executive from one of the leading Chinese module manufacturers said, “The factory inspection and audit will take time. The Covid-19-related travel constraints are adding to the lag. The government will have to extend the inspection timeline. Also, we would like to have greater clarity from the government on the enlistment process.”

“The National Institute of Solar Energy (NISE) could hire a third party to speed up the inspection process in China. With the Indian solar market growing rapidly, it’s not prudent to discount the Chinese players. We have paid the enlistment fees and are going to abide by the law. We don’t see a reason to file any complaint with the Indian

agencies. We understand the difficulties and hope for the best for everyone involved,” added the executive.

ALMM unlikely to affect immediate projects

Tenders that were bid before April 10 this year will not be affected by the ALMM. But things will be different for projects based on bids after the April 10 cut-off date. According to Mercom India Research’s Q1 2021 India Solar Market Update, about 24.1 GW of tendered capacity is waiting to be auctioned.

Speaking for the developers, Vinay Pabba, Founder of Varp Power, said, “Interestingly, the ALMM published on March 10, 2021, has only List I for modules. There is no List 2 for solar cells. Also, all solar module

manufacturers in List I are Indian module manufacturers, and foreign manufacturers are conspicuous by their absence from this list. While many foreign manufacturers have paid the inspection fee, it is apparent that the NISE has not gotten around to sending the inspection teams for factory visits abroad, most likely due to the Covid-19 pandemic. The continued restrictions on travel imply that the choices for developers winning tenders post-April 10 is severely limited unless the Ministry decides to extend the April 10 deadline.”

“As it stands now, for much of the current project construction pipeline, the ALMM order does not apply. Only when a significant bidding pipeline builds up for post-April 2021 tenders will we start feeling the manufacturing bottleneck if the ALMM continues in its current form. We still have some time in hand before such a situation arises,” Pabba added.

Is there a need for ALMM going forward?

While the ALMM was put in place to ensure the quality of solar products, it

ALMM put in place to ensure the quality of solar products overlaps the existing BIS certification in many aspects



overlaps the existing Bureau of Indian Standards (BIS) certification in many aspects. Many stakeholders are not sure about the viability of the whole process. While BIS is more of product certification, ALMM caters to facility certifications and the certification of manufacturers.

Commenting on whether the ALMM will incentivize the domestic manufacturing market and ward off foreign players, Pabba noted, “It can be argued that while BIS is related to product certification, ALMM is more of a process and manufacturing facility/original equipment manufacturer certification. It could have been better managed by combining these two objectives and making it a single-window process. A multi-layered regime has made it cumbersome and unwieldy. The ALMM regime is a thinly veiled non-tariff barrier made bulky by design and intends to ward off imports. Combined with the duty of 25% and 40% on solar cells and modules, respectively, this non-tariff barrier can significantly disincentivize foreign manufacturers from entering the Indian market. Whether the move will directly benefit

local players remains unclear.”

Pabba feels that the measures might yield positive results and replicate automotive manufacturing success in India. “Similar policy tools did a marvelous job in sectors like the automotive manufacturing in India, which resulted in a large manufacturing base coming up apart from job creation. One can only hope fervently that Indian manufacturing ramps up fast enough to meet the ambitious solar capacity additions of 30 GW per year until 2030,” he noted.

Many developers believe that most Indian module makers have weak balance sheets, which might discourage lenders from funding projects where a major part of the project finance goes into such manufacturers.

“Lenders look at various aspects of the project before funding a program. ALMM protocols introduce new uncertainty in project execution and impact project timelines, making them more prone to penalties and tariff adjustments. These may impact the bankability of projects and push up the risk premiums while lending. Developers will be pricing this risk in

the solar power tariffs that they quote. ALMM, if implemented in a cavalier manner, could raise tariffs and slow down India’s energy transition,” Pabba observed.

Incentivizing the domestic manufacturing sector

There is also a growing sentiment among the stakeholders that the domestic content requirement (DCR) is a foolproof mechanism and works much better than ALMM despite a short-term mismatch in the supply and demand for DCR products currently. That might, however, act as the catalyst for future investments and lead to the expansion of the domestic manufacturing sector, which the government is aiming for.

Speaking on the current predicament of domestic module manufacturers, Bharat Bhut, Co-founder, and Director of Goldi Solar, said, “The current pandemic situation has hampered several operations, including enlistment under ALMM. Once ALMM is streamlined, it will ensure that all solar projects use quality modules. Any benefit that domestic manufacturers might gain will be brief as they will still

Developers believe most Indian module makers have weak balance sheets, discouraging lenders from funding projects

have to meet the quality criteria. In the past, there were hurdles due to a lack of capital, machinery, and technical know-how. Today, domestic manufacturers are more than equipped to handle the demands of the upcoming projects.”

“With the introduction of the production-linked incentive program, some manufacturers are in the process of establishing or have already set up additional capacities. The BCD has helped generate positive sentiment among Indian solar manufacturers and the auxiliary industry. We see more acceptability for green energy, and there is a shift in mindset from conventional to renewable energy sources. We can expect investments and adoption of solar at a larger scale once it is in effect,” Bhut opined.

Capacity expansion announcements do not always mean they will happen. Making a case for the domestic manufacturers, Hiranandani noted, “Vikram Solar has announced a 5 GW capacity addition, and Waaree has also announced another 5 GW, and others have done the same. We have already ordered the lines and started work on them, and by the time BCD comes up, we’ll be ready for the increase in demand. Our installation numbers are in the range of 8 GW-9 GW per year, so we are capable of meeting the demands.”

Logistics issue for inspection

Inspection of facilities in China could be delayed for over a year, according to some suppliers. China is yet to open the country for visitors, with strict

restrictions still in place. When asked about their offshore facilities in Vietnam, Thailand, and Malaysia, and others, the suppliers believe that these facilities are catering to the demand of the U.S. and European markets as they are dedicated to manufacturing N-type modules that are generally priced high and are also booked until the next two years.

It might be a while before Chinese manufacturers can enlist under ALMM. Until then, the developers and investors must bear the risk of any rise in project cost or supply chain disruption. The list of eligible domestic module suppliers could shrink based on whether they can make it to the Tier-1 list maintained by the lenders to finance projects.

“Solar installations will slow down, and the market will shrink if developers bid higher to factor in the increased module costs and state agencies refuse the higher bids. Two states have recently canceled auctions citing high tariffs. Hopefully, the industry doesn’t lose another 12 months to a new policy wrinkle when it is desperately clawing back from the second wave of the pandemic,” said Raj Prabhu, CEO of Mercom Capital Group. 

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Redesigning Renewable Energy Certificates

The Ministry of Power has proposed the restructuring of the renewable energy certificate mechanism to bring more clarity on the trading of RECs in the power market

By : Rakesh Ranjan Parashar

The Ministry of Power has released a discussion paper on redesigning the renewable energy certificate (REC) mechanism for stakeholder comments.

As per the measures proposed for restructuring the REC mechanism, the REC will remain until it is sold. Currently, the validity of RECs is 1,095 days, and CERC determines the floor and forbearance prices, which until now have been revised four to five times for non-solar and solar RECs.

As the RECs will be perpetually valid, there is no need for floor and

*RECs have not
been traded
since July 2020
due to APTEL
stay order*

forbearance prices to be specified, and REC holders will have the freedom to decide when they want to sell the RECs. The Central Electricity Regulatory Commission (CERC) will be required to monitor the process so that there is no hoarding of the RECs and the creation of artificial prices in the market.

The order of CERC notifying the floor and forbearance prices, effective from July 01, 2020, is sub-judice. RECs have not been traded since July 2020 due to the Appellate Tribunal for Electricity (APTEL) stay order in response to the

petitions filed by several renewable energy associations regarding revision in the floor and forbearance prices.

Also, as per the proposed measures, the renewable energy generators will be eligible to issue RECs for 15 years from the date of commissioning of the projects. Similarly, the existing renewable energy projects would continue to get RECs for 25 years.

The Ministry has also proposed introducing a multiplier, under which less mature renewable energy technologies can be promoted over the other matured renewable technologies.

Any technology which needs to be promoted may be identified two years in advance. For such projects, at least 15 years of policy visibility would be provided to attract investments and promote such technologies in renewable energy.

A technology multiplier can be allocated in various baskets specific to technologies depending on maturity. The multiplier would also take care of old technologies depending on the date of commissioning of the project. Also, once a multiplier is given, it would continue for 15 years for that project.

For example, Technology-A, which is at a nascent stage, can be issued three RECs for every MWh energy sale, which is subject to a 3X multiplier. As the adoption of the technology progresses along the maturity path, it can gradually be reduced. Based on the policy boost to be given to specific technologies, the multiplier can vary.

The concept of negative list and sunset clause may also be considered for other technologies depending upon their maturity levels. The negative list could include obsolete technologies, whereas a sunset clause will provide for the automatic exclusion of any technology once a specific date is reached. These conditions will apply to new renewable energy projects. The renewable energy projects which have already been commissioned are excluded from these conditions.

To incentivize renewable energy procurement beyond the renewable purchase obligation (RPO) targets, only DISCOMs will be issued RECs for quantity beyond RPO.

RECs can be issued to obligated



Renewable energy generators would be allowed to issue RECs for 15 years from the project commissioning date

entities that purchase renewable power beyond their RPO compliance targets to incentivize them to achieve the RPO targets and go beyond the RPO level.

According to another measure proposed by the Ministry, RECs should not be given to any seller who is benefitting or getting preferential treatment.

The Ministry has also proposed that

the trader's role should be enhanced in REC trading, which will bring in two key advantages, i.e., it will give long-term visibility to the buyers of the REC, and they can easily fulfill the RPO targets. Further, the small buyers can bank on the traders for buying RECs. This will ensure that even the small buyers who find difficulty in trading in the REC market will fulfill their RPO targets. ☺



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Uttar Pradesh DISCOM Fined for Not Meeting RPO

Uttar Pradesh electricity regulator has directed the state DISCOM to deposit ₹72.45 billion in the RPO Regulatory Fund for unmet RPO and projected RPO requirements for the next financial year

By : Rakesh Ranjan Parashar





The Uttar Pradesh Electricity Regulatory Commission (UPERC), in a recent order, directed Uttar Pradesh

Power Corporation Limited (UPPCL) to deposit ₹72.45 billion (-\$978 million) in the renewable purchase obligation (RPO) Regulatory Fund, including ₹14.59 billion (-\$197 million) on account of shortfall in RPO compliance until the financial year (FY) 2020-21 and ₹57.85 billion (-\$780.93 million) against projected RPO requirements for FY 2021-22.

The Commission directed UPPCL to deposit the amount in ten equal installments and said that the amount would be used to procure renewable energy, including hydropower. The payment for purchasing hydropower will also be made through the RPO Regulatory Fund.

UPPCL, on behalf of the distribution companies (DISCOMs) of Uttar Pradesh, had filed a petition seeking relaxation regarding the implementation of the RPO Regulatory Fund as mandated by the UPERC order dated December 30, 2019.

Background

UPPCL, in its submission, said that it had partly complied with the Commission's order regarding the implementation of the RPO Regulatory Fund. However, the entire amount was yet to be deposited.

The Commission had also asked UPPCL to submit the year-wise status of the RPO compliance indicating how much backlog had been cleared until March 31, 2021.

UPPCL further added that according to the directions issued by the Commission, the payments to renewable generators

Uttar Pradesh: Details of RPO Shortfall as of FY 2020-21 and the Corresponding Amount to be Deposited in the Fund

Categories	Shortfall as of FY 2020-21 (MU)	Amount to be Deposited in the Fund	
		₹ in billion	~\$ billion
Solar RPO	2,186.75	2.187	0.030
Non Solar RPO	9,569.63	9.570	0.129
HPO*	2,837.08	2.837	0.038
Total	14,593.46	14.593	0.197

*HPO - Hydropower Purchase Obligation

Source: UPERC

Mercom India Research

were being routed through the RPO Regulatory Fund created by UPPCL. The DISCOM added that a total payment of ₹7.09 billion (-\$95.71) had been made to renewable generators until May 2021.

UPPCL said that the backlog of non-solar RPO and hydropower purchase obligation (HPO) was largely due to the delay in the commissioning of some projects on account of the Covid-19 pandemic.

Commission's view

The Commission observed that because of the significant increase in the non-solar RPO and HPO, it had directed UPPCL to revisit their RPO strategy and asked the DISCOMs to deposit the amount equivalent to the respective shortfall in RPO units until FY 2020-21 at the rate of ₹1 (-\$0.014)/kWh in the RPO Regulatory Fund. The Commission arrived at the total of ₹14.59 billion (-\$196.95 million) as a shortfall in RPO compliance until FY 2020-21 to be deposited in the RPO Regulatory Fund.

The Commission also added that to help DISCOMs achieve their RPO targets,

the Commission had provisionally calculated the requirement of renewable energy for FY 2021-22 as per the data submitted by the DISCOMs.

The Commission directed UPPCL to deposit ₹57.85 billion (-\$780.93 million) as the amount equivalent to the projected RPO target for FY 2021-22 at the rate of ₹4.37 (-\$0.059)/kWh.

Considering all the facts submitted by the state DISCOMs, the Commission directed UPPCL to deposit a total amount of ₹72.45 billion (-\$978.01) in the RPO Regulatory Fund in ten equal installments.

In February this year, the Ministry of Power issued a notification regarding RPO targets, including large hydropower projects commissioned after March 8, 2019. The notification said that the HPO liability of the DISCOM could be met out of the free power being provided to the state from large hydropower projects commissioned after March 8, 2019.

Earlier, UPERC had ordered the state DISCOMs to respond to its suo moto proceedings about meeting RPO targets as per regulations. ☺

Uttar Pradesh: RPO Target for FY 2021-22 and the Corresponding Amount to be Deposited in the Fund

Categories	Energy Consumed by the DISCOM (MU)	Hydropower Consumption (MU)	Energy to be considered for RPO (MU)	Target (%)	Target (MU)	Amount to be Deposited in the Fund @ ₹4.37 /Unit	
						₹ in billion	~\$ billion
Solar RPO	114,689.47	12,853.40	101,836.07	0.04	4,073.44	17.80	0.24
Non Solar RPO	114,689.47	12,853.40	101,836.07	0.06	6,110.16	26.70	0.36
HPO*	114,689.47	12,853.40	101,836.07	0.03	3,055.08	13.35	0.18
Total					13,238.69	57.85	0.78

*HPO - Hydropower Purchase Obligation

Source: UPERC

Mercom India Research

India Installs 419 MW of Solar in the Open Access Market in Q1 2021

Mercom's report on India Open Access Solar Market Update Q1 2021 covers current policies, amendments, price trends, and emerging business models related to the open access market

By : Srinwanti Das



Ondia's open access solar installations totaled 419 MW in the first quarter (Q1) of 2021, while the cumulative solar installations in the open access market have reached 4.3 GW as of March 2021. The numbers were revealed in Mercom India Research's India Open Access Solar Market Update Q1 2021.

The report covers current policies related to the open access market, amendments, price trends, and emerging business models. The new report has expanded its outreach to include two new markets: Madhya Pradesh and Rajasthan.

Over 1 GW of open access solar projects are estimated to be under development

The pipeline of projects under development and in the pre-construction phase under open access is estimated to be over 1 GW.

The report suggests that the open access market is providing an alternative opportunity for developers and



investors who do not participate in auctions for large projects, considering they are highly competitive and limited to specific geographies. The developers can choose the customers to offtake the power they produce and earn an attractive return on investment. For distribution companies, this measure works as a new avenue to bring private investment into the sector and address the shortage of electricity and encourage green power generation.

The report notes that as a result of delayed open access projects moving from 2020 to 2021, installations peaked in the first quarter of 2021, resulting in more open access projects in just one

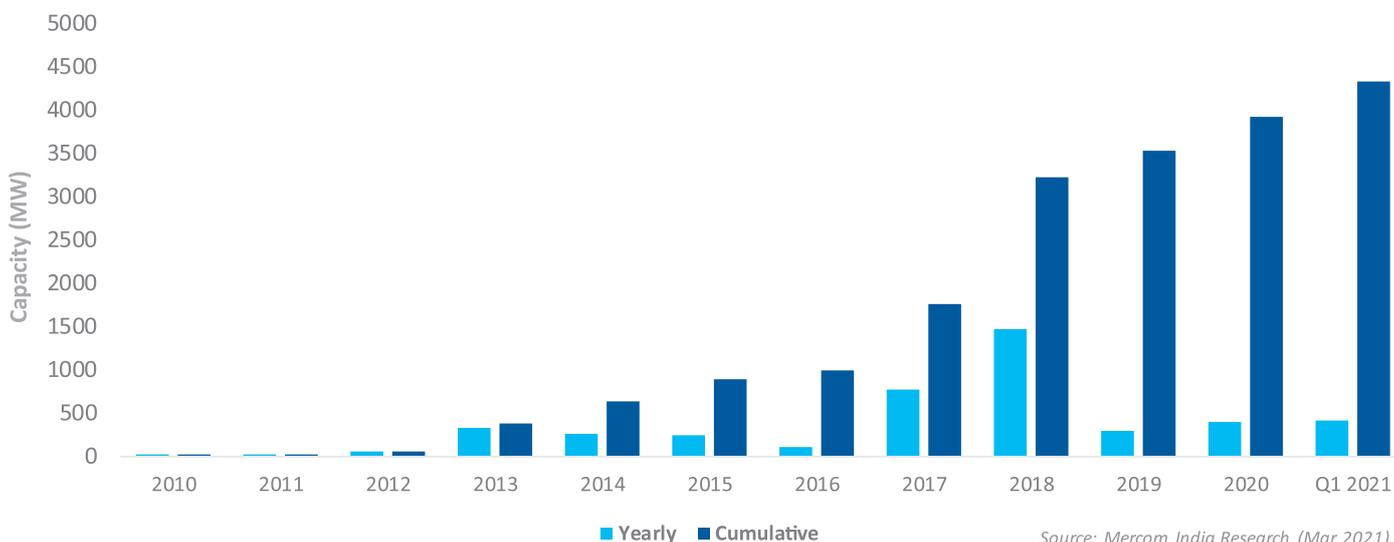
quarter compared to installations in the entire calendar year of 2020.

As of March 31, 2021, Karnataka was the largest market for open access cumulatively, followed by Rajasthan, Madhya Pradesh, Andhra Pradesh, and Tamil Nadu.

Installation activities in Karnataka have slowed over the past two years. The top five states account for approximately 76% of the total open access solar market in India as of March 2021.

In Q1 2021, Maharashtra was the top state for open access solar projects developed, accounting for 22% of the total installations during the quarter.

India Solar Open Access Market (Yearly vs Cumulative Installed Capacity)





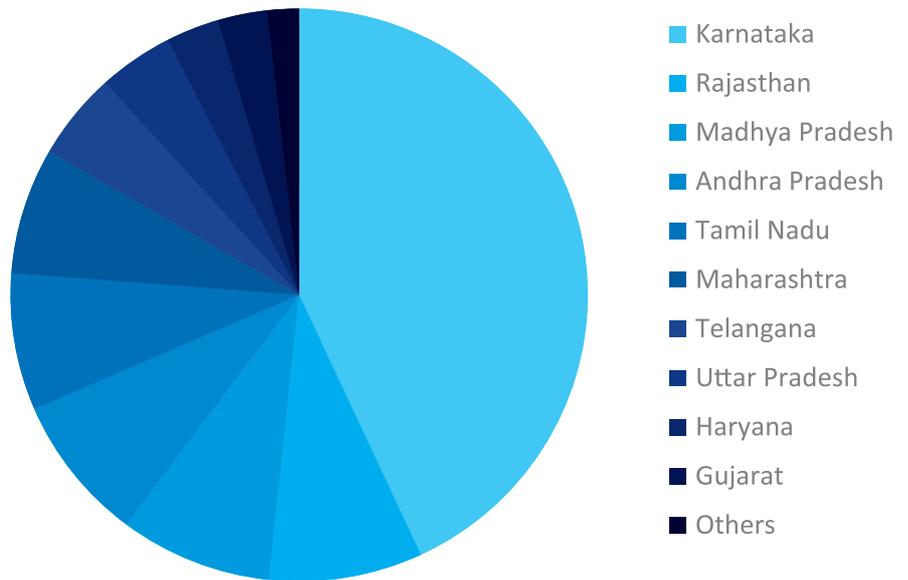
Policy consistency and visibility are the driving factors for open access solar. However, the report also found that the attractive policy in a state is not necessarily translating into growth in open access installations. According to the report, obtaining approvals is tough, and state agencies are allegedly creating hurdles in open access project implementation.

The average open access tariff in the states covered in this report ranged from ₹3.50-5.00 (-\$0.048-0.068)/kWh, with a yearly escalation of 1-2% depending on contract terms.

The procurement of power through short-term open access contracts is gaining popularity among consumers. Factors such as commitment to 100% clean energy goals by large corporates and meeting renewable purchase obligations are pushing for power procurement through short-term open access. Multinational companies (MNCs) with the strategy to go green are choosing the group captive model. These MNCs have strict norms to ensure the counterparty or the open access developer is financially strong and will stay invested for a longer duration. This has brought in demand for serious developers to sell power to these companies.

“There is huge pent-up demand

Open Access Installed Capacity Breakup By Major States (Cumulative)



Source: Mercom India Research (Mar 2021)

for open access despite restrictive policies. With the right, consistent, supportive policies, a substantial amount of investment inflows can be unlocked,” commented Priya Sanjay, Managing Director of Mercom India. “The government’s proposal to cap net metering for rooftop solar at 500 kW is also leading many consumers with larger power demand to consider open access

solar as a solution,” she added.

Mercom recently published the Q1 2021 India Solar Market Update, which revealed that India added 2,056 MW of solar in Q1 2021 compared to 1,505 MW installed in the quarter before. This was a 37% increase quarter-over-quarter. Solar installations were up by 88% year-over-year compared to 1,090 MW added in Q1 2020.

TIGER PRO

**Big or Bigger,
Mechanical Load
is a Paramount Concern**



Mechanical load is a paramount concern if we actually want panels to sit and work reliably over 25 years. IEC standards is a threshold, in the real world condition, the situation is much harsher and more complicated. How to respond to the demanding requirement and raise the standard to achieve better mechanical load values is one of the primary focuses of JinkoSolar Tiger Pro series.



Extremely Excellent Mechanical Load

JinkoSolar continues to optimize the material and process design of the module to ensure that the module can withstand high wind and snow pressure. In terms of reliability, Tiger Pro has not only passed the load test of the **IEC standard** (5400pa on the front side and 2400pa on the back side of the fixed tilt), but also paid attention to the hole position matching of modules and different trackers. Meanwhile, JinkoSolar is able to ensure the **loading safety** and improve its **compatibility** to meet different installation conditions.



Ensuring its bankability while being reliable and safe

*Take Australia 300MW DC project + tracking bracket as an example

In the compatibility test of modules and mounting system, the project requires the mechanical load of the external, internal and edge of the system to withstand **2,400pa**.

The Tiger Pro series and the bigger size modules with different hole positions can withstand different mechanical loads. In this project, for the same hole position, the Tiger Pro series **have better performance** and can **withstand higher load pressure** than the bigger size modules, resulting in an increasing cost of the purlin of the mounting system for the bigger size modules. Therefore, with its excellent mechanical load performance, the Tiger Pro series can save nearly **0.7%** of the BOS cost per watt.

	Tiger Pro Series	Larger Size Module
Power Class (W)	545	600
Number of modules per string	28	33
BOS cost (USD/W)	standard	1.38%
Take mechanical load into consideration, Difference on BOS (USD/W)	standard	+2.06%

Tiger Pro, the best module choice in 2021

JinkoSolar Tiger Pro module can **optimize the BOS cost** with its advantages on mechanical load performance. Thanks to its **high-power output** and **mature global market acceptance**, Tiger Pro modules are becoming the best module choice in 2021.

JinkoSolar is dedicated to helping global PV projects reduce costs and increase efficiency to improve the iterative quality of products in PV industry.

[Markets]

Wind Installations in Q1 Surge by 25%

India added 623 MW in wind power installations in the first quarter of 2021, a significant addition compared to the previous quarter and the same quarter the year before

By : Rahul Nair



Wind installations in India in the first quarter of 2021 (Q1 2021) were up by 25% quarter-over-quarter (QoQ), with 623 MW added compared to 500 MW installed in the previous quarter.

Meanwhile, year-over-year (YoY) installations saw a 230% jump, as only 189 MW was installed during the same period last year.

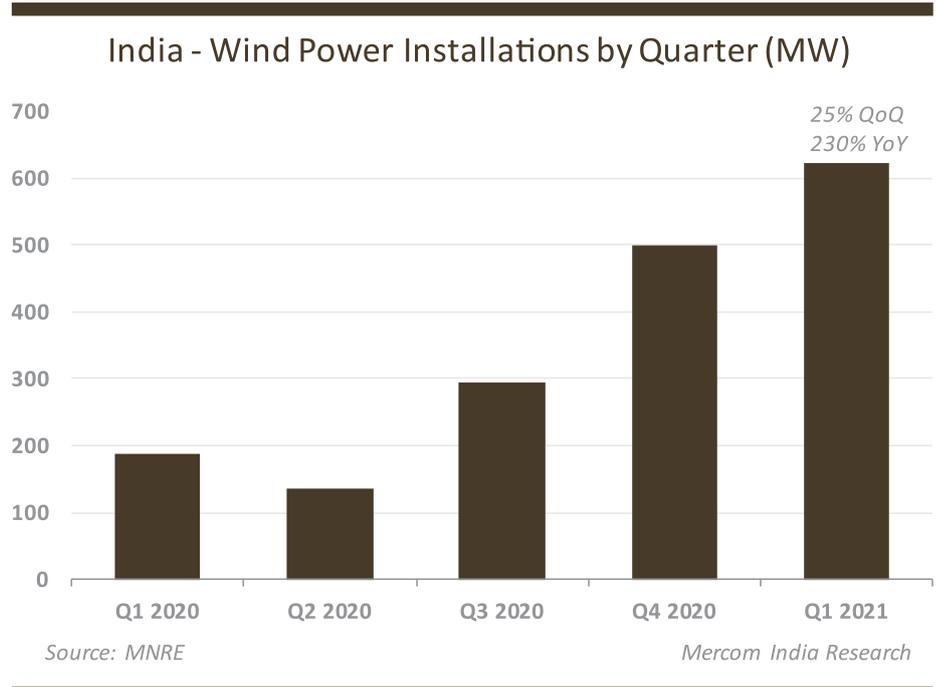
Cumulative installations at the end of Q1 2021 stood at 39.2 GW.

Installations during the quarter came from four states - Tamil Nadu, Gujarat, Karnataka, and Andhra Pradesh.

Gujarat added the most wind capacity during the quarter, with 369.3 MW of installations. The state had a 22% market share and ranked second in cumulative wind capacity in the country with 8.5 GW of installations.

Tamil Nadu added 179 MW in Q1 2021 and had an overall market share of about 25%. It continued to be the leader in cumulative installations with about 9.6 GW of wind projects to date.

Meanwhile, Karnataka installed 69.8 MW of wind projects during the quarter and held a 13% market share. Its cumulative wind installations stood at 4.9 GW, with the state ranking fourth overall.



Maharashtra - ranked third in terms of cumulative installations - did not make any wind capacity additions during the quarter and had a wind portfolio of 5 GW in the state. It held a 13% market share.

Rajasthan also had no wind installations during the quarter but had an 11% share, thanks to its cumulative

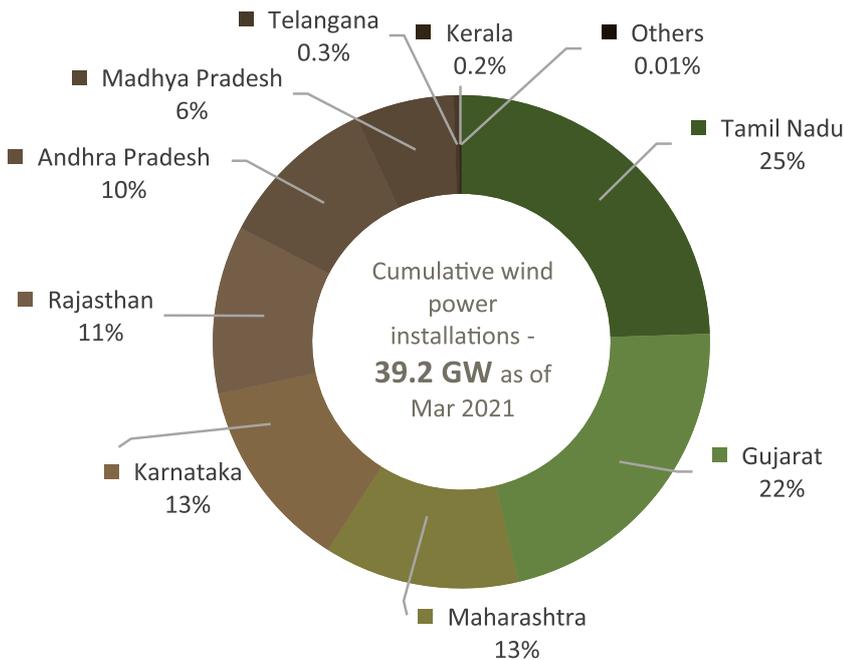
Cumulative wind installations at the end of Q1 2021 stood at 39.2 GW

installations at 4.3 GW, ranking fifth overall. Andhra Pradesh added 4.2 MW of installations in the quarter and had a 10% share. With cumulative installations of 4.09 GW, the state ranked sixth overall.

The Global Wind Energy Council (GWEC) and MEC Intelligence have jointly released the 'India Wind Energy Market Outlook 2025' report, which predicts that the world's fourth-largest wind power market will add nearly 20.2 GW new wind power capacity between 2021 and 2025. The capacity addition would increase India's existing 39.2 GW wind market by 50%, paving the way for growth after recent years of slowdown.

Last year the GWEC had raised doubts about India meeting its offshore and onshore wind energy targets by 2022. 🌪️

India - Cumulative Wind Power Installations by States (%)



Solar Project Costs Rise in Q1 2021

Mercom's report reveals that for the first time in five years, module prices rose for four quarters in a row, contributing to higher system costs

By : Rahul Nair



The average cost of large-scale solar projects in the first quarter of 2021 (Q1 2021) was about ₹36.6 million (-\$505,308)/MW, according to Mercom’s recently released Q1 2021 India Solar Market Update.

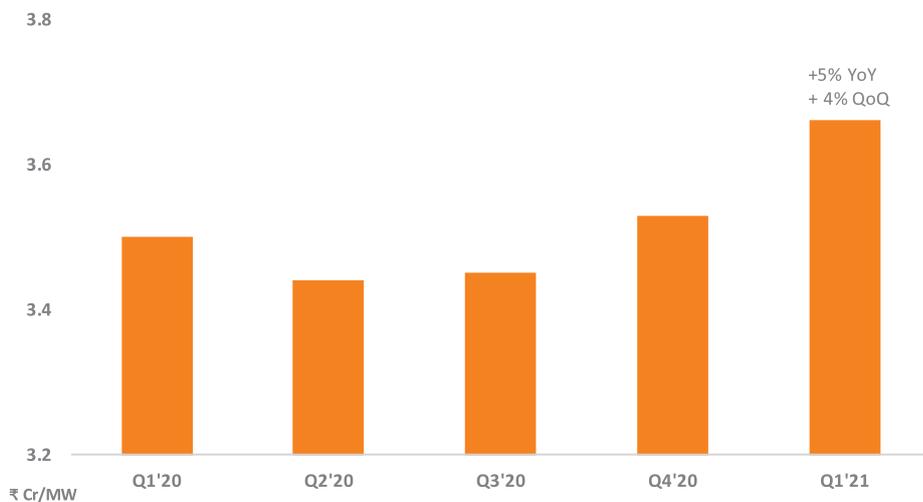
The cost increased by 5% when compared to the same period last year with about ₹35 million (-\$483,121)/MW and a 4% rise from the previous quarter (Q4 2020) when the cost was about ₹35.3 million (-\$488,255)/MW.

Module costs and raw material prices like steel, iron, aluminum, and copper have been rising

Large-scale solar project costs rose by 4% quarter-over-quarter (QoQ) due to rising module costs and raw material prices like steel, iron, aluminum, and copper. The cost of raw materials has continued to rise since Q1 2021, and the lack of availability has impacted

Q1 2021 Average Large-scale Solar Project Cost per MW

Large-scale project costs have increased by 5% YoY



Source: Mercom India Research (Mar 2021)

the overall system cost. Freight charges are high all over the world, and the shortage of shipping containers is also widespread.

The average cost per MW for rooftop solar installations was around ₹38 million (-\$524,445)/MW, up 3% from the same period last year when costs stood at ₹36.9 million (-\$509,242)/MW. The average cost for setting up rooftop solar systems was ₹36.6 million (-\$504,959)/MW in the previous quarter, up roughly 4% QoQ.

Apart from the spike in the average selling price of modules, a surge

in mounting structure costs also contributed to higher system costs. The increase in raw material costs, including steel and aluminum, has resulted in mounting structures prices going up significantly.

Even with the rise in cost, it makes perfect economic sense for industries to adopt rooftop solar as grid tariffs are at times up to 40% more expensive compared to rooftop solar.

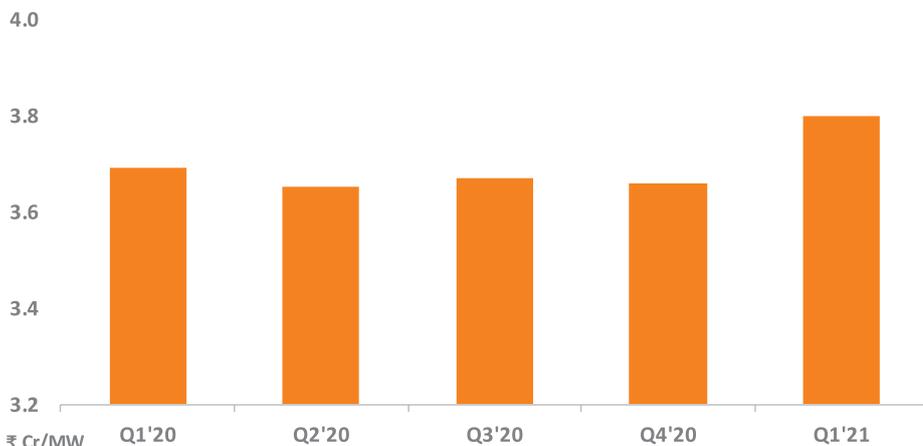
According to the report, for the first time in five years, module prices have risen for four quarters in a row. Module prices are expected to remain high this year as component shortage and logistical issues are expected to take six to nine months to resolve.

The Q1 2021 India Solar Market Update has identified a surge in demand for rooftop solar, especially from the industries that see solar as the best choice for reducing their operating expenses. The pandemic has prompted several industries to go solar. Although opportunities are flooding, installers face a dilemma as module procurement has been a difficult affair with soaring prices.

In Q1 2021, large-scale solar projects totaled 1,749 MW, up by 43% QoQ, and 307 MW were added in rooftop solar installations, an 8% growth from the last quarter. 📈

Q1 2021 Average Rooftop Solar System Cost in India per MW

Rooftop system costs have increased by 3% YoY



Source: Mercom India Research (Mar 2021)

India's Energy Supply Deficit Dips to 0.4%

According to the data released by the Central Electricity Authority, India's energy supply deficit and the peak power deficit fell for the FY 2020-21

By : Rakesh Ranjan Parashar

India's energy supply deficit for the financial year (FY) 2020-21 stood at 0.4%, with the peak power deficit also narrowing down to 0.4% during the year, according to the data released by

the Central Electricity Authority (CEA).

In FY 2019-20, the country's energy supply deficit stood at 0.5%, while the peak power deficit was 0.7%.

For the FY ending March 31, 2021, the total power supplied was 1.271 trillion

units (TU), against the demand of 1.275 TU, a shortfall of 0.4%. For the fiscal year 2021, the country met the peak power demand of 190.19 GW with 189.39 GW, a deficit of 0.4%.

In March 2021, 120.64 MW of energy



was supplied against the demand of 121.21 MW, a shortfall of 0.5%. The country met the peak power demand of 186.39 MW for the month with 185.89 MW.

The northeastern region, comprising Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura, recorded the highest energy supply deficit for 2.5% for the FY 2020-21, and the peak power deficit stood at 5.7%.

The region was supplied 16.53 BU of energy against a demand of 16.96 BU between April 2020 and March 2021. In terms of peak power deficit, the region met 3.29 GW of peak demand with 3.1 GW of power.

The western region, which consists of Chhattisgarh, Gujarat, Madhya Pradesh, Maharashtra, Daman and Diu, and Dadra and Nagar Haveli, completely met 387.98 BU of energy demand and 61.77 GW peak power demand during the period.

Similarly, the southern region, comprising Andhra Pradesh, Telangana, Karnataka, Kerala, Tamil Nadu,

The northeastern region recorded the highest energy supply deficit of 2.5% for the FY 2020-21

Puducherry, and Lakshadweep, also entirely met the energy demand of 326.84 BU and peak power demand of 58.39 GW.

In the northern region, which consists of Chandigarh, Delhi, Haryana, Himachal Pradesh, Jammu and Kashmir, Ladakh, Punjab, Rajasthan, Uttar Pradesh, and Uttarakhand, 392.32 BU of energy was supplied against its requirement of 396.15 BU, representing a deficit of 1%. In terms of peak power demand, the region met 68.29 GW of demand with 67.81 MW - a 0.7% deficit.

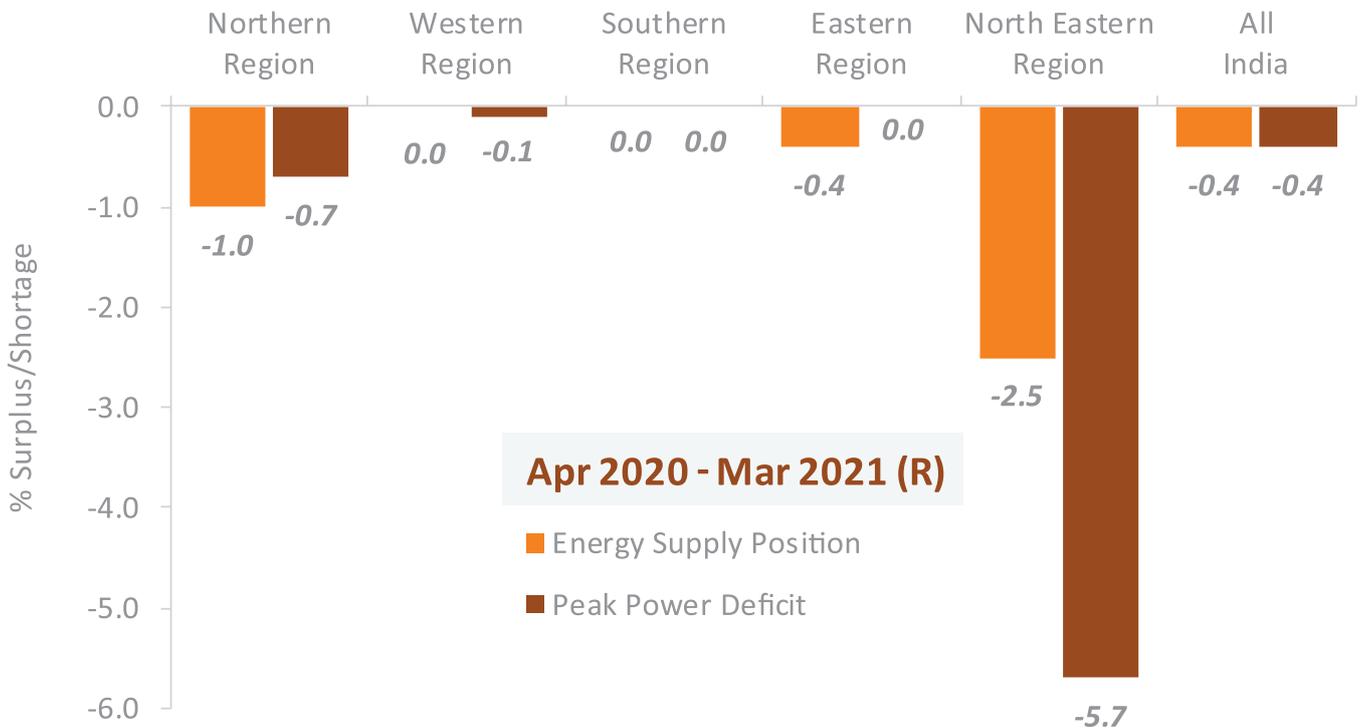
The eastern region, comprising Bihar, Damodar Valley Corporation, Jharkhand, Odisha, West Bengal, Sikkim, and Andaman & Nicobar Islands, met the energy demand of 147.53 BU with

146.99 BU, a shortfall of 0.4%. The region fully met the peak power demand of 24.01 GW.

India's power supply deficit had narrowed down to 0.3% between April and December 2020, while its peak power deficit had slipped to 0.6% during the period.

In December last year, the Cabinet committee on economic affairs had approved the revised cost estimate (RCE) for the Northeastern Region Power System Improvement Project with an estimated cost of ₹67 billion (-\$910 million). The RCE approval is a significant step towards the economic development of India's northeastern region by strengthening the intrastate transmission and distribution systems. ⁶

Region-wise Energy Supply Position and Peak Demand for Apr 2020 - Mar 2021 (Revised)



Data from CEA

Source: Mercom India Research

NO.1

Solar Rooftop Inverter Supplier in India



6/7 MPPTs



Local WIFI configuration



Max. Efficiency 99%



Smart diagnosis



MAX 50-100KTL3 LV/MV



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Rooftop Solar Incentivized in Andaman and Nicobar Islands

The Joint Electricity Regulatory Commission has released the retail power tariff order for the financial year 2022 and continues to provide a 59% reduction in energy charges for residential rooftop solar with the power consumption range of 100-200 kWh

By : Rahul Nair



The Joint Electricity Regulatory Commission (JERC) has announced the energy and fixed charges for rooftop and ground-mounted solar in the Andaman and Nicobar Islands for the financial year 2021-22. This was notified through a retail power tariff order for the financial year (FY) 2021-22.

Last year, the Commission had reduced the charges for domestic, commercial, and industrial categories to incentivize them to install solar systems on their roofs and other available areas.

The Commission has approved a tariff hike of 3.36% for FY 2021-22 over the tariff for FY 2020-21. The Commission has also approved the average billing rate for FY 2021-22 as ₹6.85 (-0.093)/kWh as against the approved average cost of supply of ₹29.51 (-\$0.40)/kWh. The revenue gap will be ₹22.66 (-\$0.31)/kWh.

The Electricity Department of Andaman & Nicobar Islands has confirmed that the approved standalone revenue gap of ₹4.75 billion (-\$64.78 million) would be borne by the Administration of Andaman & Nicobar Islands, with budgetary support from the Government of India.

This order took effect on June 1, 2021, and will remain valid until further notice.

This year, the Commission has retained the tariffs for consumption

slabs in the range of 0-100 units, 101-200 units, and 201-500 units for domestic, commercial, and industrial users.

However, the Commission has increased the tariffs by 13% for domestic and commercial users and by 7% for industrial users, specifically those who consume more than 500 units of power.

In FY 2020-21, the tariff was ₹7.5 (-\$0.1)/kWh for domestic consumers, with consumption above 500 units; for FY 2021-22, the tariff has been hiked to ₹8.5 (-\$0.12)/kWh FY 2021-22. Tariff for commercial users consuming over 500 units was ₹12 (-\$0.16)/kWh in FY 2020-21, which was raised to ₹12.75 (-\$0.17)/kWh this year. Similarly, the tariff for industrial users was ₹8 (-\$0.11)/kWh in FY 2020-21, increased to ₹9 (-\$0.12)/kWh for FY 2021-22.

Renewable purchase obligation

For FY 2021-22, the Commission has approved the RPO target of 39.43 MU, comprising 18.56 MU solar and 20.88 MU non-solar. The Electricity Department of Andaman & Nicobar Islands had claimed to purchase solar energy of around 23.70 MU and non-solar energy of 10.56 MU, thereby resulting in a shortfall in RPO compliance of 10.32 MU for non-solar.

The Commission had noted that there is a net shortfall of 5.18 MU in RPO compliance for FY 2021-22 and a cumulative shortfall of 17.18 MU until FY

2021-22. The Commission has directed the Electricity Department of Andaman & Nicobar Islands to complete the RPO obligation on priority.

Rooftop and ground-mounted solar

There is a 59% reduction in energy charges for residential rooftop solar with the power consumption range of 100-200 kWh, as the consumer has to pay only ₹2.05 (-\$0.03)/kWh compared to ₹5 (-\$0.07)/kWh in the same category without solar. This provision is unchanged from the previous financial year.

The consumers will be considered for reduced energy charges under the domestic, commercial, and industrial solar categories only if they have installed rooftop or ground-mounted solar power projects in their premises equivalent to 15% of the connected load or 25% of the roof area (whichever is less). In addition, if a minimum of 250 kWh per kW of the solar system is not generated for more than six months, the consumer will have to pay energy charges as levied for the non-solar category.

Electric vehicles

The energy charges for electric vehicle charging stations will remain at ₹6.90 (-\$0.09)/kWh, as the previous year. Fixed charges continue to be exempt. 📌

Andaman and Nicobar Islands: Reduced Tariffs for Consumers Opting for Solar Power (FY 2021-22)

Consumer Category	Consumption Slab (kWh)	Approved Tariff					
		Fixed Charges	Energy Charges (consumer opting for solar*)		Energy Charges (without solar)		% Reduction in Tariff
			(₹/kWh)	~(\$/kWh)	(₹/kWh)	~(\$/kWh)	
Domestic	0 - 100	₹ 20 (~\$ 0.27) per connection per month or part thereof for single phase; ₹ 70 (~\$ 0.96) per connection per month or part thereof for three phase	2.05	0.03	2.25	0.03	-9%
	101-200		2.05	0.10	5.00	0.07	-59%
	201-500		7.20	0.10	7.20	0.10	0%
	501 & above		8.50	0.12	8.50	0.12	0%
Commercial	0 - 200	₹ 30 (~\$ 0.41) per connection per month or part thereof for single phase; ₹ 125 (~\$ 1.71) per connection per month or part thereof for three phase	7.00	0.10	7.50	0.10	-7%
	201 - 500 units		9.50	0.13	9.50	0.13	0%
	501 & above		12.75	0.17	12.75	0.17	0%
Industrial	0 to 200 units	₹ 50 (~\$ 0.68) per KVA per month or part thereof	5.50	0.08	6.00	0.08	-8%
	201 to 500 units		6.00	0.08	6.00	0.08	0%
	501 & above		9.00	0.12	9.00	0.12	0%

* Note: Consumers will be considered under Domestic (Solar), Commercial (Solar) and Industrial (Solar) category after having installed Rooftop / Ground Mounted Solar Power Plant in their premises equivalent to 15% of the connected load/contract demand or 25% of the roof area whichever is less. Further, if minimum of 250 kWh per kW of solar system is not generated for more than 6 months, the consumer will be brought back to their respective non-solar category.



MSMEs in Gujarat Have an Incentive to Generate Solar Power

As proposed in its industrial policy announced in August 2020, for solar projects set up by MSMEs, DISCOMs would purchase any surplus solar energy at ₹2.25 (~\$0.031)/kWh

By : Rahul Nair

The Gujarat Electricity Regulatory Commission (GERC) partly allowed a petition seeking amendments in the tariff framework to procure solar power by distribution licensees (DISCOMs) and others. It passed a series of orders concerning energy accounting, rate of surplus energy receivable by micro, small, and medium enterprises (MSMEs), among others.

The petition filed by the Gujarat Urja Vikas Nigam (GUVNL) had requested appropriate amendments in the GERC (Net Metering Rooftop Solar PV Grid Interactive Systems) Regulations, 2016.

The GERC has approved the following amendments to be incorporated.

As proposed in its industrial policy announced in August 2020, for solar projects set up by MSMEs with

above 50% of its contracted demand, the power cycle for calculating the consumption has been increased from a 15-minute time-block to 7 AM-6 PM. This means the consumers will be allowed time from 7 AM to 6 PM to consume the energy generated from the solar project, and the rest is banked. Earlier, with the 15-minute block energy accounting, the power that was not consumed during the 15-minute block had to be banked.

DISCOMs would purchase any surplus solar energy not consumed by the consumer as per energy accounting at ₹2.25 (-\$0.031)/kWh instead of ₹1.75 (-\$0.024)/kWh.

The Commission also approved a switchover option for MSME projects approved before September 2019 to the mechanism mentioned in the September 2020 order.

Gujarat has been making several

amendments to encourage MSMEs to go solar. In 2019, the government had relaxed the state's solar policy to allow MSMEs to install solar projects that are more than 100% of their approved load or contract demand. Later it allowed the third-party sale of open access power by MSMEs by paying 100% of cross-subsidy surcharge and additional surcharge applicable to normal open access consumers.

MSMEs are a huge potential market for rooftop and open access solar but are largely untapped. Mercom has earlier reported that the lack of a required grade of credit rating has kept this market underserved by financiers. The attractive price offered for the surplus power generated, and relaxed energy accounting hopefully will drive the growth of solar adoption by this segment. ☺

Global Solar Funding Rises to \$13.5 Billion in 1H 2021

Global VC funding including venture capital, private equity, and corporate venture capital – in the solar sector increased around 680% to \$1.6 billion in 26 deals

By : Harsh Shukla



Global corporate funding in the solar sector, including venture capital (VC) funding, debt, and public market financing, stood at \$13.5 billion in the first half (1H) of 2021, a 193% year-over-year (YoY) increase compared to \$4.6 billion in 1H 2020, according to Mercom Capital Group’s 1H and Q2 2021 Solar Funding and M&A Report.

“Funding was up across the board in the first half of 2021 compared to last year, which was severely affected by the pandemic. Corporate merger and acquisition (M&A) activities were

Funding was up across the board in the first half of 2021 compared to last year.

up significantly, with solar developers expanding their pipelines, oil and gas companies diversifying into renewables, and funds buying up renewable assets.



Solar project acquisition reached a record high in Q2,” said Raj Prabhu, Chief Executive Officer of Mercom Capital Group.

“The transition from fossil fuels to renewables and environmental, social, and governance investing trends made an impact on financing as well as M&A activity,” Prabhu added.

In the first half of 2021, global VC funding - including VC, private equity, and corporate VC - in the solar sector increased around 680% to \$1.6 billion in 26 deals compared to \$210 million in 14 deals in the same period the year before. In 1H 2021, a total of 85 investors participated in solar funding.

Some of the top VC deals in 1H

Solar Top VC Funded Companies in 1H 2021

Company	Amount	Investors
LOANPAL	\$800M	NEA, WestCap Group, Brookfield Asset Management, Riverstone Holdings
aurora	\$250M	Coatue, ICONIQ Capital, Energize Ventures, Fifth Wall
Intersect Power	\$127M	Climate Adaptive Infrastructure, Trilantic North America
FOURTH PARTNER ENERGY	\$125M	Norfund, The Rise Fund
Heliogen	\$108M	ArcelorMittal, Edison International, Prime Movers Lab, Ocgrow Ventures, A.T. Gekko, 8090 Partners, Gordon Crawford, Rashaun Williams

Source: Mercom Capital Group

Solar Top Disclosed M&A Transactions in 1H 2021

Company	SB Energy	Greenko (21.8% stake)	Clēnera	BRUC ENERGY (50% Stake)	TERRASmart
Amount	\$3,500M	\$961M	\$433M	\$281M	\$220M
Acquirer	adani Renewables	ORIX	enlight	USS	GIBRALTAR INDUSTRIES

Source: Mercom Capital Group

2021 included \$800 million raised by Loanpal, \$250 million raised by Aurora Solar, \$127 million raised by Intersect Power, \$125 million raised by Fourth Partner Energy, and \$108 million raised by Heliogen.

1H 2021 also saw a 386% increase in solar public financing, with \$3.7 billion raised in 13 deals compared to \$758 million raised in six deals in the same period last year. In 1H 2021, Shoals Technologies Group's \$2.2 billion initial public offerings comprised a big part of the increase in public financing activity.

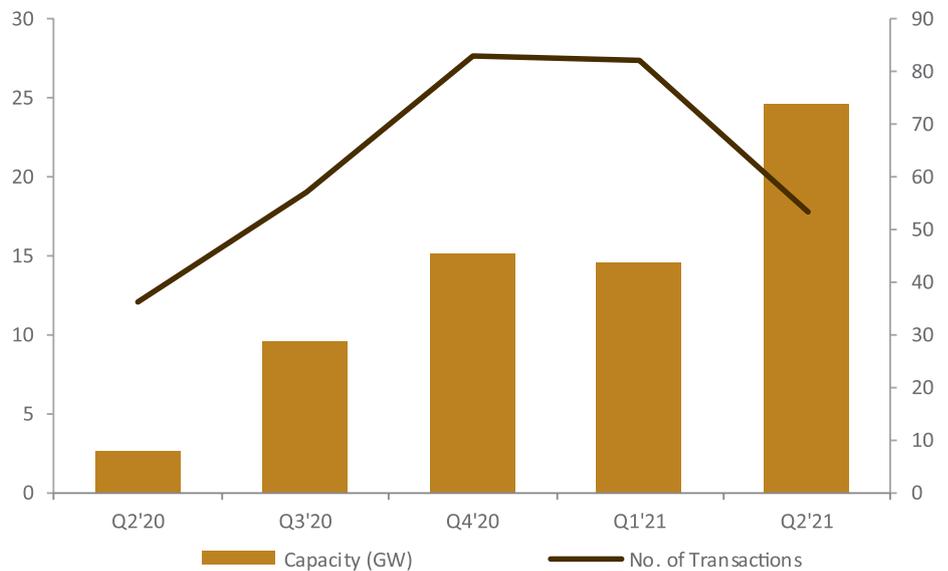
Debt financing activity stood at around \$8.2 billion through 32 different deals in the first half of 2021. This was 125% higher than the first half of 2020, which saw \$3.7 billion raised through 17 deals. In 1H 2021, a record \$2 billion was raised through seven securitization deals due to low interest rates.

The report also showed that during 1H 2021, there were 54 M&A deals, up from 25 in 1H 2020. The biggest of these was the total acquisition of SB Energy India by Adani Green Energy.

During the second quarter (Q2) of the calendar year (CY) 2021, 34 corporate M&A transactions were completed compared to 20 in the first quarter and 13 in the same period last year.

According to the report, the solar project acquisition was at a record high in Q2 2021. A total of 24 GW of solar

Solar Project Acquisitions Q2 2020-Q2 2021
(By GW)



Source: Mercom Capital Group

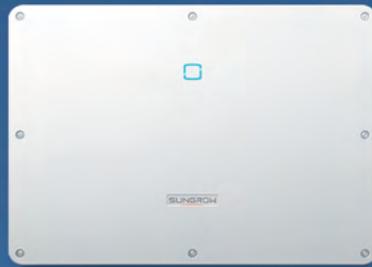
projects were acquired compared to 14.6 GW in the previous quarter. Of these, 13.3 GW of solar projects were acquired by project developers and independent power producers. Oil and gas companies accounted for 9 GW, or 37.5%, of these acquisitions during Q2 2021, followed by investment firms with 1.3 GW, or 5.41% of acquisitions.

In April 2021, Mercom Capital Group's report showed that total corporate funding for the solar sector, including VC funding, public market, and debt financing, totaled \$8.1 billion in 36 deals in Q1 2021, an increase of 21% compared to the \$6.7 billion raised in 43 deals in Q4 2020. ☺

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Global Market
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3 GW India Manufacturing Unit

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Industry News and Policy Briefs

The distributed solar company, **Fourth Partner Energy**, raised **\$125 million** in equity funding. **Norwegian Investment Fund - Norfund** had brought in \$100 million while existing shareholders of the Rise Fund invested \$25 million. The Rise Fund is a global impact investment fund managed by TPG (**formerly Texas Pacific Group**).



Azure Power posted a 16.2% year-over-year (YoY) rise in its revenue in Q4 of FY 2021, driven by projects commissioned in FY 2021. Other reasons for the growth included an additional revenue of ₹83 million (-\$1.1 million) from the recovery of safeguard duties and Goods and Service Tax, derived from the 'Change in Law' provision in power purchase agreements (PPAs) for four of their projects.

Solar Energy Corporation of India paid around ₹4.91 billion (-\$66 million) to solar and wind developers for the power it purchased in May 2021. These disbursements accounted for 94% of the total amount disbursed by the agency during the month. The nodal agency's total disbursement for the month stood at ₹5.23 billion (-\$70.49 million) towards purchasing solar and wind power, subsidies, reimbursements to developers, and duties and tax reimbursements among other expenses for the month.

Pune-based biofuel company **Greenjoules** raised ₹330 million (-\$4.52 million) in a 'Series A' round of funding from **Blue Ashva Capital** through its **Blue Ashva Sampada Fund**. Blue Ashva Capital is an investment firm based out of Singapore and India, backing sustainable and profitable businesses that solve challenges in food and agriculture, energy and environment, health and wellness, and money and finance.

Renewable energy solutions providers **Suzlon Group** announced that it had won an order from **CLP India** to develop a 252 MW wind power project. The project is in Sidhpur, Gujarat, and is expected to be commissioned in 2022.



Shapoorji Pallonji Group company's end-to-end solar engineering, procurement, and construction (EPC) solutions provider **Sterling and Wilson** declared its financial results for the year ended March 31, 2021, reflecting record losses. The company's revenue from operations stood at ₹13.64 billion (-\$183.65 million) in the fourth quarter (Q4) of the financial year 2021 (FY 2021), down 34% year-over-year (YoY) from ₹20.60 billion (-\$277.32 million) in Q4 FY 2020.



Kolkata-based manufacturer of solar cells and modules **Websol Energy System** announced combined financial results for Q4 and FY 2021. The company reported a net profit of ₹678.3 million (-\$9.3 million) for FY 2021, which included exceptional items of ₹553.1 million (-\$7.6 million) considered in Q3 2020 as a result of writing back (reduced credit balance claimed as income).



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Policy Briefs

States

The **Gujarat Electricity Regulatory Commission** approved the **amendments** sought by the **Gujarat Urja Vikas Nigam Limited (GUVNL)** to the earlier order passed by the Commission for tariff framework to procure power by distribution companies. The amendments addressed several issues: energy accounting, captive projects, cross-subsidy surcharge, wheeling charge, and additional surcharge.



The **Power Department of West Bengal** announced the **Electric Vehicle (EV) Policy 2021**, aiming to position the state as a sustainable transportation infrastructure hub. Through the move, the state government is promoting electric mobility in the state.

The **Department of Heavy Industries** announced **partial amendments** to the **FAME-II program**. **Specific demand incentive** for electric two-wheelers (E2W) of ₹15,000 (-\$205)/kWh has now been announced. Earlier, there was a uniform demand incentive of ₹10,000 (\$137)/kWh for all vehicles.



The **Karnataka Electricity Regulatory Commission** retained the tariff for **waste-to-energy projects** at ₹7.08 (-\$0.097)/kWh from April 1, 2021, to March 31, 2022. The Commission had determined the tariff of ₹7.08 (-\$0.097)/kWh for waste-to-energy on September 19, 2016, and in August 2020, it extended the validity of the tariff until March 31, 2021.



GUVNL announced that the average of solar tariffs discovered and contracted through a competitive bidding process conducted by GUVNL for non-park based captive solar projects from October 01, 2020, to March 31, 2021, was ₹1.99 (-\$0.027)/kWh.

Center

The government extended the validity of the second phase of the **Faster Adoption and Manufacturing of Electric Vehicles (FAME)-II program** for all approved electric vehicle (EV) models. The validity has been extended for two years up to March 31, 2024. Last year, the program received a validity extension until December 31, 2020.



The **Ministry of Power** issued the much-awaited amendment to the Electricity (Rights of Consumers) 2020 Rules concerning **net metering** for rooftop solar installations. The amendment permits net metering to the prosumer for loads up to 500 kW or up to the sanctioned load, whichever is lower.

The **Ministry of Power** announced an extension to the **inter-state transmission system (ISTS) charges** waiver on solar and wind energy projects commissioned up to June 30, 2025. The waiver applies to ISTS charges only and not losses, and the order comes into effect immediately.

The **Union Finance Minister Nirmala Sitharaman** announced the **'Economic Relief from Pandemic'** package and declared several sops for power distribution companies (DISCOMs), including ₹3.03 trillion (-\$40.82 billion) outlay for reform-based result-linked power distribution program.

The **Department of Heavy Industry** also issued a notification for the **performance-linked incentive (PLI) program 'National program on Advanced Chemical Cell (ACC) battery storage'** to implement ACC manufacturing facilities for EV. The program's total incentive pay-out for five years is **₹181 billion (-\$2.47 billion)**.

The **Ministry of Power** released a discussion paper on redesigning the **renewable energy certificate (REC) mechanism** for stakeholder comments. As per the measures proposed for restructuring the REC mechanism, the REC will remain until it is sold. Currently, the validity of RECs is 1,095 days, and CERC determines the floor and forbearance prices, which until now have been revised four to five times for non-solar and solar RECs.



The **Ministry of Power** granted an **extension of three months** to all interstate transmission projects under construction, with the scheduled commercial operation date falling after April 1, 2021, hit by the resurgence of the Covid-19 pandemic.

The **Ministry of Power** issued a discussion paper on the **market-based economic dispatch** of power. The Ministry proposed a new mechanism to bring down the cost of power for distribution companies (DISCOMs) and consumers. The **power demand** by all states is proposed to be met through a central pool allocating power at the optimal price.



The **Joint Electricity Regulatory Commission** announced the energy and fixed charges for rooftop and ground-mounted solar in the **Andaman and Nicobar Islands** for FY 2021-22. This was notified through a retail power tariff order for the FY 2021-22.

In a move to provide the much-needed relief to renewable developers amid the second surge of the Covid-19 pandemic, the **Ministry of New and Renewable Energy** granted an extension of two and half months for projects with commissioning dates between April 1 and June 15, 2021. The Ministry noted that the step had been taken to provide relief to renewable developers dealing with the lockdown restrictions imposed by various state governments due to the second surge of the Covid-19 pandemic.



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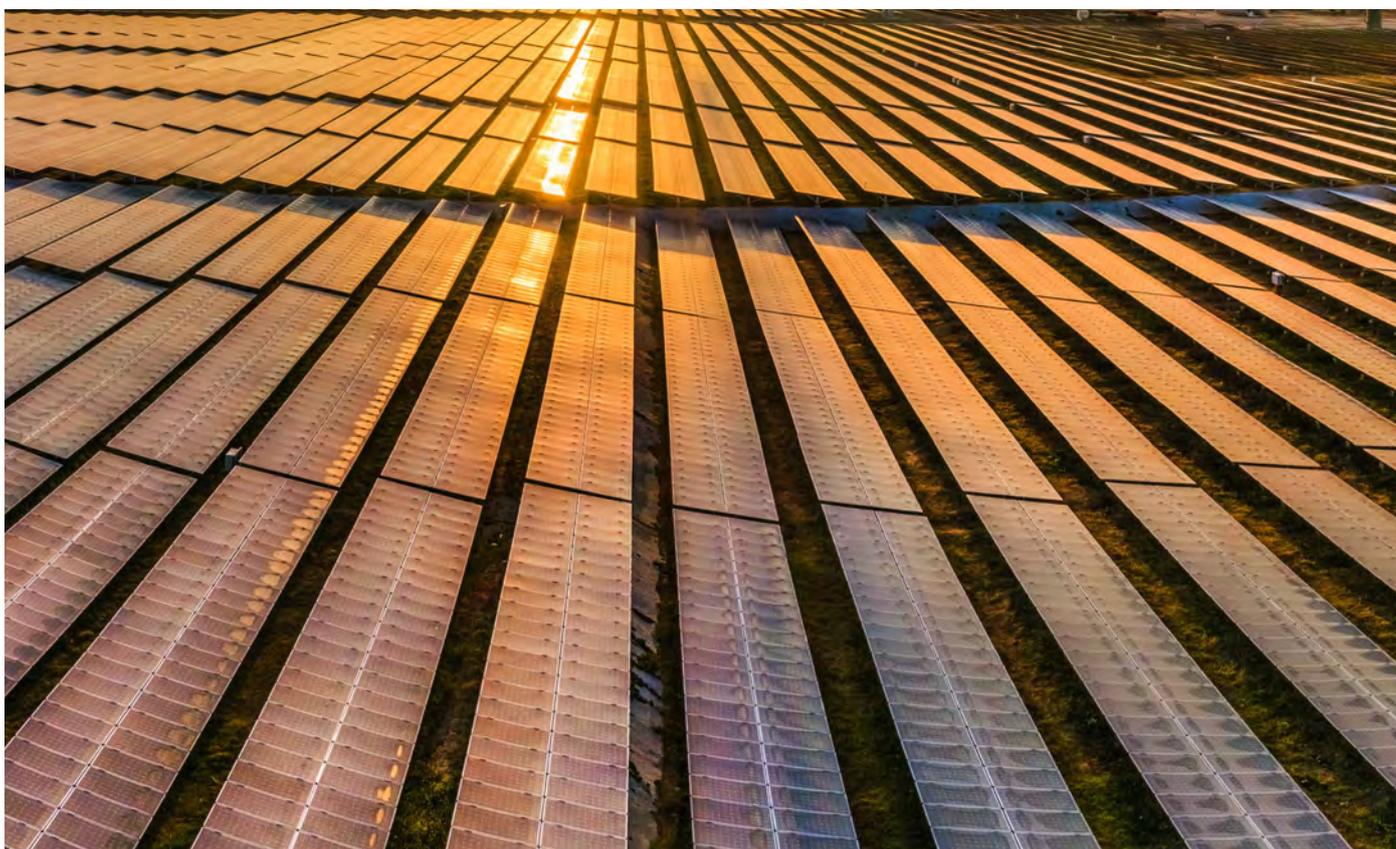
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Major Tender and Auction Announcements in June

This is a list of major tenders and auctions from June. A comprehensive list can be found on Mercom's Tender and Auction Tracker and Alerts. Please contact info@mercomindia.com for more information.



Top Large-Scale Solar Tenders

The Railway Energy Management Company Limited (**REMCL**), a joint venture of the Indian Railways and RITES, invited bids for setting up a **740 MW** ground-mount solar project on vacant lands belonging to **Indian Railways**.

NTPC Vidyut Vyapar Nigam Limited (**NVVN**), a wholly-owned subsidiary of **NTPC**, floated a tender for solar and round-the-clock solar bundled with thermal power from NTPC's **735 MW Nokh** solar project in Rajasthan and projects developed by other generators.

The Manipur Renewable Energy Development Agency released a tender to set up a **50 MW** grid-connected solar

project at Jiribam in Manipur. The ceiling tariff for the project has been set at **₹3 (-\$0.041)/kWh**.

NTPC announced a tender to install a **4 MW** ground-mounted solar project with a **1 MW/1 MWh** battery energy storage system (**BESS**) and induction-based cooking system at the NTPC Energy Technology Research Alliance facility in Greater Noida.

The Indian Oil Corporation Limited (**IOCL**) invited bids from engineering, procurement, and construction (**EPC**) contractors to set up a **2 MW** ground-mounted **on-grid solar** photovoltaic project at its **LPG Bottling Plant** at Tikri Kalan, Delhi.

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Other Tenders

The Gujarat Industries Power Company invited bids from project consultants to develop a **2,375 MW solar, wind, and hybrid renewable energy park** at the Great Rann of Kutch area in Gujarat.

The Maharashtra State Electricity Distribution Company issued a tender for **500 MW** of distributed solar projects (**0.5 MW to 2 MW**) under Component A of the Pradhan Mantri Kisan Urja Suraksha evam Utthan Mahabhiyan (**KUSUM**) program.

The REC Power Distribution Company, a wholly-owned subsidiary of REC Limited, released a tender for the owner's engineer for **125 MW** of grid-connected solar projects.

NTPC announced a tender for the supply, installation, and commissioning of a power project controller system and development of project dynamic model and related grid-compliance study for the **20 MW** solar project at **Gandhar** in Gujarat.

Bharat Petroleum invited bids to procure **15 MW** of solar and non-solar renewable power on a short-term open

access basis for its refinery in Mahul, Mumbai.

NVVN floated a tender to purchase land for setting solar power projects under the **Mukhyamantri Saur Krishi Vahini Yojana** in Maharashtra.

Central Electronics, a public sector enterprise under the Ministry of Science and Technology, issued a tender for the supply of **200,000 monocrystalline solar cells** of wattage capacity **5.1 W** or higher.

Rajasthan Electronics and Instruments, a joint venture between the government of India and the Rajasthan government, announced a tender to procure **200,000 multicrystalline solar cells** of wattage output **4.62W**. The company also invited bids to procure **9,110 polycrystalline** solar modules under the domestic content requirement (**DCR**) category.

The Kerala State Electronics Development Corporation Limited (**KELTRON**) released a tender for the supply of **1,604 multicrystalline** solar modules of 330 W output for the **1 MW** solar project at Ramakkalmedu in the **Idukki** district of Kerala.

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Rooftop Solar Tenders

The Chamundeshwari Electricity Supply Corporation invited an expression of interest for the empanelment of installers to set up **grid-connected rooftop** solar photovoltaic (PV) systems totaling **10 MW**.

The Uttar Pradesh New and Renewable Energy Development Agency floated a tender to install grid-connected rooftop solar projects under the capital

expenditure (**CAPEX**) model across government buildings at various locations in Uttar Pradesh.

The Uttarakhand Power Corporation launched a tender to **empanel** installers for grid-connected rooftop solar systems of **1 kW to 500 kW** capacity at various places in the state.

Auction Cancellation

The Uttar Pradesh New and Renewable Energy Development Agency canceled its **500 MW** solar auction. An official statement from the agency stated that the

auction had been canceled in the hope of discovering **lower tariffs** in new auctions.

Auctions

The Rewa Ultra Mega Solar's tender for **550 MW** of solar projects at the **Agar** Solar Park in Madhya Pradesh received an enthusiastic response from the bidders. Rewa's tender for **450 MW** of solar projects at the **Shajapur** Solar Park in Madhya Pradesh also received a massive response from the bidders and has been oversubscribed by **5.8 GW**.

The Maharashtra State Electricity Distribution Company Limited's (**MSEDCL**) tender to procure **500 MW** of **wind-solar hybrid power** received a good response from the bidders. It has been oversubscribed by **1 GW**. **MSEDCL's** tender for **500 MW** of solar projects also received a strong response. It has been oversubscribed by more than **3.5 GW**.



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