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COVID Effect: Solar Installations Slide in 2020

India installed 3.2 GW of solar capacity 2020. Significant positive growth expected in 2021.

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TENDERS & AUCTIONS

Major Tender and Auction Announcements in January

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

Foreword



The final numbers are in; solar installations in 2020 totaled 3.2 GW, a 56% decline compared to 7.3 GW of capacity added in 2019 according to the newly published Q4 & Annual 2020 India Solar Market Quarterly Update. Large-Scale installations in 2020 declined by 60%, with 2.5 GW installed compared to 6.2 GW installed in 2019.

The top solar markets globally, including China, United States, and Germany, have all experienced significant growth in 2020 despite COVID-19. China has installed 48.2 GW of solar capacity in 2020, a 60% year-over-year increase compared to 30.11 GW in 2019. The United States has already installed 10.9 GW of solar through Q3 2020 (Q4 updates are pending) compared to 13.3 GW installed in all of 2019. India is the only top solar market that has posted negative installation growth as high as 56%. India had a far stringent lockdown during the pandemic compared to other markets, but this was just one of the reasons for the dismal installation numbers.

Mercom expects 2021 and 2022 to be two of the strongest years to date. But, the reluctance of the distribution companies to sign power sale agreements with the Solar Energy Corporation of India is threatening to slow down growth. With tariffs falling steeply in each auction, state distribution companies are reluctant to sign power sale agreements. This has left about 17-18 GW of projects without a PSA.

Freight and shipping costs are still high. Spot solar components average selling prices in China shot up across the board in January. Raw material costs are up due to the shortage of supply, especially glass.

Chinese polycrystalline module ASPs saw an increase of 3% QoQ to \$0.188 (-₹13.72)/W in Q4 2020 compared to the \$0.183 (-₹13.35)/W in Q3 2020. Current module ASPs (Mid-February) are around \$0.198 (-₹14.45)/W, an 8% increase compared to Q3 2020.

Large-scale solar system costs rose by about 2% due to the increase in module ASPs and the rise in raw materials costs, including steel and aluminum. Large-scale system costs in Q4 2020 climbed to around ₹3.53 Cr (-\$0.483 million)/MW compared to ₹3.45 Cr (-\$0.472 million)/MW in the previous quarter. The surge in raw material costs has increased the mounting structure and other BOS costs, resulting in the average large-scale project cost to shoot up.

A total of 719 MW of rooftop solar capacity was added in 2020, a 34% decline compared to the 1.1 GW added in 2019. However, things seem to be turning around, with installations improving significantly over the second half of the year. Fourth-quarter was the strongest for rooftop installations, and we expect the momentum to continue into Q1 2021.

The solar industry has shown incredible resilience amid all the chaos brought on by the pandemic. The market is on the verge of experiencing two of its best years-to-date unless further disruptions in the form of ill-conceived policies hurt growth.

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Solar Imports and Exports See Sharp Drop in CY 2020

As the COVID-19 pandemic brought the solar industry to a standstill, its ripples were felt across the value chain as both solar imports and exports dived

By : Rakesh Ranjan Parashar

In the calendar year 2020, India imported solar cells and modules worth \$475.78 million (-₹34.7 billion), a 78% drop from CY 2019. In CY 2019, the Indian solar sector had imported solar modules and cells worth nearly \$2.17 billion (-₹158.29 billion).

The COVID-19 pandemic and the subsequent lockdown brought the solar industry to a standstill, leading to decreased demand and a sharp dip in imports.

Exports also declined by 67% - \$84.16 million (-₹6.14 billion) in CY 2020 compared to \$253.01 million (-₹18.45

billion) in 2019.

Solar Imports in Calendar Year 2020

China was the largest exporter of solar modules and cells to India in CY 2020, with a market share of nearly 84%, followed by Vietnam, Thailand, Taiwan,

and Singapore with 4.9%, 4.5%, 1.9%, and 1.5%, respectively.

Solar Exports in Calendar Year 2020

The United States was the largest market for solar exports from India. It accounted for nearly 79% of the market share, followed by Turkey, South Africa, the UAE, and Oman with 4.4%, 2.8%, 1.4%, and 1%, respectively.

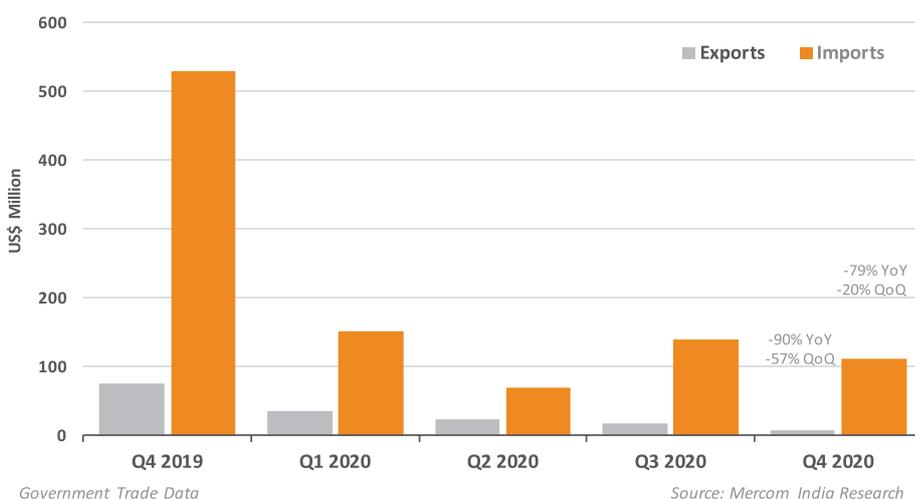
Solar Imports and Exports in Q4 2020

India's solar imports declined by 20% in Q4 2020 compared to Q3 of CY 2020. The imports stood at \$111.8 million (-₹8.15 billion) compared to ₹140.12 million (-₹10.2 billion) in Q3 2020. The Q4 imports represent a 79% decrease when compared to the same period in 2019.

Exports of solar modules and cells from India also saw a decline of 57% and stood at \$7.25 million (-₹528.8 million) compared to \$16.91 million (-₹1.23 billion) in Q3 2020. Q4 exports were 90% lower compared to the same period in 2019.

In Q4 2020, China was the largest exporter of solar products to India with a market share of 88%, followed by Vietnam, Myanmar, Malaysia, and Taiwan with 3%, 2.3%, 1.8%, and 1.5%, respectively. The United States continued to be the biggest market for

India Solar Cell and Module Quarterly Import-Export Activity (\$M)



Indian solar exports with a market share of 65%, followed by the UAE, South Africa, Canada, and Nepal with 11%, 4.7%, 4.3%, and 2%, respectively.

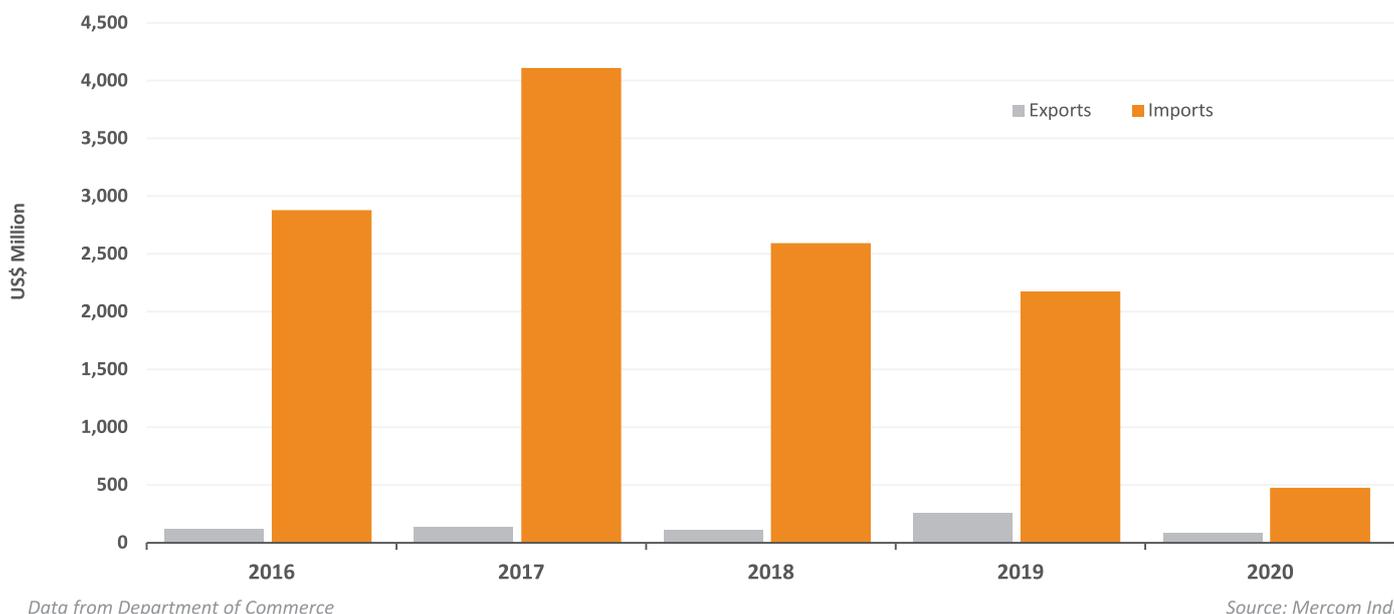
and Industry, imposed a countervailing duty at 9.71% of the cost, insurance, and freight value for five years on the imports of textured and tempered (whether coated or uncoated) glass from Malaysia. The glass is used in the production of solar panels and solar thermal applications.

Mercom reported in October 2020 that India's solar imports were 77% lower in Q3 2020 compared to the same period in 2019, which saw \$598.1 million (-₹42.2 billion) of imports. However, solar imports rose to \$140.1 million (-₹10.4 billion) in Q3 2020, a 102% increase from the previous quarter's \$69.2 million (-₹5.3 billion).

Solar imports in the calendar year 2020 declined by 78%

Recently, the Directorate General of Trade Remedies, Ministry of Commerce

India Solar Cell and Module Import-Export Activity (\$M) 2016 - 2020



Developers Seek PMO's Help on Gujarat Solar Auction Fiasco

Gujarat electricity regulator allowed the state power distribution company to cancel the 700 MW solar auction and retender it to discover a lower tariff

By : Rahul Nair



The Solar Power Developers Association (SPDA) has written to the Prime Minister's Office (PMO) against the delays in signing the power purchase agreements (PPA) by the Gujarat Urja Vikas Nigam (GUVNL) for 700 MW of projects at the 1,000 MW Dholera Solar Park.

The Gujarat Electricity Regulatory Commission (GERC) had allowed GUVNL to cancel the 700 MW solar auction and re-tender it (Phase IX) to discover a lower tariff for the projects. This is not the first time that GUVNL has canceled the auctions citing high tariffs.

The park comes under the Dholera Special Investment Region (DSIR), which is expected to become a global

manufacturing hub. The invitation for bids was issued on February 16, 2019, with a ceiling tariff of ₹2.75 (-\$0.038)/kWh.

The tender was undersubscribed due to operational challenges at the site

However, due to operational challenges at the site, the tender was undersubscribed. Eventually, Tata Power Renewable Energy was awarded 250 MW at ₹2.75 (-\$0.038)/kWh.

A second tender was issued for the remaining 750 MW on June 24, 2019, which received a poor response with bids received for a capacity of just 50 MW. Tata Power was again awarded the 50 MW capacity.

Both projects were approved by the Gujarat Electricity Regulatory Commission (GERC) and are under construction.

Both tenders were undersubscribed because the Dholera Solar Park's difficult terrain failed to attract investors at a ceiling tariff of ₹2.75 (-\$0.038)/kWh.

Some of the issues at the location that inflate the cost of project construction and maintenance include:

- Frequent flooding of nearby rivers and the Gulf of Cambay gushing into the site's low lying areas leaves the site waterlogged for at least nine months a year.
- The groundwater is around 1.5-2 meters heavily laced with chlorides and sulfates, which, coupled with the coastal environment, results in heavy corrosion and needs superior quality design and materials.
- The site is not suitable for the latest bifacial modules due to soil conditions and frequent flooding, restricting the choice of technology.

Since the tenders were undersubscribed, GUVNL took up the matter with Solar Energy Corporation of India (SECI), Gujarat Power Corporation (GPCL), which is the implementing agency, and the Department of Industrial Policy and Promotion (DIPP).

SECI, which had plans to develop 5000 MW at DSIR, proposed a new

tariff of ₹3.06 (-\$0.042)/kWh, saying the ceiling tariff was too low at ₹2.75 (-\$0.038)/kWh.

However, GUVNL raised the ceiling to ₹2.92 (-\$0.40)/kWh. Based on the new tariff, GUVNL floated the remaining 700 MW tender, which was oversubscribed by seven bidders to an aggregate of 1,300 MW. Eventually, after conducting a reverse auction, the project was awarded in the range of ₹2.78 (-\$0.038)/kWh to ₹2.81 (-\$0.039)/kWh. The LoA was subsequently issued on October 9, 2020.

The PPAs that were scheduled to be signed on January 9, 2021, are pending

The PPAs that were scheduled to be signed on January 9, 2021, are pending. The developers have alleged that GUVNL was unfairly comparing the Dholera project tariffs to lower tariffs discovered in subsequent auctions.

The developers claim that such comparisons were unfair, given the challenges on-site at DSIR, and when tariffs were discovered in the range of ₹2.78 (-\$0.038)/kWh and ₹2.81 (-\$0.039)/kWh, which were lower than the ceiling of ₹2.92 (-\$0.040)/kWh.

The five developers selected for the project are O2 Power, ReNew, Tata Power, SJVN, and Vena Energy.

The developers have requested the PMO to intervene in the matter as the land on the project site has already been demarcated, and a few have already paid for land-related charges. The developers have only received 15 months to execute the project.

They have said that the stance of GUVNL would have huge repercussions on the investment environment in Gujarat and India. 🇮🇳



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Solar Projects Buckle Under Exorbitant Freight Charges

Solar companies are reporting that shipping/freight charges have shot up in the range of 500%-800% in the last quarter

By : Rahul Nair





Solar companies are reporting that shipping/freight charges have shot up substantially in the range of 500%-800% in the last quarter, raising the cost of new installations. As a result, contracts are being terminated at FOB (freight on board) incoterms and the freight at actuals at the ports.

Mercom spoke with developers, manufacturers, and suppliers to understand the reasons behind the sudden rise in container charges and how it is affecting their businesses.

An executive at a major Indian module manufacturer said that while the shortage of raw materials or glass for solar modules was manageable, freight charges have shot up. The rise in freight charges is not just limited to India but is a global challenge.

“The increased freight charges are adding to the cost of getting material from China. Those importing finished modules from China are also facing the same challenge,” he said.

According to the executive, freight cost which used to be \$800 - \$1,000 (-₹58,440 - ₹73,050) per container has now soared to \$4,000 - \$4,500 (-₹292,202 - ₹328,702) per container.

“In one container, you can roughly import around 200 kW of modules. With a bigger output module, you can bring in 220 kW. It would add up to 1 MW if someone ships in five containers, meaning he would spend around \$15,000 - \$20,000 (-₹1.09 million - -₹1.46

million). It is a substantial amount, which adds to the cost per watt. Imagine if someone is hauling in 1 GW or 8 GW of modules from China, it would add up to several containers,” he said.

Another supplier of modules from China said that shipping modules and

The rise in freight charges is not limited to India; it is a global challenge

raw materials are a new challenge his company is facing.

“There has been a six-fold spike in freight charges, which we are squeezing out of our pockets. Earlier our shipping costs were as low as 2 - 3% when it came to maritime shipping of modules. Now it is as high as 8%. A single container shipped to Chennai would cost us around \$600 (-₹43,830), and now it has shot up to \$4,800 (-₹350,647). Each month we are shipping 175 containers, and we are incurring losses to the tune of \$600,000 (-₹43.83 million). We have no choice but to pay up,” he

said.

According to the supplier, there is no genuine reason behind such a sharp spike in costs. “The staple excuse that we are given is that there is a shortage of shipping containers returning to China. Covid had a huge impact on shipping as several voyages were cut short, and many ships were left stranded at different ports. But this still does not justify the six-fold increase in shipping charges, and this has become a global phenomenon.”

He said that clients are terminating contracts at FOB incoterms and the freight at actuals. “We have to push the cost on to the consumers. In earlier contracts, we took the brunt of the freight charges, but the latest contracts we signed in the last few months are on FOB incoterms.”

According to Vinay Pabba, Founder and CEO of Varp Power, container prices have increased quickly in a short period.

He said that 1 MW of imported modules needs four to five containers. “Earlier, our variables were in control, but the cost of shipping modules in containers has shot up, and now there is a load on our finances. One of the major routes for importing modules from China is through Chennai. Here the container charges were around \$600-\$800 (-₹43,830 - ₹58,440), but now we see rates in the range of \$4,000 - \$5,000 (-₹292,202 - -₹365,257) for each container. So for 1 MW of modules, we are paying around \$13,000 - \$15000 (-₹949,578 - -₹1.09 million),” he said.

Pabba said several solar developers like him did not expect the rates to skyrocket and are forced to use company funds to offset the high

Clients are terminating contracts at FOB incoterms and the freight at actuals

expenses. “To be honest, we are not able to get a

convincing answer as to why freight charges have shot up so much. We are seeing this price peak for the last three-four months.”

However, he said there is nothing much the developers can do since rising prices is a trade issue and not a policy issue. “We don’t have any rationale to go to the government because all businesses face risks, and this is one of the operational risks we need to factor in.”



Government's Plan to Boost Solar Manufacturing Calls for Clarity

The solar industry feels production linked incentives can positively impact domestic manufacturing

By : Rakesh Ranjan Parashar

The Indian government has been trying to boost the domestic manufacturing segment and make it globally competitive. In one such move, in November 2020, the government announced a production-linked incentive (PLI) of ₹1.45 trillion (-\$19.61 billion) for ten key sectors to help India attract investments in key manufacturing areas and develop cutting-edge technology.

Under the PLI program, the government has allocated ₹796.42 billion (-\$10.75 billion) to manufacture high-efficiency solar modules, advanced chemistry cell batteries, and automobiles and auto components for the next five years.

The PLI is part of the 'Aatmanirbhar Bharat' program to make India self-reliant and become an important player in the global supply chain, especially in sectors heavily dependent on Chinese imports. The solar sector is one of them.

The program will extend an incentive of 4-6% on the incremental sale of goods manufactured in India and covered under target segments to eligible

companies for five years.

The solar industry has welcomed the PLI program and believes the initiative can change the face of domestic manufacturing. However, it has sought clarity on certain issues relating to the criteria for utilizing the incentives, among others.

The government has allocated ₹796.42 billion to manufacture high-efficiency solar modules

Bharat Bhut, co-founder, and Director of Goldi Solar, said, "India currently has 16 GW of annual solar module manufacturing capacity, which is much lower than the 25 GW annual demand that is anticipated in the coming

years. The PLI initiative can bring about a massive change in domestic manufacturing - specifically in the solar industry - technology up-gradation and scalability. The imported raw materials to manufacture solar cells and panels are very expensive. The program will help local suppliers, strengthen the auxiliary industry, and make the whole ecosystem cost-competitive."

"We have shared our views with the government and requested clarification on the PLI program, specifically on how the money will be allotted and whether the incentive will be production-based or efficiency-based. The government can either reimburse a nominal amount on a per-watt basis or help us pay the interest on the term loans taken for the manufacturing equipment," he said.

The consensus among stakeholders is that while the PLI program is a step in the right direction, more needs to be done to make India a manufacturing hub. They also emphasize that speed is the essence when rolling out incentives.

Some manufacturers feel that the allocations for the solar manufacturing sector are not enough.



Avinash Hiranandani, Global CEO and MD of RenewSys, said, “The funds approved for the solar industry in the PLI program are relatively small. Solar PV module and cell manufacturing need more investments. Solar cells especially need more impetus because they have a significant role to play in the next phase of solar manufacturing expansion in India. A larger cell manufacturing capacity needs to be established to match the need while setting up facilities for more stages of the solar manufacturing value chain.”

“The PLI program will be more successful if more players benefit from it. Since exports from the Indian solar module manufacturing industry are down, an export benefit program to the tune of 8% is necessary,” he said.

Industry representatives Mercom spoke with made specific proposals on what the government should be doing to take domestic manufacturing to the next level.

Another manufacturer in the process of setting up a module production facility said that the government is looking at providing incentives

to only those companies intending to manufacture 1 GW each of high-efficiency solar module and cell manufacturing capacity. This, he said, would require an investment of about ₹15 billion (-\$209 million). Only large conglomerates with robust financial strength can qualify.

Government aims to provide incentives to companies intending to manufacture 1 GW each of solar module and cells

That said, a few manufacturers have gone ahead with the expansion plans and new facilities, hoping to receive support from the PLI program when it is implemented. If they wait for the program to take effect, these companies say they might lose out on the opportunities. It is a choice between policy risk or market risk.

Saibaba Vutukuri, CEO of Vikram Solar, said, “The government’s resolve to meet Paris Agreement commitments is reflected in various positive policy actions, with the most recent being the PLI program for solar modules. The COVID-19 pandemic is a huge opportunity for India to shape an inclusive and sustainable economy.”

For the PLI initiative to meet its objectives, the government has to give stakeholders clarity on the program’s specifics and how it will work on the ground. It remains to be seen whether the PLI program is indeed the answer to all the ailments plaguing the solar manufacturing sector.

But like most government programs, the announcement comes first, and the details can take a long time to trickle in. 



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Time for Mono PERC and Bifacial Solar Modules Has Come

At a recent webinar hosted by Mercom, the panelists predicted mono PERC and bifacials to dominate the solar modules market

By : Rakesh Ranjan Parashar



Mercom recently hosted a webinar on "Module Technologies and Trends Dominating the Indian Solar Market."

The panelists discussed the workings of the solar module manufacturing industry and spoke about developments and technologies that can improve the overall efficiency of the module manufacturing segment. They also discussed the global trends in India's module market and available choices.

The panel included Parag Sharma, CEO, O2 Power; Arul Shanmugasundram, Executive Director, Ayana Renewable Power; Zhichao Yuan, Product Head, APAC, LONGi Solar; Sai Charan Kuppili, Technical Director, Jinko

Solar; and Sumit Kumar, Head - Product Management, Vikram Solar.

Priya Sanjay, Managing Director, Mercom India, moderated the session.

According to Mercom India Research, India has approximately 10 GW of solar module manufacturing capacity and around 3 GW of solar cell manufacturing capacity as of September 2020.

Bankability of Solar Module Suppliers

Speaking about the criteria for selecting module suppliers, Parag Sharma, from O2 Power, observed that the module supplier's financial health is one of the main factors when picking suppliers. "The bankability of the supplier is a must for us. The credibility

of module suppliers is very important for us, and we have a quality team that looks into all the aspects related to the quality of the modules."

Arul Shanmugasundram from Ayana Renewable Power concurred. "We always look for a long-term relationship with the suppliers. We look for the modules' quality, and once we sign the contracts, we don't want last-minute changes in the contract. We want people to honor the contracts. The credibility of the suppliers is another important aspect for us. Last year has been a challenging year for us, but things are bound to improve, and we see a good 2021 for the solar sector."

Asked about the declining tariff rates and whether it was in anticipation of



module prices coming down, Sharma said, "Now things have changed, and technological innovations account for 20-25% of the project cost decision, while capital cost accounts for 75%. People are now forced to go for technological innovations, which are increasing day by day. Cost of capital is now the main driving force, and it has been the main reason behind the drop in tariffs."

India a Big Market in the Solar Supply Chain

Sharing his views on the big Indian solar market, Zhichao Yuan representing LONGi, said, "The Indian market is a big market for us. India aims to achieve the 300 GW solar target by 2030, and we want to be part of it. Solar is a very price-sensitive market globally, and the same is the case with India. In 2020 we suffered a lot because of the COVID-19 pandemic, and the prices of solar glass went up because of the demand and

supply gap. LONGi is positioned as the largest supplier of modules globally, and we want to play our part in India's solar journey."

Sai Charan Kuppili from Jinko Solar also spoke on similar lines. "India is a top market for us. It is a high-density market, and soon, India will be a big market for mono PERC and bifacial modules. We need to continue with our

Technological innovations account for 20-25% of the project cost decision

technological innovations and set new standards for the Indian market," he said.

Mono PERC and Bifacial to Dominate

On the technological innovations taking place in module space, Yuan said, "The future of modules lies in technological innovations. Mono PERC and bifacial are going to dominate the market in the foreseeable future. The heterojunction technology (HJT) and other new technologies will take some time to gain ground in the market. We have received lots of orders for the bifacial modules, and it's going to become popular in the Indian market as well. It will take some time to become mainstream, but technology is improving, and its benefits will help in lowering the levelized cost of energy (LCOE)."

"Logically multicrystalline modules might attract the customers right



now. Presently, 500 Wp bifacial will dominate, but in the post-basic custom duty era, bifacial will take a back seat, and mono PERC technology will be in vogue for the next few years," added Arul on the new technologies taking shape.

Sumit Kumar from Vikram Solar said, "Right now p-type mono PERC is very popular and n-type is also gaining popularity as there is lesser degradation and better efficiency can be achieved. TOPCON is another technology that is gaining ground and is the one for the future. M6 wafer size will remain in the market, but by 2021, the market will comprise 20% of M6 wafers, 40% of M10 wafers, and 40% of M12 wafers. This would mean an increase in the size of modules and greater module efficiency. In the next two years, mono PERC and bifacial modules are going to be in high demand."

Stressing on the need for the government to step in and help the

domestic solar manufacturing sector, Kumar said, "The competition is global, and we have depended on imports from countries like China, Vietnam, and Malaysia for very long. Things are changing, and in the last few years, the government has taken some decisive steps to bring changes in the domestic

*Right now,
p-type mono
PERC is very
popular, and
n-type is
also gaining
popularity*

manufacturing sector. The optimization of technology is taking place, and this will help to bring down the LCOE. We are planning to develop a 600 MW cell line by the end of this year, and this is in tune with the 'Make in India' initiative of the government. The module market is a very price-sensitive market, and the mono PERC and bifacial are getting popular day by day."

The webinar participants agreed that mono PERC and bifacial would be big for the next two to three years. They also felt that a certain degree of stability in solar module prices would be achieved in 2021.

In a recent article, Mercom discussed the impact of the shift to bigger sized M6 and M12 solar wafers from M2 on the Indian solar sector. The industry believes that the total shift in wafer sizes from M2 to M6 to M12 can become a reality as early as 2021, and manufacturers will have to be prepared for this imminent change. 📍



Outlook for Energy Storage in 2021

New value streams must be utilized to create a stronger business case for energy storage solutions

By : Nithin Thomas Prasad

As renewable installations in the country rise, it is crucial to ensure adequate energy storage solutions are in place to support renewables’ integration into the power mix. While the Indian government has taken several steps to promote renewable power generation, there is a lack of focus on promoting energy storage systems.

Mercom reached out to renewable energy sector executives to find out what the future holds for the energy storage companies. Most were optimistic about storage solutions playing an important role in integrating renewable

energy into India’s power mix.

Firms in the energy storage space say that with the right policy environment and adequate government support, new value streams in grid-balancing, ramping, peak-shifting, and frequency regulation capabilities must be developed to create a stronger business case for batteries. This, in turn, will contribute significantly to renewable energy penetration in the Indian market.

Vineet Mittal, Chairman, Avaada Group, said, “Energy storage is expected to play a critical role, as managing grid variability takes center stage with increased penetration of

renewable assets. As prices decline, storage is expected to play a broader

The market for energy storage in India lags behind the US, Europe, and China

role in the energy markets, moving from niche uses such as grid balancing to broader ones like replacing conventional power generators for reliability, providing power-quality services, and supporting renewables integration.”

Vish Ganti, Head, AutoGrid India, a smart energy solutions provider, said, “Currently, the only business and market case we have for batteries is increasing self-consumption of solar or wind generation. Although batteries can be used for ancillary services like frequency regulation, peak shaving, and boosting power quality, there are no mechanisms in the country to earn revenue using these additional value streams today. We have the capability, but we are underutilizing it. Additionally, the return on investments will take much longer since these additional value streams cannot currently be utilized to create a strong business case.”

Nishit Mehta, Head - Strategy & Governance, Sterlite Power, said, “The government has taken cognizance of the need for energy storage assets for various high-value applications such as frequency regulation, grid stability,

New value streams in grid-balancing, ramping, peak-shifting, frequency regulation capabilities must be developed

and renewables-integration. We expect to see this manifest in energy storage as grid-asset projects are announced and awarded in 2021. At Sterlite Power, we are closely working with different stakeholders to create the right construct for deploying energy storage as a grid asset.”

Sunil Badesra, Business Head, Sungrow (India), opined, “The last decade saw a boom in renewable energy in almost all parts of the globe. The next decade will be the decade of battery energy storage for efficient integration of volatile renewable power to the grid and also faster adoption of electric mobility. The government must focus on policy certainties related to duties, taxes, and other fiscal measures, float more tenders on solar and battery storage, and incentivize local manufacturers to

have an ecosystem to create globally competitive products.”

Rucas Wang, Regional Director, Growatt, said, “We believe energy storage is the future for solar, and the sector will continue to grow with economic recovery on the horizon and government policies to promote clean energy. However, there are some issues with the BIS standards certification. The fee is high, and the long certification period will slow the introduction of new products into the Indian solar market. The time for BIS certification should be in accordance with the product life cycle.”

The market for energy storage in India lags behind the US, Europe, and China. The lack of a policy framework has prevented the battery energy storage market from taking off. ☹

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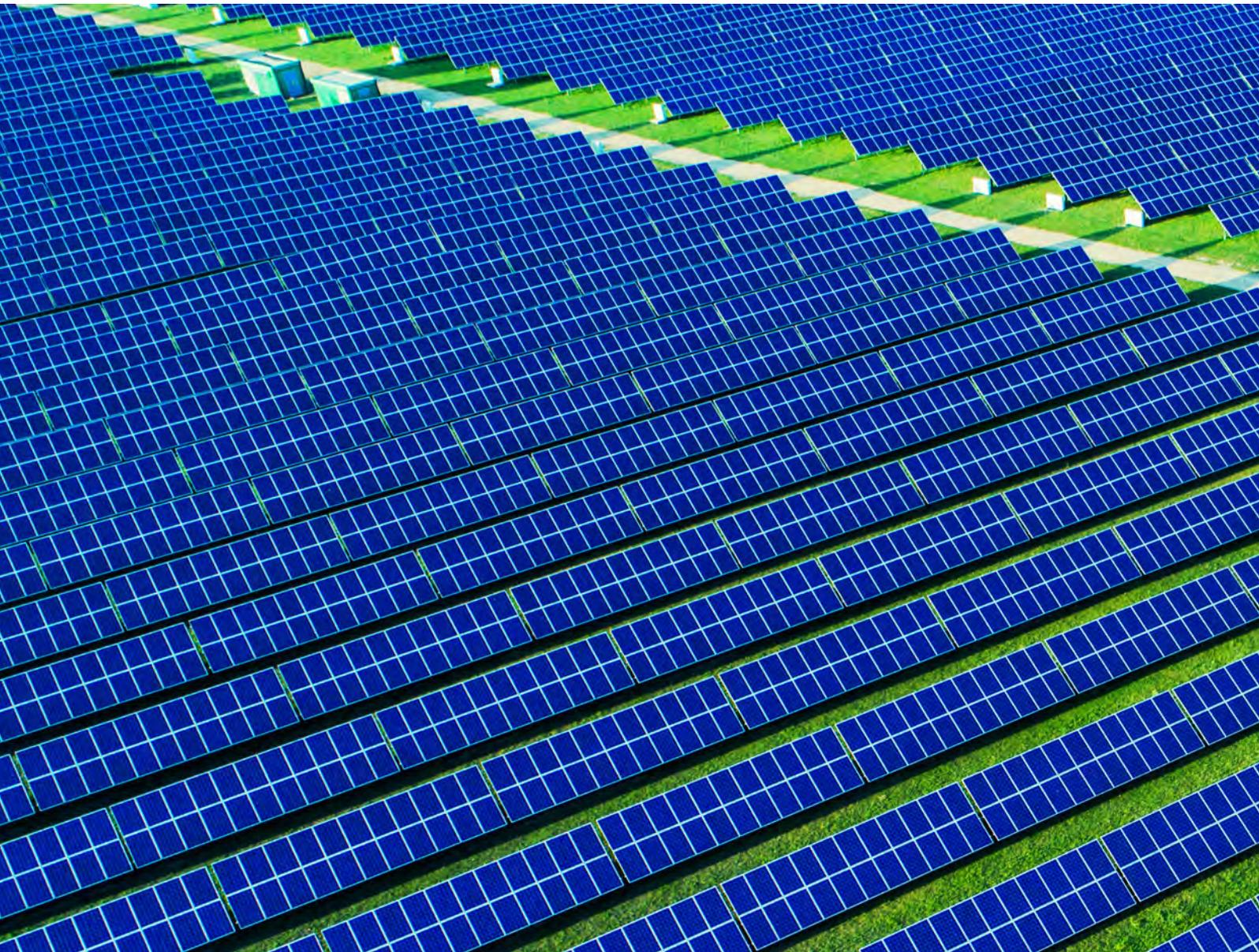


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Open Access Solar Installations Grew 56% in 2020

Open access installations remain relatively small but are growing thanks to increasing interest by corporates in buying projects

By : Nithin Thomas Prasad



The total installed capacity in the open access (OA) market as of December 2020 stood at almost 4 GW, with a project development pipeline of over 1 GW, according to Mercom India Research's report, Open Access Solar Market in India - Key States.

The report covers OA markets in key states like Karnataka, Andhra Pradesh, Telangana, Maharashtra, Uttar Pradesh, Haryana, Tamil Nadu, and Gujarat. The report discusses the state of the markets, OA charges, and challenges while providing an overview for each state. Open access installations in India saw a 56% increase in 2020 from the year before, owing to the increasing interest of corporates buying OA projects under group captive.

Mercom's data showed that Karnataka was still the largest market for open access transactions cumulatively as of December 2020. The state has potential, but the growth is being deterred as distribution companies (DISCOMs) have been delaying approvals. This has resulted in a drop in interest for both third-party sale (TPS) and group captive

projects in the state.

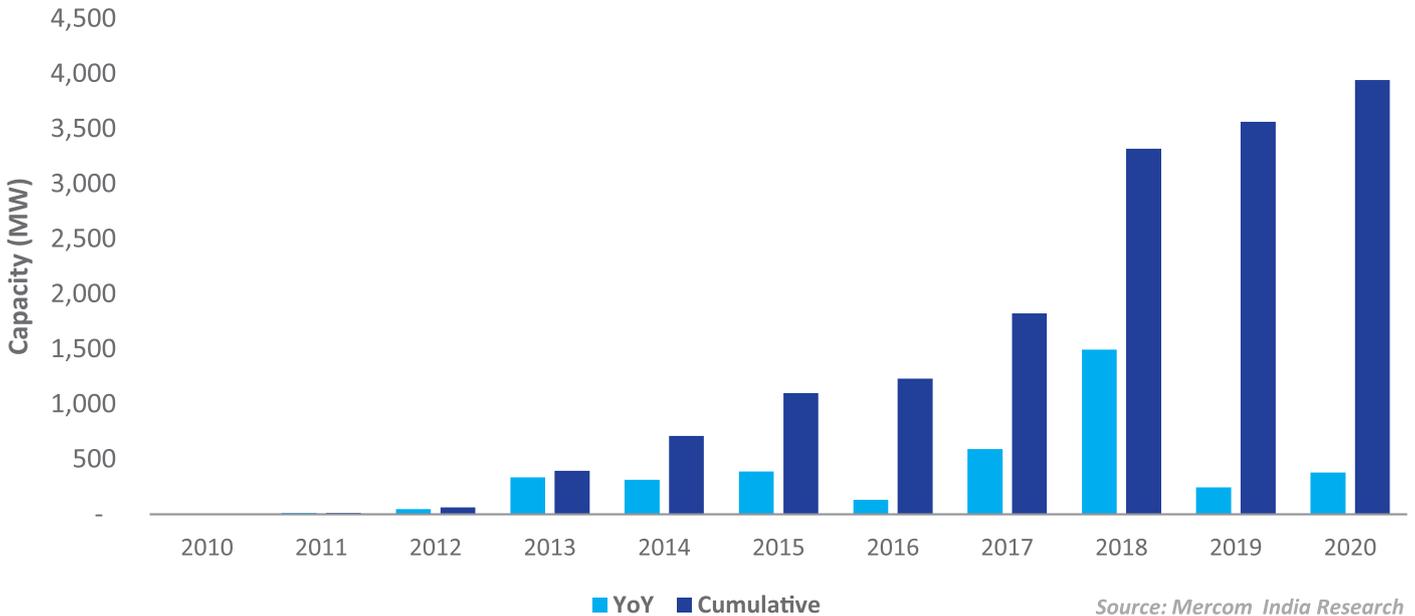
Tamil Nadu and Gujarat were the latest inclusions in the report. Like Karnataka, Tamil Nadu has also been facing similar challenges, with developers facing hurdles in getting approvals for TPS projects from DISCOMs. The state saw a 57% decline in OA installations as of December 2020, from the end of 2019. Gujarat was the only state that allowed installations under the TPS model exclusively for solar-wind hybrid projects.

Industry executives told Mercom that TPS projects have come to a standstill due to high OA charges and issues getting approvals from DISCOMs. The TPS model is similar to the OPEX (operational expenditure) model, where the developer owns the solar project,

***Karnataka
was still the
largest market
for open access
transactions***



India Open Access Market (YoY vs Cumulative)



Source: Mercom India Research

and the consumer only has to pay for the energy generated.

Captive generation models remained the next best option for consumers where power can be sourced by a single entity or a group of companies.

The most significant advantage of group captive projects is that some OA charges are not levied on the procured power. The report showed that the market is gradually shifting towards

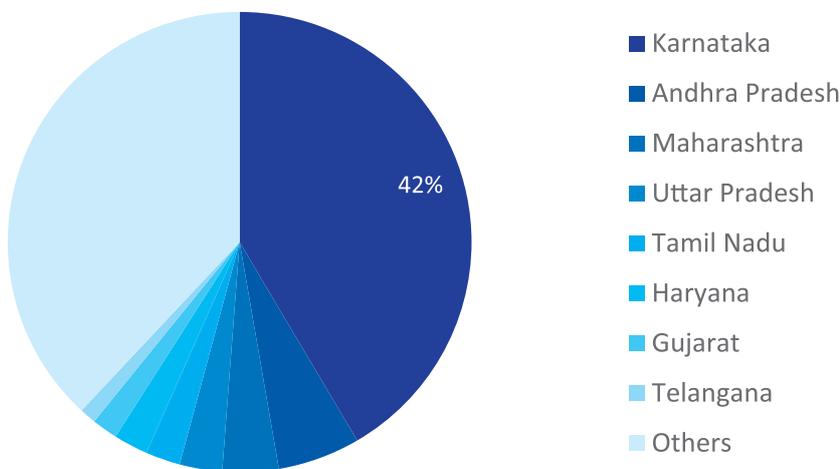
this model, thanks to the lower risks involved and ease of acquiring approvals compared to the TPS model.

Industry officials believed that long-term open access agreements were the most favorable because of their longer 15-20-year tenures and higher security on returns. However, consumers preferred short-term open access agreements since they tend to steer away from long-term contracts.

Short-term open access agreements were common in the textiles, metals, chemicals, and auto component industries, the report showed. Textile industries held the largest share of short-term open access transactions with a 29% share, followed by the metals industry with a 24% share.

The report asserted that the OA market remains an attractive avenue for investment even if ground-level issues

Open Access Installed Capacity Breakup By Major States (Cumulative)



Source: Mercom India Research

Long-term open access agreements were the most favorable

like DISCOM approval hassles, policy inconsistencies, and a non-conducive regulatory environment continue to weigh it down.

Rays Power Experts, Amplus Solar, and CleanMax Solar were the top open access developers in the country in terms of cumulative installed capacity as of 1H 2020, according to Mercom's India Solar Market Leaderboard 1H 2020. 

TIGER PRO

**Big or Bigger,
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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.

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Corporate Funding for Battery Storage Companies Up 136% in 2020

Global venture capital funding for battery storage, smart grid, and efficiency companies rose 12% in 2020 and stood at \$2.6 billion, compared to \$2.3 billion in 2019

By : Nithin Thomas Prasad

Total corporate funding (including venture capital funding, public market, and debt financing) for the battery storage, smart grid, and energy efficiency sectors in 2020 was up 112% at \$8.1 billion in 2020 from \$3.8 billion in the previous year, according to Mercom Capital Group’s latest report.

Meanwhile, global venture capital (VC) funding (venture capital, private equity, and corporate venture capital) for battery storage, smart grid, and efficiency companies rose 12% in 2020 and stood at \$2.6 billion, compared to \$2.3 billion in 2019.

Battery Storage:

Mercom’s latest report showed that total corporate funding in the battery storage sector was up 136% at \$6.6 billion raised through 54 deals in 2020. VC funding in the sector in 2020 slipped during the year to \$1.5 billion through 32 deals compared to the previous year, which saw \$1.7 billion through 32 deals.

The report also showed that 105 VC investors participated in battery storage deals in 2020 compared to just 78 in 2019. Breakthrough Energy Ventures was the top investor in 2020.

Lithium-ion battery technology companies received \$649 million in VC funding during the year, the most across company categories. According to the report, the top VC funded companies in 2020 were: Northvolt with \$600 million; QuantumScape with \$200 million; Zenobe Energy with \$198 million; ProLogium Technology with \$100 million; and Form Energy with \$76 million.

In 2020, battery storage companies announced the highest debt financing since 2014 at \$5 billion through 22 deals, up significantly from \$1.1 billion through ten deals in 2019. Northvolt’s \$1.6 billion and Plug Power’s \$1 billion loans were the largest public market financing deals during the year.

There were 19 mergers and acquisition (M&A) deals within the battery storage companies during the year. Overall, 24 battery storage and storage-plus-solar deals M&A transactions were announced in 2020, up from 11 the year before.

Corporate funding in the battery storage sector stood at \$6.6 billion raised in 54 deals

Battery Storage, Smart Grid, and Efficiency Top VC Funded Deals in 2020

Company	Amount (\$M)
	600
	200
	198
	157
	127
	125
	100

Source: Mercom Capital Group

Battery Storage, Smart Grid, and Efficiency Top M&A Transactions in 2020

Company	Amount (\$M)	Acquirer	Country
 Power Grids (80.1% stake)	6,850		Japan
 OSI powering the future	1,600		USA
 COOPER Lighting Solutions	1,400		Netherlands

Source: Mercom Capital Group

Smart Grid:

Smart grid companies raised \$748 million in VC funding through 38 deals in 2020. This was a 149% increase from 2019 when \$300 million was raised through the same number of deals. Total corporate funding, including debt and public market financing, stood at \$758 million through 41 deals compared to \$372 million through 41 deals in 2019.

Some of the top VC funded companies in the year included ChargePoint, which brought in \$127 million; Star Charge, which received \$125 million; Tibber, which secured \$65 million; SmartRent with \$60 million; and Probus Smart Things with \$53 million, according to the report.

The report showed that 102 investors funded smart grid companies in 2020, up from 78 in 2019. Some of the top VC investors in this segment during the year included Congruent Ventures, Energy Impact Partners, National Grid Partners, and Silicon Valley Bank.

Smart grid companies raised \$748 million in VC funding through 38 deals in 2020

Smart charging companies received the most in VC funding during the year with \$324 million through 13 deals. Smart grid communications companies raised \$119 million through six deals, while demand response companies raised \$104 million through three deals. The sector saw a total of 21 M&A transactions during the year, compared to 29 in 2019.

Energy Efficiency:

Energy efficiency companies raised

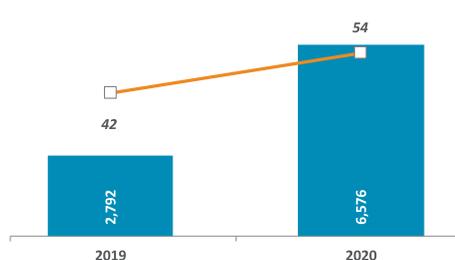
\$291 million in VC funding through 16 deals during the year. This was a slight decline compared to \$298 million through nine deals in 2019. Meanwhile, total corporate funding, including debt and public market financing, reached \$791 million in 2020 compared to \$670 million in 2019.

Some of the top VC funded companies in 2020 included Redaptive, which raised \$157 million; followed by Palmetto with \$29 million; Juganu with \$18 million; Infogrid with \$16 million; and Eta Compute with \$13 million.

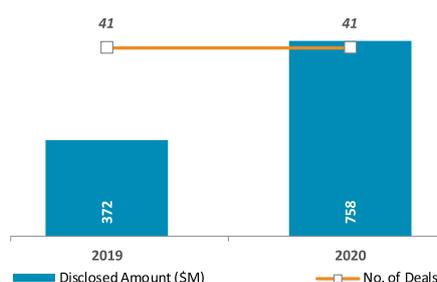
The year saw participation from 52 investors, up from just 38 in 2019. Every Ventures was the most active investor in 2020. Energy efficiency companies announced one deal worth \$500 million in 2020, compared to \$371 million through three deals in 2019.

M&A activity in the energy efficiency segment slowed down with only four transactions during the year compared to 2019, which saw nine transactions. 📌

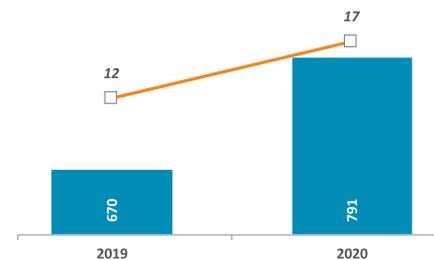
Battery Storage Corporate Funding 2019-2020



Smart Grid Corporate Funding 2019-2020



Efficiency Corporate Funding 2019-2020



Source: Mercom Capital Group

DISCOM Dues to Renewable Generators Rose in December 2020

Dues to renewable generators from DISCOMs reached ₹121.12 billion in December 2020

By : Rakesh Ranjan Parashar



Distribution companies (DISCOMs) owed nearly ₹121.12 billion (-\$1.65 billion) to renewable energy generators (excluding disputed amounts) in overdue payments across 380 pending invoices, according to data released by the Ministry of Power (MoP).

The figures were slightly higher than those reported for November 2020 when DISCOMs owed renewable energy generators ₹118.6 billion (-\$1.6 billion) across 452 invoices.

According to MoP's payment ratification and analysis portal (PRAAPTI), outstanding payments (excluding disputed amounts) to renewable generators in December stood at ₹3.12 billion (-\$42.6 million).

DISCOMs paid ₹35.32 billion (-\$483.02 million) towards their outstanding dues and ₹138.8 billion (-\$1.89 billion) towards overdue amounts during December, an increase of 60.5% and 11.6% compared to November 2020. Outstanding amounts are payments that have been delayed by over six months.

As per the data, 65 DISCOMs owed 231 power generators, nearly ₹1.26 trillion (-\$17.22 billion) against 22,456 overdue invoices in December 2020. Outstanding payments at the end of the month stood at ₹93.43 billion (-\$1.27 billion), a decrease of 29% compared to ₹132.06 billion (-\$1.81 billion) in

DISCOMs cleared ₹35.32 billion in outstanding dues and ₹138.8 billion in overdue payments in December 2020

November 2020.

Rajasthan continued to have the largest backlog among the states, with overdue payments to the tune of ₹405.99 billion (-\$5.55 billion). Out of the total amount, ₹380.38 billion (-\$5.2 billion) has been overdue for more than 60 days. Tamil Nadu followed closely with an overdue amount of ₹209.01 billion (-\$2.85 billion), out of which ₹185.87 billion (-\$2.54 billion) was overdue for more than 60 days. Other states that performed badly on the set parameters included Uttar Pradesh, Karnataka, Andhra Pradesh, Madhya Pradesh, and Karnataka.

Gujarat, Himachal Pradesh, West Bengal, Arunachal Pradesh, Tripura, Meghalaya, and Manipur were rated as 'Best' in terms of ease of payments by the DISCOMs in December. Jammu and Kashmir, and Punjab were termed average.

Non-conventional energy generators who were owed the most

by the DISCOMs included Tata Power Company, Adani Green Energy, and NLC India with ₹ 23.61 billion (-\$322.8 million), ₹12.009 billion (-\$164.2 million), and ₹10.85 billion (-\$148.37 million) respectively.

Recently, the National Solar Energy Federation of India sought the Union Power Minister, R.K. Singh's intervention for releasing payments by the Power Finance Corporation and REC Limited to renewable energy developers having power purchase agreements with Andhra Pradesh DISCOMs. The payments are pending since April 2020.

In May last year, the central government announced that DISCOMs would receive ₹900 billion (-\$12.03 billion) as part of a stimulus package to help the Indian economy recover from the COVID-19 crisis. This one-time liquidity injection was to be infused through PFC and REC in two equal installments. 

DISCOMs Dues to Power Generators as of December 2020

Particulars	As of December, 2020		As of November, 2020		% of Change
No. of DISCOMs	65		65		0%
No. of participating power generators	231		230		0%
No. of overdue* invoices	22,456		21,952		2%
Overdue and Outstanding	₹ in Billion	~\$ Billion	₹ in Billion	~\$ Billion	% of Change
Overdue amount at the beginning of the month	1,260.09	17.13	1,256.97	17.09	0.2%
Total amount billed to DISCOMs	142.11	1.93	153.73	2.09	-7.6%
Amount paid by DISCOMs against overdue	138.8	1.89	124.35	1.69	11.6%
Amount paid by DISCOMs against outstanding	35.32	0.48	22.01	0.30	60.5%
Overdue amount at the end of the month	1,266.46	17.22	1,260.09	17.13	0.5%
Outstanding amount at the end of the month	93.43	1.27	132.06	1.80	-29.3%

Overdue* invoices are those which remain fully or partly unpaid past the due date

Source: PRAAPTI

Mercom India Research



Flexible Solar Minimodules to Meet Power Demands

The low-cost solar modules with over 15% conversion efficiency can be integrated into windows, cladding, and other infrastructure

By : Harsh Shukla

A team of researchers at the University of Bristol, in collaboration with researchers from Northumbria University and Loughborough University, aim to develop solar minimodules with a conversion efficiency of over 15%.

To develop these minimodules, the researchers will investigate complex semiconductor compounds like Kesterite ($\text{Cu}_2\text{ZnSn}(\text{S}, \text{Se})_4$) with a precise crystal structure to develop precursors and processing methods, ensuring that each atom goes in the right place.

The researchers said thin-film photovoltaic (PV) devices emit less carbon during fabrications and installations than traditional technologies. These devices can also be made flexible and semi-transparent to integrate them into various systems and infrastructures.

The researchers explained that the United Kingdom required a technology that could mitigate the country's increasing power demands to achieve net-zero emissions by 2050. The power demand is set to double in power-intensive sectors like transport, manufacturing, and buildings.

David Fermin, Head of Bristol Electrochemistry and Solar Team at the University of Bristol, said, "We need to deploy low-carbon energy systems

into every sector of the economy. Out of all renewable energy technologies, solar is the only one with the capacity to be integrated into cities and high population areas. We need technologies that will allow us to integrate solar into the cladding, windows, and every possible infrastructure."

"Our project aims to develop adaptable and low-cost PV technology, which can meet this challenge," Fermin added.

Thin PV devices emit less carbon during fabrication

The researchers claimed that the research could help decrease PV devices' fabrication costs and remove toxic elements present in existing commercial technologies.

Devendra Tiwari, Researcher at Northumbria University, said, "Solution processing is much less capittally intensive and readily suited to allow integration of solar cells to

scaffoldings and windows that current manufacturing technology prevents for thin-film solar cells. It, therefore, offers the opportunity to produce cost-effective integrated PV systems."

Jake Bowers, Researcher at Loughborough University, said, "Fabricating thin-film solar cells with low-cost solution processes has the potential to reduce the cost of electricity produced from PV to the end-user. The fabrication processes used require significantly less energy than manufacturing processes used in traditional silicon-based PV."

The 3.5-year-long research program is expected to begin in July 2021. UK Research and Innovation (UKRI), Engineering and Physical Science Research Council, and Cabot Institute have provided funding for the research project.

In August 2020, a research team from the University of Michigan said they set a new efficiency record for color-neutral, transparent solar cells that are compatible with windows that cover the face of most buildings.

Mercom had earlier reported that Australian researchers, led by members of the ARC Center of Excellence in Exciton Science, developed semi-transparent perovskite solar cells that could allow for windows in buildings and automobiles to generate electricity. 





Residential Solar Helps Save Power Bills and Environment

Lower costs, government subsidies make residential rooftop solar affordable

By : Harsh Shukla

The adoption of residential rooftop solar systems is gradually picking up in India, thanks to greater public awareness about the savings on power costs they bring and their contribution to environmental good.

Mercom spoke to several consumers who have installed rooftop solar systems on their homes. Here is what they had to share about the capital investment, savings on power bills, and environmental benefits of installing a solar system.

System cost and subsidy

The average capacity of rooftop systems installed at homes ranges between 1 kW and 10 kW depending on the capacity allowed by distribution companies and ideal roof space availability. The system cost to install a 1 kW rooftop solar system can range between ₹45,000 (-\$612) and ₹85,000 (-\$1,156).

Ramnikkal Patanvariya, a resident of Rajkot in Gujarat, said it cost him around ₹1,39,000 (-\$1,908) to install a 3 kW rooftop solar system. "However, I received around ₹55,604 (-\$764) or 40% of the project cost as a subsidy that made the system affordable."

The Ministry of New and Renewable Energy (MNRE) provides subsidies

for residential rooftop solar systems. Rooftop solar systems up to 3 kW will qualify for a subsidy of 40%. Systems above 3 kW and up to 10 kW get a subsidy of 40% for the first 3 kW and 20% for the remaining capacity, and for systems above 10 kW, it is 40% for the first 3kW and 20% for the remaining 7 kW.

Achal Jain, a resident of Gurugram in Haryana, said, "I set up a 5 kW system three years back with an upfront cost of around ₹350,000 (-\$4,804), and received approximately ₹120,000 (-\$1,647) or around one-third of the total cost in subsidy. However, I did not receive any subsidy to increase the capacity of the system up to 15 kW, which cost me around ₹500,000 (-\$6,865)."

Jitendra Dhama, Chairman of Savan Status, a residential society in Rajkot, Gujarat, said, "We recently installed an 85 kW rooftop solar system to cut power cost of common amenities and contribute to saving the environment. "The system cost us around ₹3.3 million (-\$45,312), but we got a subsidy of over ₹700,000 (-\$9,611) from the government that reduced the overall cost of the system to nearly ₹2.5 million (-\$34,327)."

For group housing societies and residential welfare associations, the MNRE subsidy is limited to 20% for



installing the rooftop solar system to supply power to common facilities. The capacity eligible for subsidy is limited to 10 kW per house, with no more than 500 kW, inclusive of rooftop solar systems installed on the individual houses.

Recently, Gujarat announced its new 'Gujarat Solar Power Policy 2021' with incentives for residential, commercial, and industrial rooftop solar developers. The Maharashtra government has also set a target to install 2 GW of rooftop solar projects by 2025 in its new renewable policy.

Savings on power bills

Patanvariya said, "I used to pay around ₹1,500 (-\$20.58) for electricity bill as electricity tariff is around ₹6.5/unit. After installing a 3 kW solar system, I am earning around ₹800 (-\$10.98) monthly by generating clean energy instead of paying power bills."

According to Jain, there are significant monetary benefits of installing a rooftop solar system on homes. He said, "I used to save around ₹6,000 (-\$82.37) monthly on my electricity bills with a

5 kW rooftop solar system. Recently, I installed an additional 10 kW capacity to reduce my power bill from ₹18,000 (-\$247) per month to zero."

Dhami also echoed similar views. He said, "The 85 kW solar system neutralizes monthly power bills for common amenities of society, which is usually in the ₹115,000 (-\$1,578) to ₹127,000 (-\$1,742) range. And it generates additional 9,000 units of clean energy monthly."

Savings or income earned from any rooftop projects purely depends on the consumer's contracted load and the

MNRE provides a subsidy of 40% for rooftop solar systems up to 3 kW capacity

state power distribution companies' rules. The billing mechanisms vary across distribution companies, and the scenario of offsetting or savings with the monthly bill is the common benefit of installing rooftop solar systems.

Environmental benefits

Climate change is affecting every individual around the world. Consumers can contribute to cut the negative impacts of climate change by installing rooftop solar systems on their homes.

Dhami said, "We can contribute to saving the environment by using natural energy sources like solar to generate clean energy as the government is also focusing on maximizing the use of solar energy. This will help reduce the use of coal-fired power and pollution."

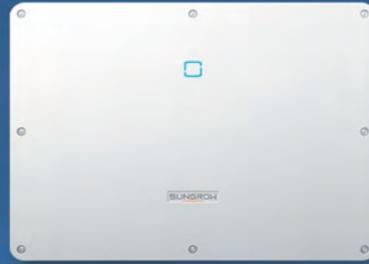
Patanvariya commented, "We can help save the environment by generating clean energy through natural resources like solar without polluting the world."

Endorsing Patanvariya's thoughts, Jain said, "We have to reduce the use of fossil fuels that pollute the environment and shift towards clean energy resources." 🌱

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Towards Achieving an Aatmanirbhar Bharat



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Solar Capacity Surpasses Wind for the First Time Ever

The installed capacities of solar and wind power stood at 38.8 GW and 38.6 GW, respectively

By : Nithin Thomas Prasad





The share of solar power in India's installed power capacity mix reached 10.3%, exceeding that of wind-based power sources for the first time, according to Mercom's data. The share of installed wind capacity is 10.25%.

Solar power was also the leading source of renewable power generation in 2020.

"Wind in India has had over a decade plus in head start over solar. By the time solar installations in India began in 2010, wind had already surpassed 10 GWs. However, solar in recent years has seen explosive growth driven by falling costs. We expect solar to be the dominant source of energy for the foreseeable future," said Raj Prabhu, CEO of Mercom Capital Group.

The installed capacities of solar and wind power stood at 38.8 GW and 38.6 GW, respectively, as of December 2020.

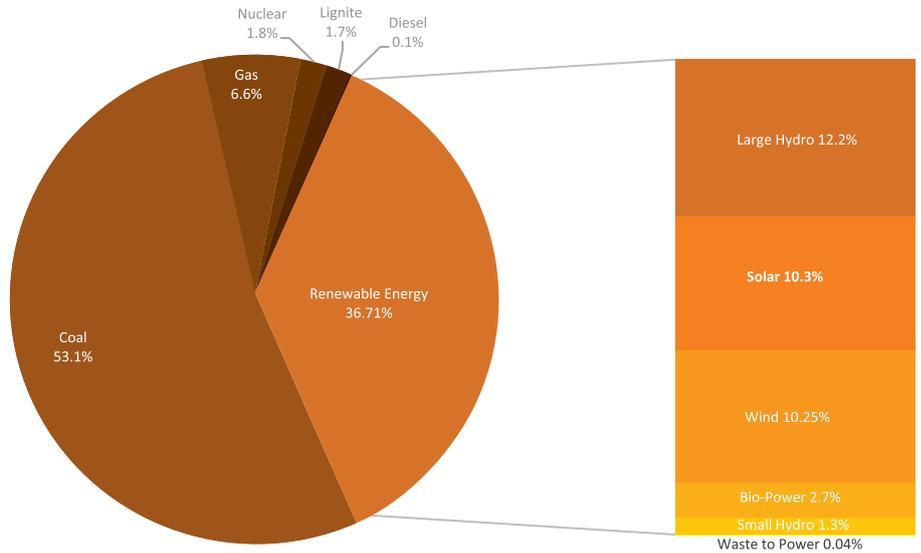
According to Mercom India Research's Q3 2020 India Solar Market Update, India added 1.73 GW of solar in the first nine months of 2020, a 68% decline compared to 5.48 GW added in the same period the year before due to COVID-19 related market disruptions.

Low Wind Installations

Wind power installations in the country peaked in 2016-17 with 5.5 GW. They have been on a downtrend ever since the reverse auctions were introduced to the wind power project tendering process in 2017, and tariffs slid to ₹2.44 (-\$0.0334)/kWh.

India - Cumulative Installed Power Capacity Mix (%)

Renewables (including Large Hydro) comprise ~36.71% of India's total installed capacity, with solar accounting for 10.3%. Among renewables, solar accounts for ~28% of the installed capacity



Data from CEA, MNRE, Mercom India Solar Project Tracker (Installed Capacity as on 31 Dec 2020)

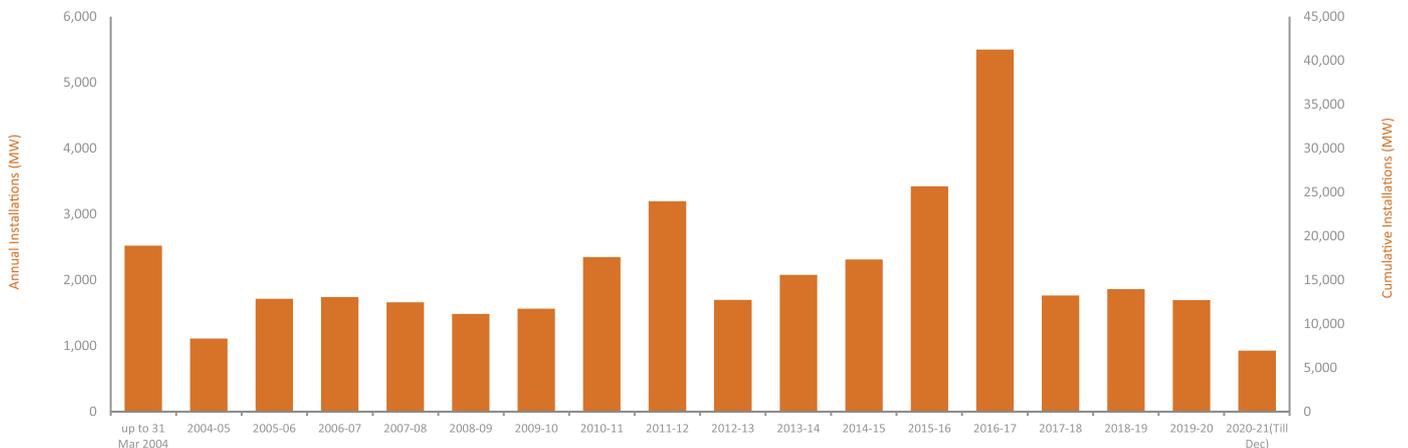
Source: Mercom India Research

Tariffs for wind power projects have also remained on the higher side compared to solar tariffs. Wind tariffs were at their lowest in December 2017 at ₹2.43 (-\$0.0333)/kWh, discovered in the Gujarat Urja Vikas Nigam Limited's auction for 500 MW of wind projects.

The second-lowest wind tariff was discovered in February 2018 in the Solar Energy Corporation of India's (SECI) 2 GW wind tender (Tranche III). Tariffs have only risen since and now stand at around ₹2.99 (-\$0.041)/kWh. This has made solar projects more attractive for

Solar power was also the leading source of renewable power generation in 2020

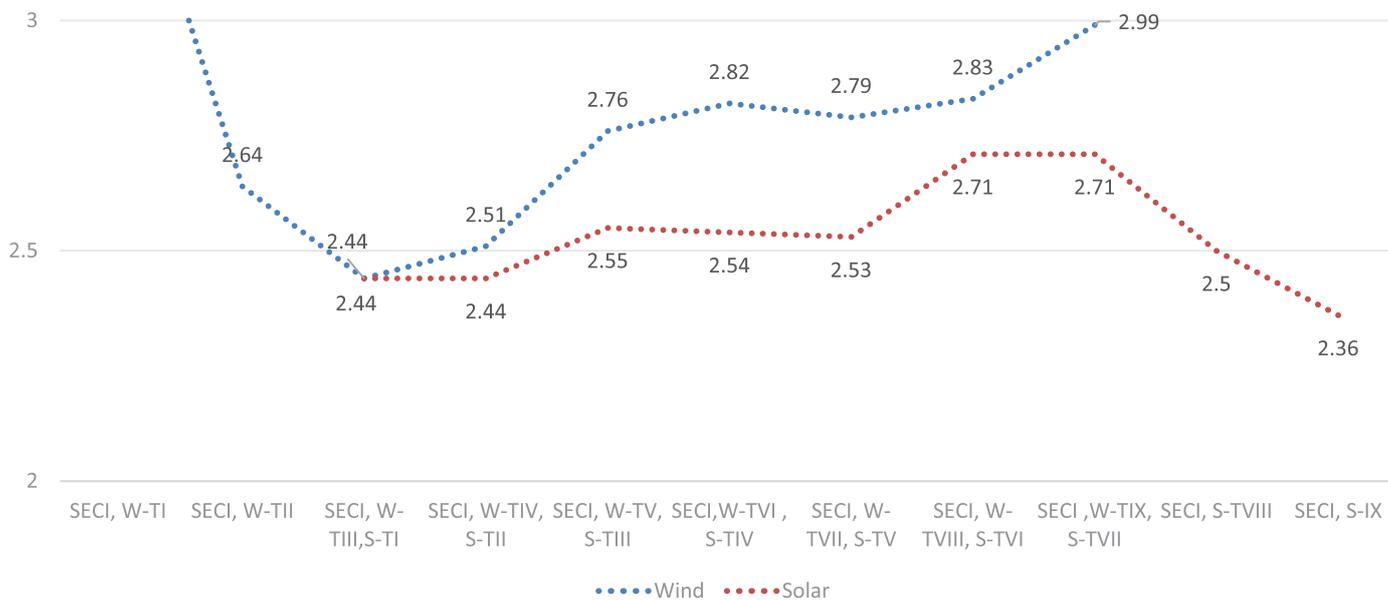
India: Year-Wise Wind Power Installed Capacity (MW)



Source: MNRE

Mercom India Research

ISTS Tariff Comparison of Wind and Solar from 2017-2020



*SECI ISTS tranche-IX Wind Tender was Revised and Blended with Solar

Source: Mercom India Research

distribution companies (DISCOMs).

Factors including the unstable regulatory environment, lack of suitable land, and the fact that most states in the country do not have conditions ideal for wind power project development have hindered the growth of wind. Unlike solar, which has favorable conditions across the country, wind power potential remains exclusive to a very few regions.

According to a study by the National Institute of Wind Energy, regions with a potentially higher capacity utilization factor are distributed in Andhra Pradesh, Gujarat, Karnataka, Maharashtra, and Tamil Nadu. Kerala,

Madhya Pradesh, Telangana, Jammu and Kashmir, and Rajasthan have limited potential for wind.

Wind power installations in the country peaked in 2016-17 with 5.5 GW

In the third quarter of 2020 (Q3 2020), Mercom reported that Tamil

Nadu and Gujarat were the only two states which added wind capacity during the quarter with about 221 MW and 73 MW, respectively, according to data from the Ministry of New and Renewable Energy (MNRE). No other states reported wind installations during the quarter.

The overall share of renewable energy (including large hydro projects) in the country's installed power capacity mix stood at 138.27 GW, with a total share of 36.7% at the end of 2020, as per data from the Central Energy Authority (CEA), the Ministry of New and Renewable Energy (MNRE), and Mercom's India Solar Project Tracker. 📊



[Markets]

Wind Installations up 70% in the Fourth Quarter of 2020

Q4 2020 saw 500 MW of wind capacity additions spread across Tamil Nadu, Gujarat, Karnataka, and Rajasthan

By : Nithin Thomas Prasad



Wind installations in India were up nearly 70% in the fourth quarter of 2020 (Q4 2020), with about 500 MW of capacity added compared to 295 MW installed in the previous quarter.

However, installations year-over-year were 13% lower than Q4 2019, which saw about 575 MW added.

Cumulative installations at the end of Q4 2020 stood at 38.6 GW.

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

Gujarat added the most wind capacity during the quarter with 348 MW of installations. The state had a 21% market share. It ranked second in terms of cumulative wind capacity in the country with 8.2 GW of installations.

Tamil Nadu added 51 MW in Q4 2020 and had an overall market share of about 24%. It continued to be the leader

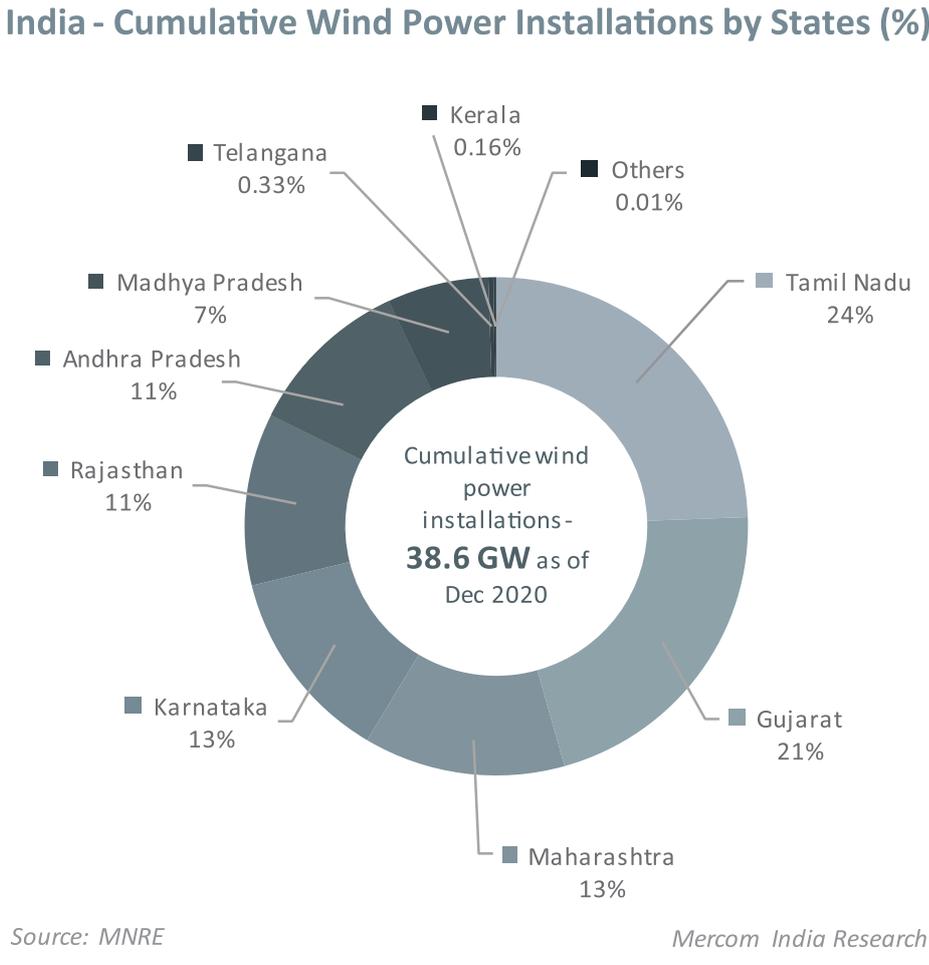
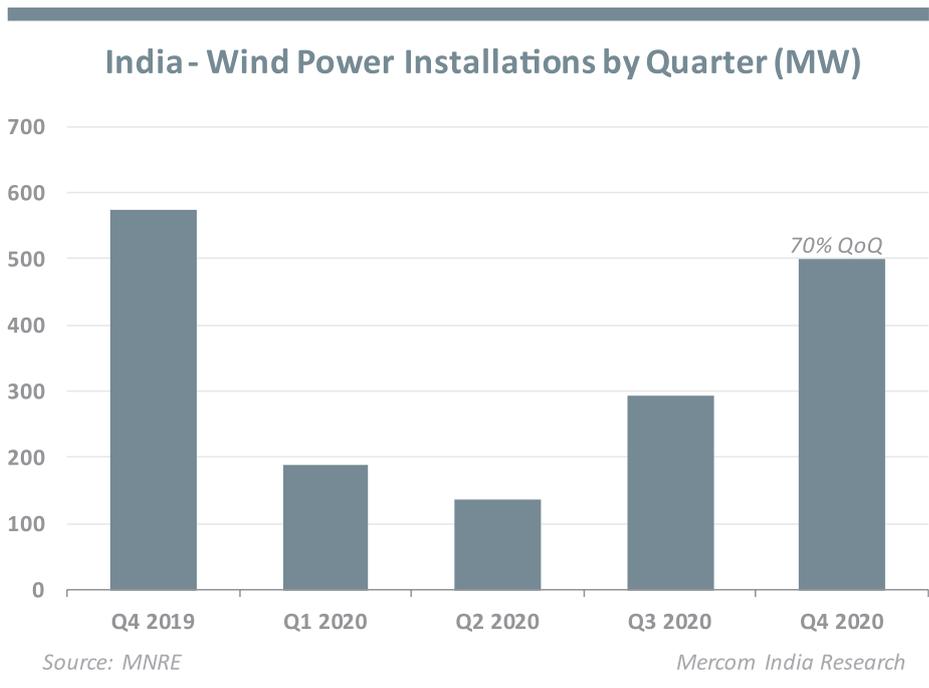
Gujarat added the most wind capacity during the quarter with 348 MW of installations

in terms of cumulative installations with about 9.4 GW of wind projects to date.

Karnataka installed 74 MW of wind projects during the quarter and held a 13% market share. Its cumulative wind installations stood at 4.8 GW, with the state ranking fourth overall.

Rajasthan added 26 MW during the quarter, with an 11% share. Its cumulative installations stood at 4.3 GW, ranking fifth. 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.

The share of solar power in India's installed power capacity mix reached 10.3%, exceeding that of wind-based power sources for the first time,



according to Mercom's data. Wind power installations in the country have been on a downtrend ever since reverse

auctions were introduced to the wind power project tendering process in 2017, and tariffs slid to ₹2.44 (-\$0.0334)/kWh. Ⓜ

[Markets]

Solar Generation Up 26% in 2020

The country generated about 14.2 BU of solar power representing a 21% increase compared to Q4 2019, when it generated about 11.7 BU

By : Nithin Thomas Prasad



In Q4 2020, the country generated about 14.2 billion units (BU) of solar power compared to 12.9 BU in the previous quarter. The data showed that solar generation was returning to pre-COVID levels.

Solar power generation in Q4 2020 was also over 21% higher compared to the same quarter last year. In Q4 2020, the country generated about 14.2 BU of solar power compared to Q4 2019's 11.7 BU. In the calendar year 2020, India generated about 58.2 BU of solar power compared to 46.3 BU a year before, a 26% increase.

The rise in annual and year-on-year generation in 2020 was due to new solar capacity additions during the year. According to data released by the CEA earlier, India added about 5.1 GW

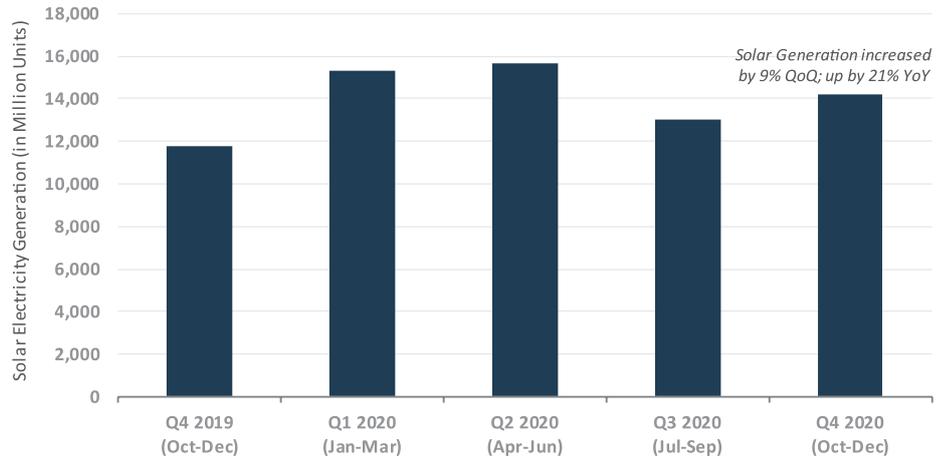
In the calendar year 2020, India generated about 58.2 BU of solar power

of renewable energy (including large hydro projects) capacity in 2020. Solar power accounted for about 3.2 GW of the additions, with 1.73 GW capacity added in the first nine months of 2020, according to Mercom India Research's Q3 2020 India Solar Market Update.

Mercom reported that in Q3 2020, India generated nearly 13 BU of electricity from solar, a 17% decline from the previous quarter, which saw 15.7 BU of power generated, according to the CEA's data. However, generation was up 22% from the same period last year.

In Q4 2019, solar power generation rose 12% quarter-over-quarter to 11.8 BU from 10.5 BU in Q3 2019. The economic downturn and curtailment due to low power demand during the year adversely impacted solar installations and solar power generation. 

India: Solar Electricity Generation (MU) by Quarter

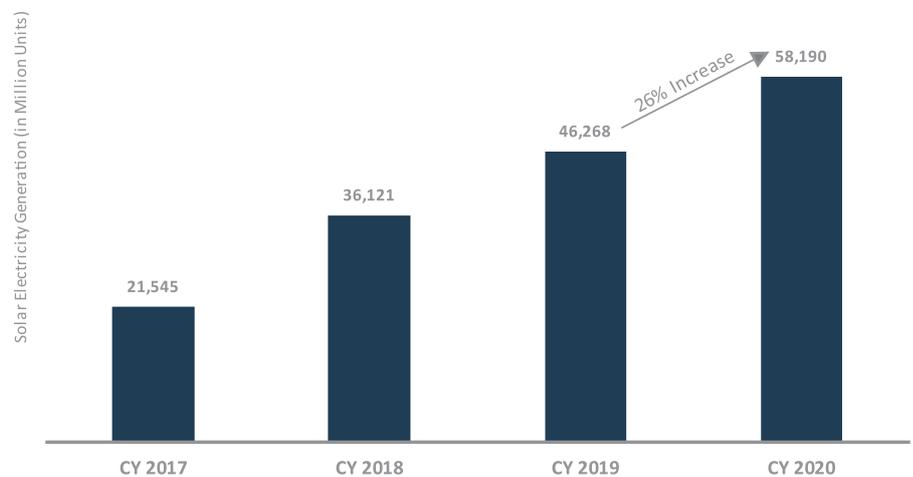


Data from CEA

Source: Mercom India Research



India: Solar Electricity Generation 2017-2020 (MU)



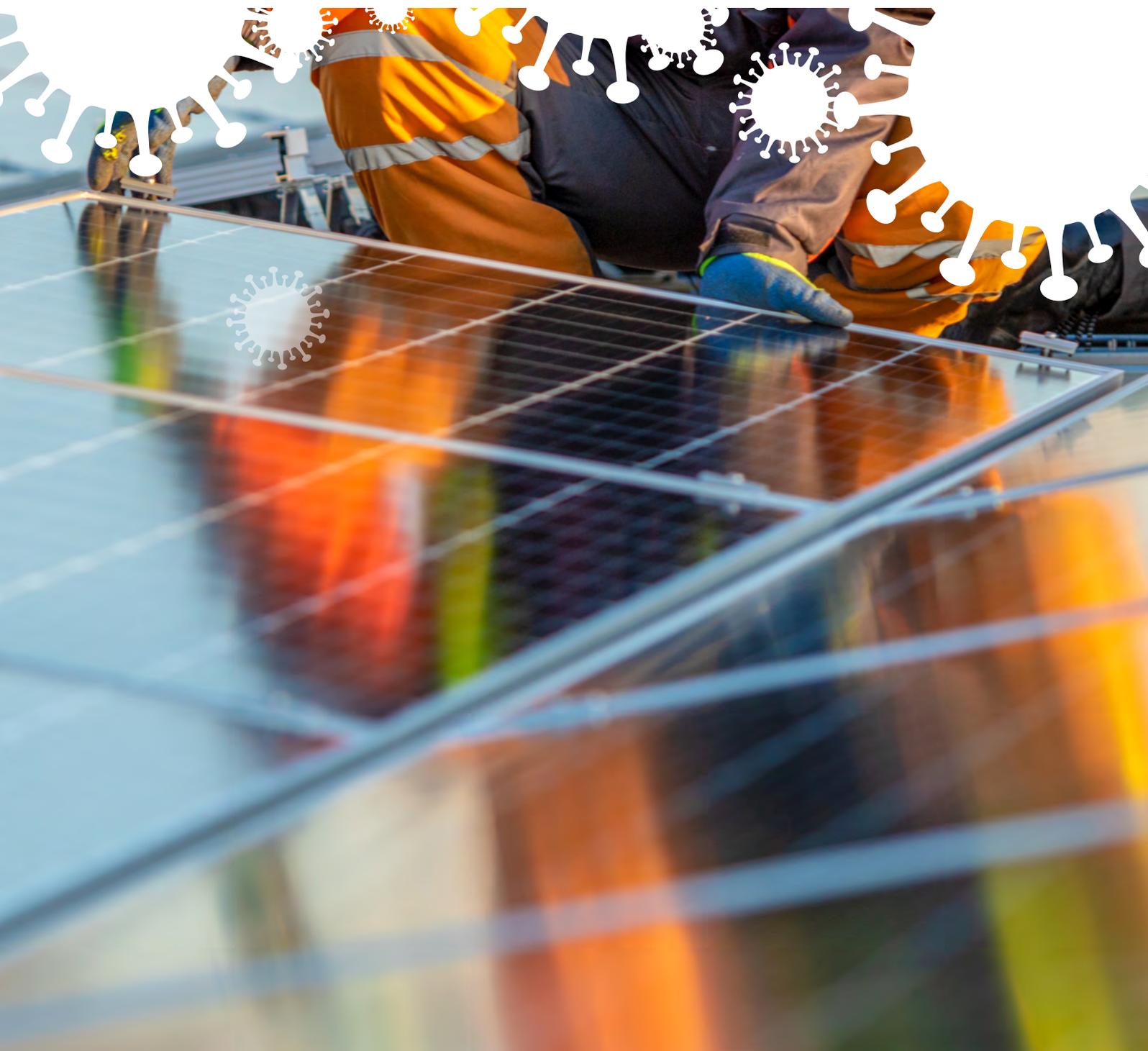
Data from CEA

Source: Mercom India Research

COVID Effect: Solar Installations Slide in 2020

One of the most stringent lockdowns in the world in response to COVID-19 took its toll as solar installations declined to their lowest levels in five years

By : Rakesh Ranjan Parashar



India installed 3,239 MW of solar capacity in the calendar year (CY) 2020, a 56% decline, compared to 7,346 MW in 2019, according to the latest 2020 Q4 & Annual India Solar Market Update released by Mercom India Research.

By the end of 2020, large-scale solar installations accounted for 78% of the total installations with 2,520 MW. The figure saw a 60% decline compared to the last year. Rooftop solar installations accounted for 22% of the installations with 719 MW, a 35% drop YoY.

Among the states, Andhra Pradesh, Rajasthan, and Gujarat were the top three in large-scale solar installations accounting for 51% of the total installations.

The Indian solar market added nearly 1,505 MW in Q4 2020, a 244% increase compared to 438 MW installed in Q3 2020. However, the installations saw a decrease of 21% compared to 1,897 MW installed in Q4 2019. In Q4 2020, large-scale installations accounted for 1,220 MW, a 331% increase compared to 283 MW added in Q3 2020. Rooftop solar installations in Q4 2020 accounted

for 285 MW, an increase of 155 MW compared to Q3 2020.

The COVID-19 pandemic was a major reason for the decline in installations. Another issue that affected the numbers was the difficulty government agencies faced in getting distribution companies to sign power sale agreements (PSAs) in the wake of the steep fall in tariffs in most auctions. Nearly 17-18 GW of projects are languishing without a PSA in place.

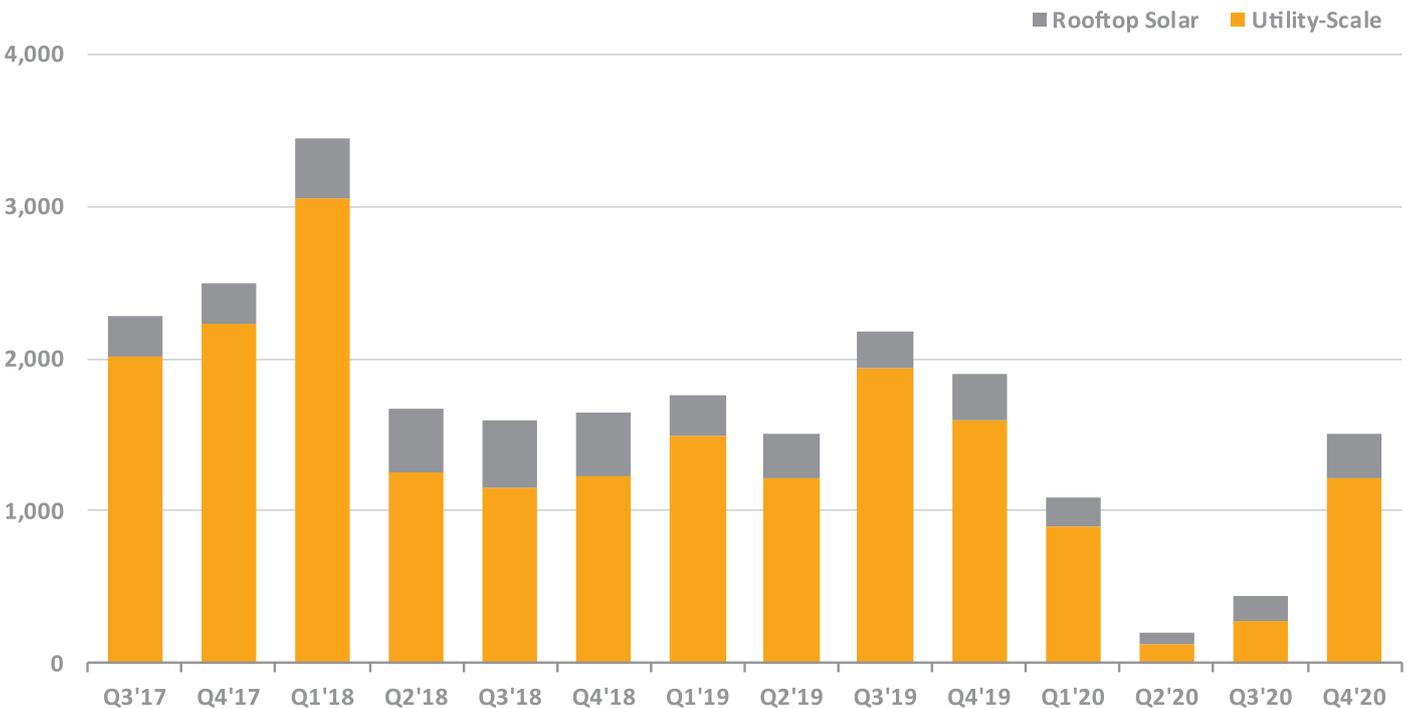
"India's solar installations in 2020 were the lowest in five years. While other top solar markets in the world have experienced positive growth, India, which had one of the most stringent lockdowns in response to the pandemic, took a while to get back up and running. We expect the industry to experience significant positive growth in 2021," said Raj Prabhu, CEO of Mercom Capital Group.

The report highlights other short-term challenges such as the rise in module prices, increased shipping and freight charges in the range of 500%-800%, and a surge in raw material costs. As a result, the average large-scale solar project costs increased slightly by 2% quarter-over-quarter in Q4 2020. However, project costs were 2.5% lower compared to the same quarter in 2019, according to the report

The government is taking steps to promote domestic manufacturing and limit the imports of solar components from countries like China, Vietnam, and Malaysia. The production-linked incentive announcement was one such move to spur the domestic market to manufacture high-efficiency solar modules. But the industry is still waiting for clarity on the implementation part and the actual budget allocation for solar.

Large-scale solar installations accounted for 78% of the total installations with 2,520 MW

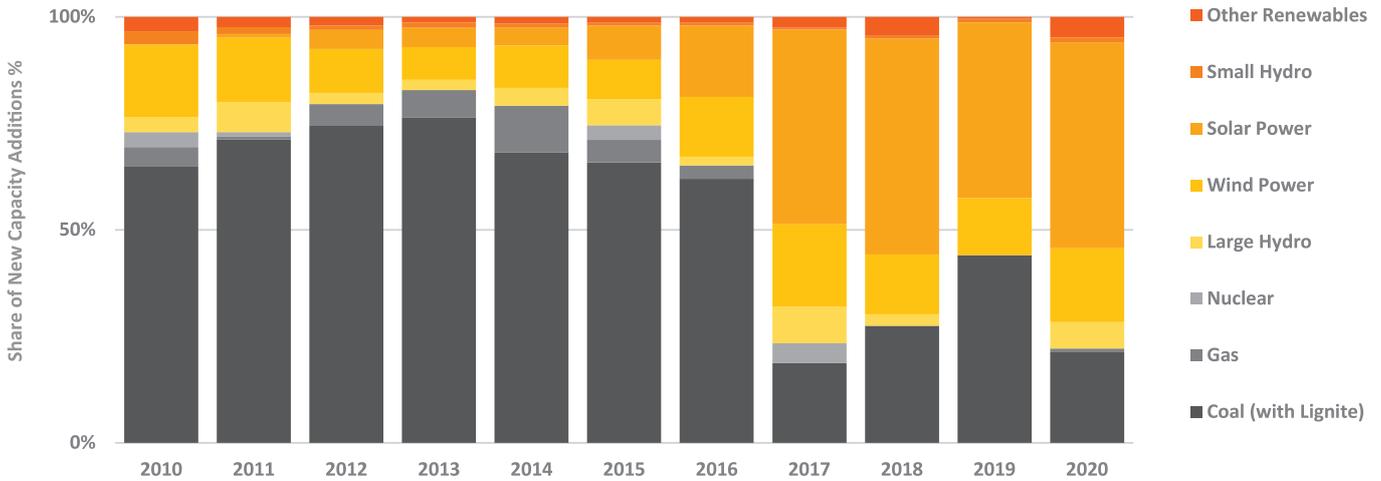
Solar Installations by Quarter (MW)



Source: Mercom India Research (Dec 2020)

Share of New Power Capacity Additions in India (2010-2020)

Solar and Wind account for 66% of new power capacity additions during 2020



MNRE's revised cumulative Bio-Power figures not included
Data from CEA, MNRE, Mercom India Solar Project Tracker

Source: Mercom India Research (Dec 2020)



The adoption of renewable energy sources is moving in the right direction in the country, with renewable energy sources accounting for 78% of total installations in 2020, with solar representing 48% of new capacity additions and wind accounting for 17.4%. Coal accounted for just 21% of new capacity. The share of solar in India's power mix reached 10.3%, exceeding that of wind-based power sources (10.25%) for the first time.

Highlights from Mercom India Research's 2020 Q4 and Annual India Solar Market Update:

- India added 3.2 GW of solar in CY 2020, a 56% decline compared to 7.3 GW installed in CY 2019
- Large-scale solar installations in CY 2020 accounted for 78% with 2.5 GW, and rooftop solar made up the remaining 22% adding 719 MW
- Cumulative solar installed capacity in India was approximately 39 GW at the end of Q4 2020
- The large-scale solar project pipeline in India stood at 47.5 GW, with another 24.5 GW of tendered capacity pending auctions at the end of Q4 2020
- Solar accounted for 48% of new power capacity additions in CY 2020
- In CY 2020, investments in the Indian solar sector were 66% lower compared to CY 2019
- Electricity generated from solar in CY 2020 crossed 58.2 billion units

"The solar industry has shown incredible resilience amid all the chaos brought on by the pandemic. The market is on the verge of experiencing

Cumulative installed solar capacity in India is about 39 GW at the end of 2020

two of its best years-to-date unless further disruptions in the form of ill-conceived policies hurt growth," said Prabhu.

The rooftop solar segment is experiencing a turnaround, with

installations showing significant growth in the second half of the year. Q4 2020 was the strongest in terms of rooftop solar installations, and the report predicts the momentum to continue into Q1 2021.

According to the report, the biggest hindrance to the rooftop solar market's growth is the new net metering policy, which restricts net metering to rooftop solar systems of up to 10 kW and mandates gross-metering for systems above 10 kW. Stakeholders feel this decision may hurt the Indian rooftop solar segment. The Ministry of Power has assured the industry that the government would review the gross metering policy for installations over 10 kW capacity.

Mercom India Research is forecasting over 10 GW of solar installations in 2021, as most of the projects scheduled for 2020 were moved to 2021.

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Urdhva Management Private Ltd. proudly presents the first edition of Recommerce- Global Battery Recycling Conference, happening at The Lalit Ashok, Bengaluru, on 3rd and 4th of March, 2021, officially supported by Ministry of Environment, Forest and Climate Change, Ministry of Electronics and Information Technology, Bureau of Indian Standards & Digital India.

With the increasing demand for electronic gadgets, vehicles and technology, market for battery is expected to grow expeditiously during the period of 2021–2030. Batteries come in a variety of shapes and sizes, all batteries have heavy metals, like mercury, lead, lithium, cadmium, nickel, etc. These metals are extremely harmful to human health and environment when not disposed properly.

Recommerce is largely a B2B event and platform that intends to promote recycling and facilitate waste management, nationwide and globally. It aims to create an organized sector for waste management in India, which is now largely unorganized. The platform also aims at bridging the gap among businesses involved in the space and generating more business and employment opportunities in the waste management sector.

The two-day knowledge and networking conference will be attended by recyclers, OEM's, CEO's, senior level executives, associations, government bodies, consultants, educational institutions, experts in waste management and environment-friendly technologies and research organizations. The conference will discuss and debate on topics like eco-friendly ways for battery recycling, asset management, best in collection procedures, effective implementation of EPR, latest innovations, materials-recovery solutions, end-of-life strategies, quality check certifications and standards, as well as regulatory and business models to help reduce the environmental impact of battery waste.

The conference provides a unique opportunity to learn about developments in the battery recycling industry, find solutions, and gain insights into best practices and leading recycling technologies for sustainable living.

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Venue: The Lalit Ashok, Bengaluru

Date & Time: 3rd & 4th March, 2021; 9:30 am - 5:00 pm

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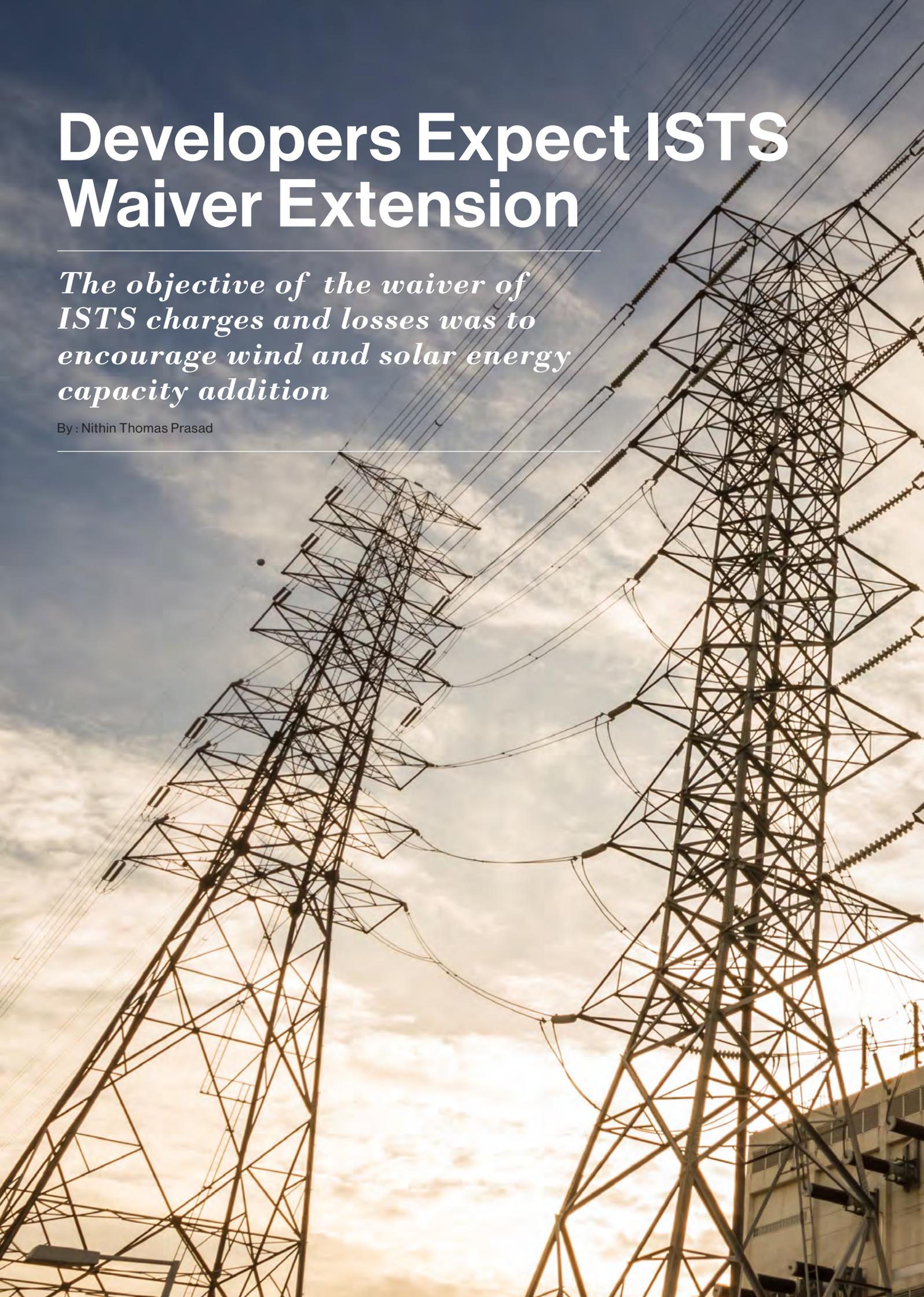
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Developers Expect ISTS Waiver Extension

The objective of the waiver of ISTS charges and losses was to encourage wind and solar energy capacity addition

By : Nithin Thomas Prasad



Renewable energy projects commissioned on or before June 30, 2023, have a waiver on the inter-state transmission system (ISTS) charges and losses. But most of these projects are yet to sign power purchase (PPA) and power sale agreements (PSA), which is critical if they have to be completed on time.

Projects are given 18 months to commission from the date of signing the PPA, which means by January 2022, the PPAs and the PSAs have to be signed. Lenders make it mandatory for both the PPAs and PSAs to be signed before the financial closure of the projects.

The Ministry of Power is considering an extension on waivers for renewable power projects even if they are commissioned after this deadline, depending on its development status. However, other pressing issues need to be addressed.

Mercom spoke to stakeholders to discuss the importance of the waiver, its cost implications, and the other issues they face with ISTS projects.

Projects Unworkable Without Waiver

The objective behind the waiver of ISTS charges and losses is to encourage wind and solar energy capacity addition by reducing the cost of generation to achieve the country's target of achieving 175 GW of renewable energy capacity by December 31, 2022.

According to a project developer, the Central Electricity Regulatory Commission has nine transmission zones with point of connection (PoC) charges (₹/MW/Hour) between ₹0.30 (\$0.004)/kWh and ₹2 (\$0.027)/kWh. So, without the ISTS charges waiver, some projects may become unfeasible.

Deadline Extension Inevitable

Renewable project developers did not seem too concerned about the waiver deadline, and they were confident that an extension beyond the June 20, 2023 cut-off date was almost certain. They, however, said other issues need to be addressed.

KRM Prakash Kumar, General Manager at Hild Energy Private Limited, a Chennai-based solar power project developer, said an extension would most

likely be granted, especially considering the special benefits renewable power generation offers. He said developers were not too worried about it.

He explained that there were more pressing concerns with ISTS-connected projects, like the insufficient 18-month project commissioning period once PPA is signed. Additionally, ISTS substations and all related connectivity work must be ready to evacuate power from the projects on time. Land acquisition delays were another concern for developers.

The Power Ministry is considering an extension on waivers for renewable projects

Without these requirements in place, developers would not be able to conduct the three-month performance guarantee tests on their projects and get their dues, he said. This was especially important since entities like engineering, procurement, and construction contractors are given the final 10% of the contract payment only after completing the test.

Unsigned PSA Backlog

Delays in signing PSAs by the Solar Energy Corporation of India (SECI) is another challenge that could hinder developers. After signing a PPA with the project developers, SECI signs a PSA with the distribution company (DISCOM) to sell the power generated by these projects to off-takers.

However, there is a massive backlog of such unsigned PSAs - a problem for developers who face difficulties securing debt funding. According to Mercom's data, about 10.6 GW of ISTS-connected solar power and 2.9 GW of ISTS-connected renewable power projects blended with solar are waiting for the



PSAs to be signed.

A SECI official said that the constantly falling tariffs have been creating issues lately, and DISCOMs are hesitant about signing PSAs for solar projects. The earlier method of pooling tariffs every six months has failed, and SECI is trying to sign PSAs separately for each bid.

“We are trying to sell the power from these projects but finding it extremely difficult considering the bids are so low lately. We are hoping that rates are higher in future auction rounds since the prices of modules have also gone up,” the SECI official said.

“The manufacturing-linked solar development projects have a higher tariff (₹2.92 (-\$0.040)/kWh) and are also in large quantity (12,000 MW). This has been the greatest challenge, but ultimately all parties have to bear the cost of development. We are also trying to come out with more hybrid tenders to meet demand.” the official added.

The Force Majeure Option

Developers have also pegged their hopes on seeking refuge under the ‘force majeure’ clause of their contracts. A ‘force majeure’ is declared in the event

Renewable project developers did not seem too concerned about the waiver deadline

of unforeseeable circumstances that prevent parties from fulfilling a contract.

An executive from a top renewable project development company said that if SECI does not sign PPAs on time, developers could claim relief under the force majeure clause.

“The ISTS waiver is not under the developers’ scope. Therefore, these things are not applicable on developers’ side, and there is not much of a concern as such,” he said.

Ultra-Mega Solar Projects May Not be the Answer

Praveen Golash, Joint Secretary, Solar Power Developers Association (SPDA), said, “The SPDA believes that the government must also re-examine its approach to developing solar in India in light of ISTS charges waiver coming to an end by June 2023. The current focus is on developing ultra-mega solar

power projects which are associated with land acquisition challenges, sub-optimal utilization of power evacuation infrastructure, higher transmission losses, and charges.”

“India is endowed with abundant sunshine across the country with a variation of 15% to 20%. Hence, small to medium scale projects (50-100 MW) can be developed at load centers in over 700 districts located across the country, which results in lower transmission losses, better utilization of transmission assets, equitable job creation and development,” he said.

While the industry doesn’t seem too worried about the ISTS waiver deadline, it is evident that there are other issues these projects face. The government needs to work with implementing agencies and the state DISCOMs to ensure PSAs are signed early to boost developers’ and lenders’ confidence. 

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Energy Sector's Mixed Reactions to Budget 2021

While the massive outlay for revamping the power distribution sector was lauded, the response to the Budget proposals from the renewable energy sector was not too enthusiastic

By : Rahul Nair



The 2021-22 Budget tabled in the Parliament by the Finance Minister, Nirmala Sitharaman, received a mixed response from stakeholders in the energy sector. While the massive outlay for revamping the power distribution sector was lauded across the board, the response to the Budget proposals from the renewable energy sector was not too enthusiastic.

The industry reacted positively to the Budget outlays for Solar Energy Corporation of India (SECI) and Indian Renewable Energy Development Agency Limited (IREDA).

Some of the key proposals in the Budget include:

- ₹3.05 trillion (-\$41.92 billion) outlay for a revamped reforms-based result-linked power distribution sector program over five years
- Infusion of additional capital of ₹10 billion (-\$137 million) in SECI and ₹15 billion (-\$205.6 million) in IREDA
- Increase in customs duty on solar inverters from 5% to 20% and on solar lanterns from 5% to 15% to encourage domestic production

The finance minister also said that a phased manufacturing plan for solar cells and solar modules would be announced soon to build up India's solar capacity.

In Budget 2020, an allocation of ₹220 billion (-\$3.08 billion) went to the power and renewable sector.

Some of the major budget outlays in the power sector include ₹26 billion (-\$356 million) for solar power and ₹11 billion (-\$150 million) for wind power. The largest outlay was for the Integrated Power Development Scheme (IPDS), which received a whopping \$53 billion (-\$724 million). One of the main programs of IPDS is smart meter installations.

An allocation of ₹220 billion went to the power and renewable sector

The program for Faster Adoption and Manufacturing of (Hybrid and) Electric Vehicles in India - (FAME- India) also received an outlay of ₹7.57 billion (-\$103.4 million) compared to ₹6.93 billion (-\$96.8 million) last year.

Mercom spoke with several stakeholders in the solar industry to get

a sense of the market sentiment.

Massive Fund Allocation for DISCOMs

Jaideep Mukherji, Chief Executive Officer, Smart Power India, told Mercom that the budgetary allocation of ₹3.05 trillion (-\$41.92 billion) for the power sector would help the sector upgrade its infrastructure and address the challenges, especially at the distribution level.

“The proposal to create a framework for the distribution space, once implemented, will promote healthy competition among DISCOMs and help consumers have access to multiple service providers to choose from with an improved focus on traditionally weak areas such as metering, billing, collection, and grievance redressal,” he said.

Prabhajit Kumar Sarkar, MD & CEO, Power Exchange India Limited, said that the Budget had given a big push to the power sector by the massive package for power distribution sector scheme.

“We welcome this move as it is expected to assist DISCOMs for infrastructure creation tied to financial improvements, including prepaid smart metering, feeder separation, and upgradation of systems. Additionally, the government's proposed framework

Budget 2021-2022: Outlay on Major Programs

Major Central Sector Programs	2018-19 Actuals		2019-20 Actuals		2020-2021 BE		2020-2021 RE		2021-2022 BE	
	₹ Million	~\$ Million	₹ Million	~\$ Million	₹ Million	~\$ Million	₹ Million	~\$ Million	₹ Million	~\$ Million
Solar Power	19,040	260.1	19,953	272.6	25,158	343.7	15,754	215.2	26,060	356.0
Wind Power	9,500	129.8	10,260	140.2	12,990	177.5	10,590	144.7	11,000	150.3
Green Energy Corridors	5000 (BE)*	68.3	526	7.2	3,000	41.0	1,600	21.9	3,000	41.0
Kisan Urja Suraksha evam Utthaan Mahabhiyan (KUSUM)	-	-	-	-	10,000	136.6	2,100	28.7	9,970	136.2
Deen Dayal Upadhyaya Gram Jyoti Yojna (DDUGYJ)	38,000	519.1	39,260	536.3	45,000	614.8	20,000	273.2	36,000	491.8
Integrated Power Development Scheme	38,970	532.4	55,600	759.6	53,000	724.0	40,000	546.4	53,000	724.0
Strengthening of Power Systems	28,020	382.8	18,130	247.7	18,430	251.8	8,200	112.0	14,550	198.8
Power System Development Fund	5,440	74.3	5,550	75.8	5,740	78.4	8,240	112.6	5,740	78.4
Scheme for Faster Adoption and Manufacturing of (Hybrid and) Electric Vehicles in India - (FAME- India)	1,450	19.8	5,000	68.3	6,930	94.7	3,180	43.4	7,570	103.4

Note: BE - Budget estimates; RE - Revised Estimates

\$1 = ₹73.2

Source: IndiaBudget.gov.in

Mercom India Research



to give consumers the choice of more than one DISCOM was a much-needed move. It will help enhance efficiency in the power distribution sector, induce fair competition, and address monopoly concerns.

S N Goel, Chairman, Indian Energy Exchange, said that while the fine print and details of the Budget are awaited, the announcements are forward-looking. If implemented earnestly, it can potentially transform the energy sector.

“The proposed distribution reforms package to promote competition, enable consumers to choose their DISCOM, and increase penetration of automation and technology will go a long way in restoring financial viability and infusing greater efficiency in the sector.”

Saif Dhorajiwala, Co-founder, and Executive Director, Fourth Partner Energy, said that the power connection portability was an encouraging announcement. “Creating the enabling framework to provide consumers an option to choose their power distribution company will take time to implement, but it will undoubtedly strengthen India’s energy sector.”

Gagan Vermani, CEO and Founder, MYSUN, said, “In the larger power picture, the decision to break the monopoly of the DISCOMs is a welcome move, though how soon this will be actioned and completed is to be seen.”

Funding for SECI and IREDA

Hartek Singh, CMD of the Hartek Group, said, “We welcome the Budget proposal for infusing ₹10 billion (-\$137 million) as additional capital to SECI and ₹15 billion (-\$205.6 million) to IREDA. We are hopeful that this monetary boost will help capitalize on the emerging energy transition trends effectively.

Customs duty on solar inverters and lanterns hiked to encourage domestic production

Shobhit Kumar, Director, Oakridge Energy, concurred with Hartek Singh. “Significant budgetary allocations have been made to SECI and IREDA, which will greatly enhance their ability to act as effective nodal agencies for renewable capacity addition.”

Imaan Javan, Director of Operations,

Suntuity REI, described the Budget as forward-looking. It would help the solar industry grow, multiply employment opportunities and empower India to compete globally, “The ₹10 billion (-\$137 million) fund allocation to SECI will bring in the much-needed respite.”

However, according to Animesh Damani, Managing Partner, Artha Energy Resources, “The allocation of ₹25 billion (-\$341 billion) fund to SECI and IREDA (cumulatively), is a play on optics and yet again, not likely to benefit the private players. Moreover, the silence of the authorities on the GST front has now become a cause for concern. If introduced, GST would potentially generate revenue for the government and aid private players.”

Gagan Vermani said that the Budget was a mixed bag for the solar sector. “There is no clarity on how the funds allocated to SECI and IREDA would be utilized.”

Customs Duty

The announcements about raising customs duty on solar inverters received a mixed response. While some felt that the move would promote domestic manufacturing, others said that it could put off consumers opting to go solar because the cost of solar inverters could go up.

Imaan Javan said, “No customs duty



on imported modules and cells will give developers the impetus to take up more projects, thus enabling India to achieve the ambitious target of 175 GW by 2022.”

Jeetender Sharma, Founder & Managing Director, Okinawa Autotech, said that the Budget effectively sets the roadmap for the next five years with a slew of overall economic growth measures.

“The increase in customs duty on automobile parts will rightly encourage domestic manufacturing. All in all, the Budget is rewarding. However, the pandemic has had an inevitable impact on the auto industry. We were also expecting the government to look at reducing the GST and reconsider the current taxation framework applicable to raw material and the final product in case of EVs, which could have provided the much-needed impetus to the industry.”

Saif Dhorajiwala said that the government had delivered a balanced budget for the renewables sector. “The solar industry welcomes the announcement of 20% BCD on inverters and 15% on lanterns. The finance minister has indicated ramping up domestic manufacturing of cells and panels in a phased manner, which is the right approach. It reflects the growing maturity of the renewables sector and the need to be ‘Aatmanirbhar’ (self-

reliant) for key components across the value chain,” he said.

However, not all were impressed by the Budget proposals.

Animesh Damani said, “The FY 2021-22 budget has left the non-utility solar players to fend for themselves. Adding

Stakeholders welcome National Hydrogen Mission

to the misery is the capped net metering of 10 kW, which is likely to impact 70% of the rooftop solar business. The government’s stance on raising import duties on solar inverters will further discourage potential investment in the solar development segment and adversely affect employment.”

Gagan Vermani echoed Damani’s views. “The import duty on solar inverters was increased from 5% to 20%, which could perhaps raise the cost for those considering going solar. With the domestic market for inverters very much a work in progress, moves like these can potentially be a cause of concern.”

Gyanesh Chaudhary, Managing Director of Vikram Solar, said that he was looking forward to the details on the phased manufacturing plan for solar cells and solar panels. “The RE sector, especially the solar industry, was hoping for more support from the Budget on implementation of the Basic Customs Duty (BCD) with an exemption for SEZ-based manufacturers, 5% Interest, etc.”

Nikunj Ghodawat, CFO, CleanMax, termed the higher duty on inverters negative but felt that its impact would not be much.

Green Hydrogen Mission

Stakeholders wholeheartedly welcomed the announcement on setting up the Hydrogen Energy Mission to generate hydrogen from green power sources.

Green hydrogen is a nascent and emerging technology, but the country needs to be future-ready to achieve our energy transition goals. We look forward to the launch of the National Hydrogen mission next fiscal, Saif Dhorajiwala said.

According to Animesh Damani, the only silver lining in the Budget is the government’s taking note of the Hydrogen Energy sector. “We hope for it to have a serious outlay. This, in turn, is likely to prompt Indian players in the sector to take the lead globally.”

Industry News and Policy Briefs

The **Supreme Court of India** issued orders placing a hold on a stay order given by the **High Court of Punjab and Haryana** on the privatization of Chandigarh's distribution company (DISCOM). The Apex Court issued the interim stay order on January 12, 2020.



Kerala's Finance Minister Thomas Isaac announced a 50% reduction in motor vehicle tax for electric, fuel cell, and full hybrid battery electric vehicles (EV) for five years in the state's budget for 2021-2022.



Leading Electric Car manufacturer **Tesla** established an Indian subsidiary, 'Tesla Indian Motors and Energy' in Bengaluru.

Indian Renewable Energy Development Agency, which falls under the administrative control of the **Ministry of New and Renewable Energy**, signed a Memorandum of Understanding with **NHPC** for providing its technical expertise in developing renewable energy projects.

The **Union Cabinet** approved an investment of ₹52.81 billion (-\$723.43 million) for the 850 MW Ratle Hydropower project, located on the Chenab river in the Kishthwar district of Jammu & Kashmir.

Total, a French oil and gas major, acquired a 20% minority interest in **Adani Green Energy** from Adani Group. The two partners agreed to the acquisition of a 20% stake in AGEL for an investment worth \$2.5 billion.

The **Maharashtra State Cabinet** issued its 'Unconventional Energy Generation Policy' to promote non-conventional source-based energy generation.

Tata Power announced its takeover of Western Electricity Supply Company of Odisha and Southern Electricity Supply Company of Orissa.



Ola, one of India's leading mobility platforms, announced that it had partnered with **Siemens** to build its upcoming electric vehicle manufacturing facility.

The Kolkata-based solar cells and modules manufacturer, **Websol Energy Systems**, announced the financial results for the third quarter (Q3) of the financial year (FY) 2021. The company reported a 21.3% growth in revenues during Q3 FY21 over Q2 FY21.



The **Central Electricity Authority** provided approval to **Eden Renewables** and **SoftBank Energy's** special purpose vehicles to construct transmission lines for 300 MW of solar projects each in Rajasthan.

Tata Power joined hands with the **Small Industries Development Bank of India** to provide affordable financing for rooftop solar installations by micro, small, and medium enterprises.

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SPECIAL PLENARY SESSIONS

- Innovation in Utilities During the Pandemic
- Regulatory Support in Different Countries for Revival of Utilities
- Cyber Security for Digital Utilities
- Energy Storage Systems -Business Models and Regulations
- Disaster (and Pandemic) Resilient Utilities
- Smart Meter Rollout in India
- Disruptive Technologies and Innovations for Utilities
- Grid Integrated Vehicles (GIV) and Standards for GIVs

SPECIAL ROUNDTABLES AND WORKSHOPS

- Interconnection of Regional Grids in Asia
- Electric Cooking
- Blockchain Applications in Energy
- Urban Air Mobility Systems (UAM)
- Smart Water Distribution
- Smart City Gas Distribution including Green Hydrogen
- District Cooling Systems
- Live Line Maintenance in Utilities
- IEC-IEEE World Smart Energy Standardization

BILATERAL WORKSHOPS

- 10th EU-India Smart Grid Workshop
- 7th US-India* Smart Grid Workshop
- 5th Sweden-India Smart Grid Workshop
- 4th France-India Smart Grid Workshop
- 2nd Switzerland-India* Smart Grid Workshop

**program under finalization*

Policy Briefs

States

The **Jharkhand State Electricity Regulatory Commission** set a pre-fixed levelized tariff of ₹3.09 (-\$0.042)/kWh for power from decentralized solar and other renewable energy projects between 500 kW and 2 MW in size under **Component-A** of the **Pradhan Mantri Kisan Urja Suraksha evam Utthan Mahabhiyan (PM KUSUM)** program.



Center

The **Minister of Road Transport and Highways (MoRTH)**, Nitin Gadkari, approved a proposal to levy 'Green Tax' on old vehicles polluting the environment. MoRTH has forwarded the proposal to the states for consultation before it is formally notified.



The **Ministry of Power** issued directions to the **Central Electricity Regulatory Commission** regarding sharing transmission charges under 'force majeure' conditions.

The **Ministry of Power** announced that it would not deprive renewable power projects of a waiver on inter-state transmission system charges and losses if they are commissioned after June 20, 2023, due to delays caused by the transmission provider or the government agency or due to force majeure.

The **Ministry of New and Renewable Energy** issued a notification extending the self-certification of solar PV inverters from December 31, 2020, to June 30, 2021, subject to the condition that the manufacturers have a valid International Electrotechnical Commission (IEC) certificates and test reports from international test labs.

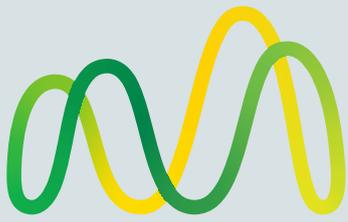
The **Ministry of Power** assured stakeholders from the rooftop solar segment that the government will review its gross metering stance for installations over 10 kW capacity. The provision under the Electricity (Rights of Consumer) Rules 2020 mandates net metering for loads up to 10 kW and gross metering for loads greater than 10 kW.

The **Punjab State Electricity Regulatory Commission** said that it would come up with a staff paper suggesting amendments to the net metering regulations, 2015. It said that the draft amendments would be put up for public comments, and all the stakeholders will get another opportunity to submit their suggestions to the proposed amendments.

The **Department of Food & Public Distribution** announced that it would extend financial assistance to project proponents to enhance their ethanol distillation capacity

The **Himachal Pradesh Electricity Regulatory Commission** issued generic levelized tariffs for solar projects (not exceeding 5 MW) for the financial year 2020-21.





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- Has become **preferred** investment destination for EV manufacturers
- **TSREDCO** invited bids to set up grid-connected rooftop solar plants
- Major Incentives to boost **EVs manufacturing** and adaption in new EV policy

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Major Tender and Auction Announcements in January

This is a list of major tenders and auctions from January. 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 **Indian Renewable Energy Development Agency** floated a tender to set up **5 GW** of grid-connected solar power projects (Tranche III) under the **Central Public Sector Undertaking (CPSU) program (Phase II)**. The program aims to provide the necessary policy framework for selecting and implementing 12 GW or more of grid-connected solar PV projects with VGF by government producers such as public sector undertakings.

The Gujarat Urja Vikas Nigam Limited (**GUVNL**) issued a request for selection to purchase power from **500 MW** of grid-connected solar PV projects to be set up in the state.

The Maharashtra State Power Generation Company Limited (**MAHAGENCO**) invited bids from solar power developers for setting up **250 MW** of grid-connected solar photovoltaic projects at the Dondaicha Solar Park in **Dhule, Maharashtra**.

NTPC Limited called for bids from developers for setting up **190 MW** of grid-connected solar PV projects at **Nokh Solar Park** in Rajasthan. The project is being developed through Rajasthan Solar Park Development Company Limited.

The Solar Energy Corporation of India (**SECI**) released a tender for **50 MW** of solar PV projects, including a **10 MW agro-PV component** in **Tamil Nadu**. Agro PV projects involve developing solar power projects and cultivating crops on the same plot.

SECI also issued a tender on behalf of **Bharat Coking Coal Limited** to construct a **25 MW** solar power project at its Bhojudih Coal Washery in Purulia, West Bengal.

The **Manipur Tribal Development Corporation Limited** invited bids to develop the **Bukpi Solar Park** in the Pherzawl district of Manipur.

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For conference: office@snec.org.cn



Other Tenders

Energy Efficiency Services Limited (**EESL**) issued a tender for an off-grid solar photovoltaic water pumping system in select states on a Pan-India basis under **Component-B** of the Ministry of New and Renewable Energy's (MNRE) Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan (**PM-KUSUM**) program. In all, **317,975 pumps** are slated for installation across 30 states and five union territories.

West Bengal State Electricity Distribution Company Limited invited bids to install and commission distributed grid-connected solar systems for agricultural consumers under Component C of the PM KUSUM program. A total of **700 agricultural pumps** will be solarized.

The **Maharashtra Energy Development Agency**

issued an expression of interest for a third-party **feasibility survey** and inspection of solar pumps installed in the state under Component-B of the PM KUSUM program.

Central Electronics Limited floated a tender for **1.8 million** multicrystalline solar photovoltaic **cells** with wattage greater than 4.68W.

Rajasthan Electronics and Instruments released a tender for 300,000 multicrystalline silicon **solar cells** with a wattage of 4.5W. The company also invited bids for 200,000 multicrystalline silicon **solar cells** of 4.67W

SJVN Limited issued a notice inviting bids for the purchase or lease of **1,250 acres of land** for setting up solar power projects in Bihar.

Auctions

Larsen and Toubro's (L&T) renewable energy arm won the engineering, procurement, and construction contract for the **200 MW solar project in Gujarat** through an e-reverse auction conducted by **NTPC limited**.

In another auction, L&T won the rights in the e-reverse auction held by the Gujarat State Electricity Corporation Limited to construct a **210 MW** grid-connected solar project in the Jamnagar district of Gujarat.

Reissued Tender

Central Electronics Limited reissued the tender for setting up a **2.75 MW** grid-connected ground-mounted solar power project at the **Indian Oil's LPG bottling plant** at Trichy, Tamil Nadu.

Belagavi Smart City reissued the tender for selecting a developer to install rooftop solar systems on a 'discount over retail tariff' basis on select government buildings in Belagavi, Karnataka.

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Rooftop Solar Tenders

The Goa Energy Development Agency (**GEDA**) issued an expression of interest for the empanelment of agencies to design, supply, install, test, and commission grid-connected rooftop solar PV systems with an aggregate capacity of **80 MW**. The rooftop solar PV systems would be installed on **residential buildings** and **group housing societies/residential welfare associations**.

The Madhya Pradesh Urja Vikas Nigam Limited (**MPUVNL**) invited bids for the discovery of tariff and implementation of **40 MW** of grid-connected rooftop solar systems at various locations in the state. The projects

will be developed under the renewable energy service company (**RESCO**) model.

The Delhi Metro Rail Corporation Limited (**DMRC**) invited bids for **2 MW** of rooftop solar projects on staff quarters and other buildings of DMRC under the RESCO model.

The **Maharaja Agrasen Medical College** at Agroha, Haryana, has floated a tender to enter into a power purchase agreement (PPA) for power from a **1 MW** of rooftop solar system under the RESCO model.

Canceled Tender

SECI terminated its request for selection issued for setting up **7,500 MW** of grid-connected solar projects in Leh and Kargil (Jammu & Kashmir).

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