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India

## Technology Key to Unlocking Domestic Solar Manufacturing Potential

India has a long road ahead when it comes to establishing itself as a significant solar manufacturing hub. Embracing new technology is the first milestone in that journey

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Worldwide

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Global Market  
Share

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# Foreword



With the COVID-related extension for construction projects ending, we see signs of activity all around the solar sector; tenders, project development, and transportation are all moving in the right direction.

Rooftop is also seeing increased activity, but most market inquiries are from the commercial and industrial segment. Customers are mostly looking for solar systems through the OPEX model as businesses cannot afford the CAPEX investment. Funding, however, is still very challenging to obtain for OPEX projects due to economic weakness and tight liquidity conditions.

The pandemic continues to ravage India, but the solar industry seems to have a good handle on it - labor issues have been largely resolved, and transportation and logistics are not a significant issue anymore. For all practical purposes, 2020 will end up as one of the worst years for solar installations in India.

There is a growing concern, however, among project developers that power transmission projects, which are also delayed, may further delay the commissioning of solar projects. It is likely to lead to hefty fines for developers.

We forecast 2021 to be much stronger for solar installations as most of the projects that were postponed this year are scheduled for commissioning next year. However, the uncertainty around the basic customs duty (BCD) created by the government is a dark cloud hanging on the sector.

No one - including the MNRE officials or solar industry executives - have any idea when the BCD will be implemented or what the tariff rate would be. Manufacturing expansion plans have come to a standstill as companies lack clarity, not to mention the confusion as to what will happen to production units in the SEZ zones. This is an unfortunate problem created by the government that could have been handled better. Instead of first studying all the implications, announcements were made about the BCD; now the government is dealing with the consequences while the industry remains frozen with uncertainty.

The BCD has been proposed for imported inverters as well as cells and modules, but unlike the latter, several foreign inverter firms have been 'manufacturing' in India for some time. As India continues to put up trade restrictions, the government has to be careful not to push too hard and end up in the WTO.

So far, there has been little attention paid to BCD effects on demand. DISCOMs will not automatically pay more as tariffs increase once the duty is imposed. When the safeguard duty was first imposed, all tenders and auction activity stopped. It took about six months for procurement activity to restart, which only happened after module prices fell sufficiently to negate the costs of the safeguard duty.

The government needs a balance between self-reliance in manufacturing and meeting the 100 GW solar goal set by the Prime Minister. Mercom has forecasted less than 4 GW of solar in 2020 - creating more uncertainty will start to negatively affect demand in 2021.

**Raj Prabhu**  
CEO  
Mercom Capital Group

# Mercom

clean energy news and insights India

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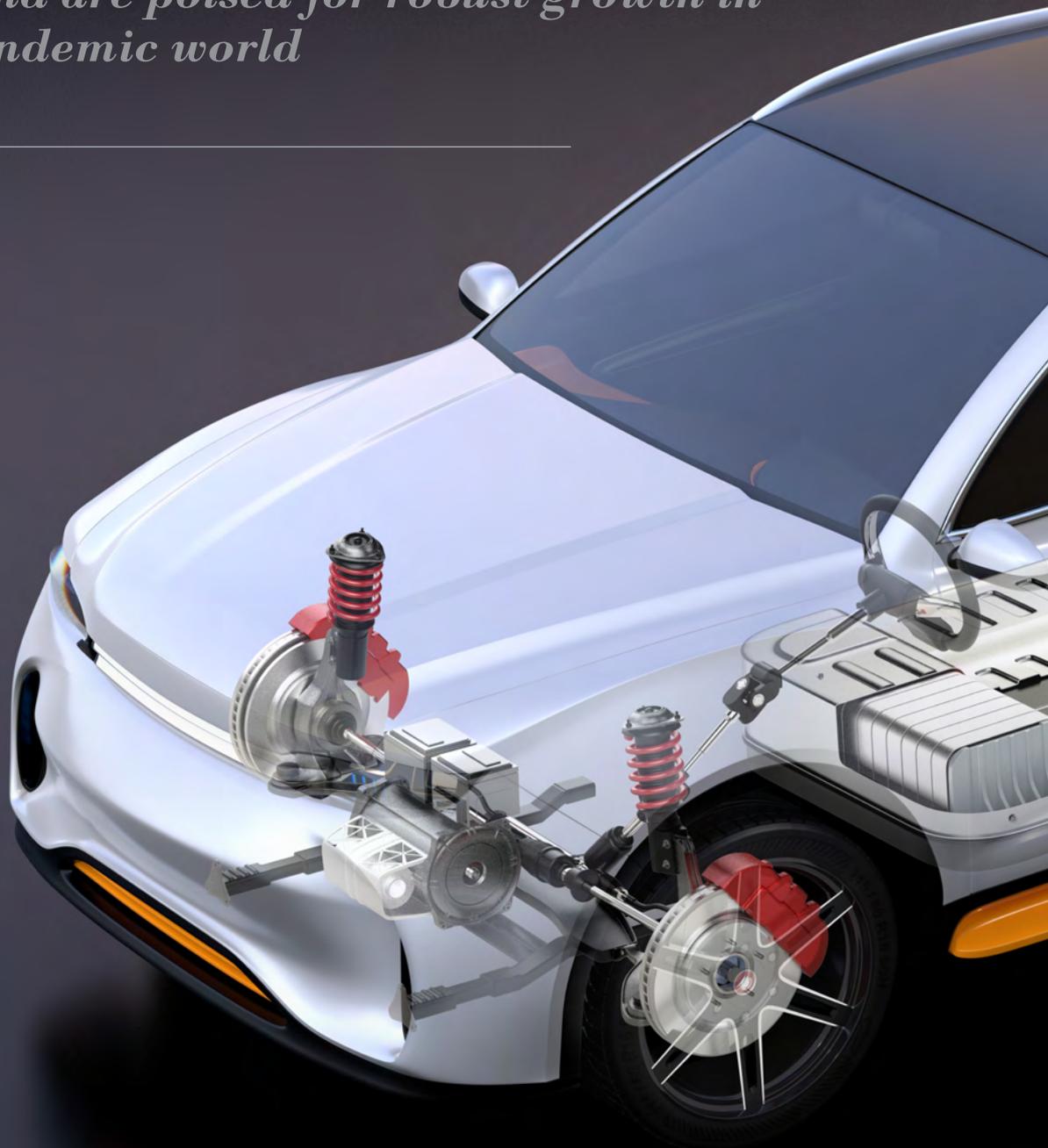
# India's EV Startups Show Resilience Amid Pandemic

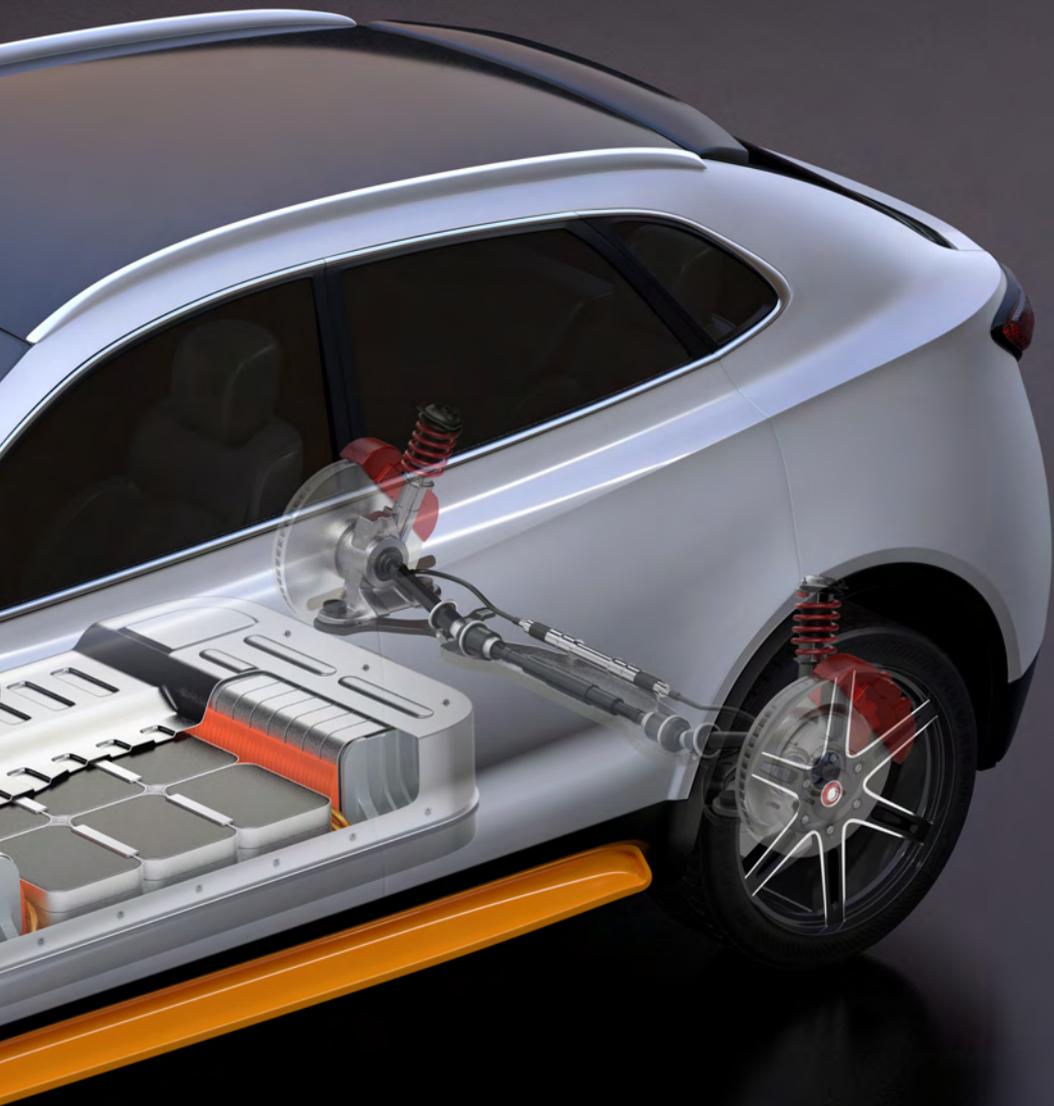
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*Amid the ensuing COVID-19 crisis, India's electric mobility startups have demonstrated resilience and are poised for robust growth in the post-pandemic world*

By : Rakesh Ranjan Parashar

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Historically, mobility and fossil fuels have been inextricably linked, and electric vehicles (EVs) have been on the fringes relevant only in a few niche markets. But with climate change taking precedence, electric mobility is gradually inching towards the center stage.

The advancements in the field of battery technology have also facilitated faster adoption of electric mobility in recent years. The Indian automobile industry is one of the largest in the world, and it is currently transforming with sales of electric vehicles rising year after year. However, like all other segments of the economy, the EV segment has also been affected by COVID. Still, there is optimism, and the

## Despite the pandemic, several Indian EV startups have raised funding, which speaks to the potential of the sector

industry sees a bright future for itself post-pandemic.

### Disruptions Due to COVID-19

The pandemic plunged the economy into an unprecedented crisis. The problem was exacerbated by the extensive lockdown and mass exodus of the workforce from the cities. Manufacturing units that rely heavily on such workforce bore the brunt of the labor migration.

Speaking to Mercom, Alok Ray, Assistant Director-Operations at Society of Manufacturers of Electric Vehicles (SMEV), said, “The COVID-19 pandemic has ruptured the manufacturing and sales activities across all sectors, including EV. The pandemic is showing no signs of slowing down, and this has resulted in the industry’s all-time low performance right now. Post the lockdown period, the digitized manufacturing and servicing will help

### Funding Deals Involving Indian EV Companies (2019-2020 YTD)

Company	Amount		Investors
	₹ million	~\$ million	
BluSmart	510	6.89	Inflection Point Ventures (IPV), Survam Partners, Venture Catalysts, Mumbai Angels, Chhatisgarh Investments Limited, JITO Angels, Lets Venture Fund, and Kaplavriksh Fund
Ather Energy	840	11.25	Hero MotoCorp
	3,501	51	Flipkart’s co-founder Sachin Bansal and Hero MotoCorp
Yulu	300	3.95	Rocketship.VC
Euler Motors	200	2.66	Inventus Capital India
Earth Energy EV	Undisclosed	Undisclosed	LR Joshi, MD of Pranada Biopharma Private Limited, and Three other equity investors
Numocity Technologies	Undisclosed	Undisclosed	Ideaspring Capital, Rebright Partners, and ABB Technology Ventures (ATV)
SmartE	963	14	Treasure Vase Ventures Private Limited
BattRE	Undisclosed	Undisclosed	Tata Motors’ former President Gajendra Chandel
PURE EV	Undisclosed	Undisclosed	Hyderabad-based investor V.C. Nannapaneni
Ola Electric	Undisclosed	Undisclosed	Ratan Tata, the chairman of Tata Sons
	3,872	56.4	Tiger Global and Matrix India and others
Strom Motors	Undisclosed	Undisclosed	Indian Angel network

Source: Mercom India Research

in ensuring the safety and efficacy of the sector. Public sensitization around climate change and alarming pollution levels have helped the sector grow because now people are looking for sustainable mobility options. All these factors, including certain public behavioral changes, will help the EV sector to grow in the post lockdown period.”

Even in an economy affected by COVID, several Indian EV startups have managed to raise funding, which speaks to the potential that investors see in this segment.

### COVID Impact

Commenting on the impact of the COVID-19 pandemic, Tarun Mehta, CEO, and co-founder of Ather Energy, said, “The COVID-19 crisis has certainly disrupted the local supply chains and manufacturing, and has also impacted demand in the short term. But it’s important to keep the medium and long term in perspective and not let the short-term issues impact the strategic direction more than they need to. This disruption will have a strong impact over the next 2-3 quarters, post which we should begin to see the industry starting to get back to pre-lockdown levels. One of the best things to happen with the pandemic is people have now realized the importance of a clean and green environment and have witnessed

### M&A Transaction Involving Indian EV Companies

Company	Amount		Acquirer
	₹ million	~\$ million	
Etergo BV	Undisclosed		Ola Electric Mobility

Source: Mercom India Research

the quick results that can be seen with reduced air pollution. The transport industry can only reduce air pollution by making a systematic shift to electric mobility, and this will drive the transition in India.”

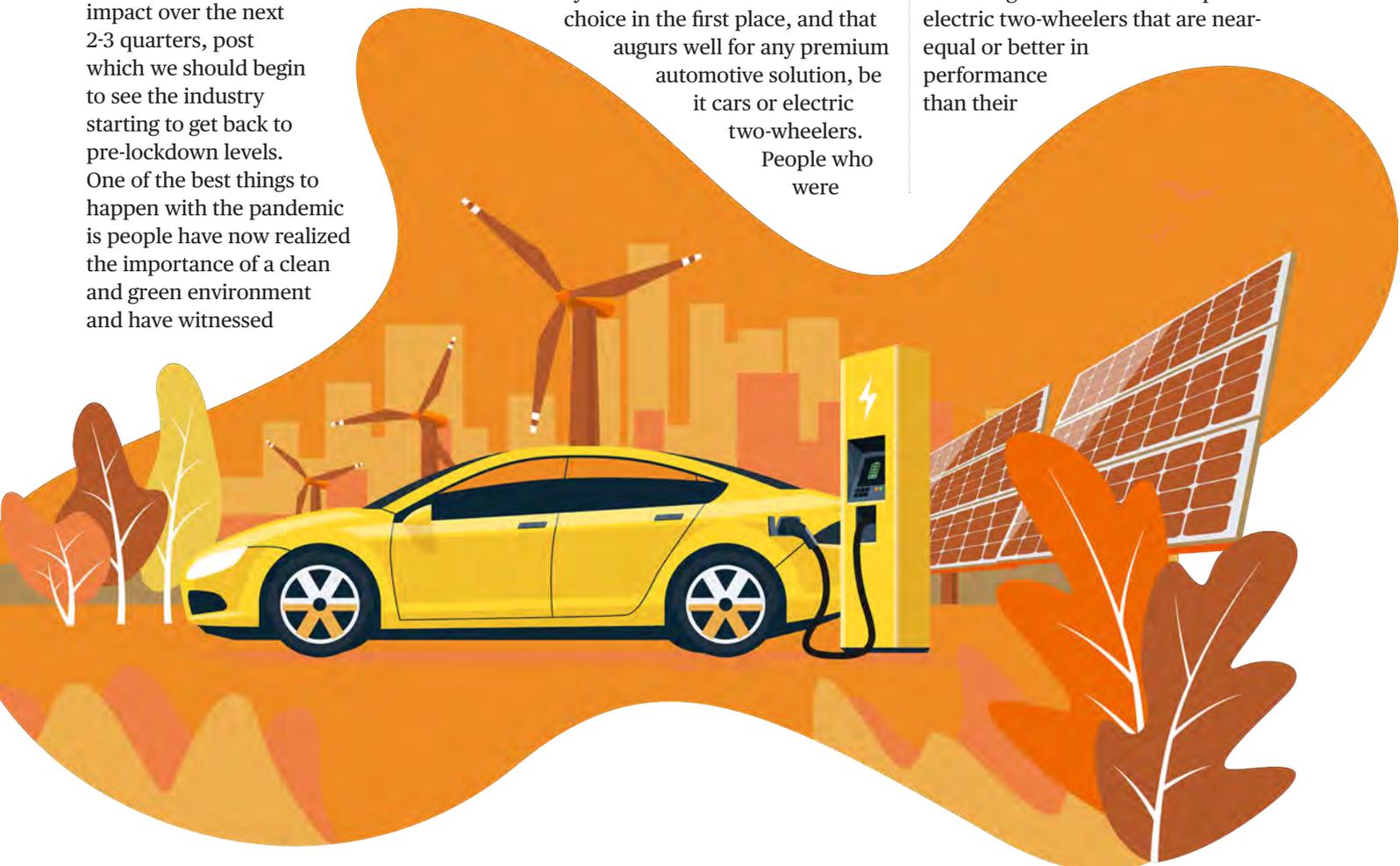
While the country is grappling with the virus, the looming global recession is also a cause of concern for businesses. But is there a silver lining in these dark times?

“If we look at any big recession across the world, a lot of people find some sense of normalcy even during a financial crisis. It is a global phenomenon, and auto sales in China and some parts of Europe are already back. Moreover, in the short-term, people are not going to take shared mobility. It was an economics-driven choice in the first place, and that augurs well for any premium automotive solution, be it cars or electric two-wheelers. People who were

originally in the market for a premium scooter, temperamentally, are still there to buy the product. So, by that logic, we like to believe that we are relatively more insulated than the rest of the market and are focusing on offering innovative ownership models, for instance, battery subscription models or leasing models,” added Mehta.

According to Mehta, the electric mobility segment is a classic example of the chicken and egg situation. Manufacturers did not produce EVs, citing low demand and lack of charging points, while buyers kept complaining about limited options and patchy supply. However, much has changed in the past two years.

“With new and existing brands launching more efficient and powerful electric two-wheelers that are near-equal or better in performance than their



Internal Combustion Engine (ICE) counterparts, electric vehicles will be the future of mobility in India. People are a little more aware now about the impact of human activity on the environment. We need to see how much of that realization converts into making the switch to electric. While there are enough people today who acknowledge the benefits of electric mobility, a lot of those who were fence-sitters have now got the motivation to shift toward technology. Now, we will see some upswing,” according to Mehta.

There are two key customer segments in the EV market today - one that is looking at EVs purely from a TCO (Total Cost of Ownership) perspective, and the other that see EVs as the future of automobiles and as technologically superior.

“For the former, the tough economic environment makes a stronger case to shift to EVs soon. And for the latter, preference is already skewed towards the premium end of the market and will be relatively less vulnerable to the economic impact,” noted Mehta.

### Preparing for the Future

In India, the EV market has been

## *The EV sector is focusing on offering innovative ownership models like battery subscription or leasing*

primarily driven by the two and three-wheeler segments. That said, several automobile makers have also started introducing premium electric cars in the country in the last couple of years. India is at a unique position in the global EV landscape, offering enormous opportunities for stakeholders who are mindful of price-sensitive consumers.

After the lockdown, the consumers are likely to be more inclined towards using personal vehicles for the commute as the new normal now includes optimum hygiene and social distancing. This could be an opportunity to be leveraged by the EV segment. And for that, the stakeholders and the government should unite to form a concrete roadmap for growth.

Talking about India’s role in leading the electric mobility revolution, Moran Price, CEO, and Co-founder

of IRP Systems, said, “India has great potential to lead the EV revolution— the combination of its bold government policies, rising environmental awareness, and continued popularity of its two and three-wheeler market have put the country on the path to EV adoption. All the parts are in place, but only time will tell if India can truly be at the forefront of the EV revolution.”

Though there is immense potential, several factors are impeding the momentum. One of the biggest reasons is the shorter driving range, which acts as a deterrent to many customers. India can address this issue by developing a robust fast-charging infrastructure across the country and, get into battery development.

Speaking on the importance of batteries in facilitating the growth of EVs, Price said, “The most expensive



component of an EV is the battery pack. EV makers are working towards improving the size, weight, and composition of the batteries so that EVs can be made more affordable for everyday consumers. But tackling the battery issue alone isn't enough. EV makers are advised to take a more holistic approach to bring reliable, affordable EVs to the mass market; this entails improving the efficiency and performance of all EV components, not just the battery."

"The major issue with the EVs is the cost parity with ICE. The industry is looking for the government's support on policy changes to help small businesses and startups in the EV segment. The EV industry also needs support for building the required infrastructure and advancing current fiscal subsidy limit provided under the FAME II program," Ray added.

"We would like to see policies around creating supplier parks at concessional rates, supplier side incentives for import of raw materials and incentives around capital expenditure (CAPEX), and R&D investments in India, which will go a long way in building up the

supplier ecosystem in India. In terms of charging infrastructure, we would like the government to set up charging

## *The sale of electric vehicles, especially two-wheelers, has been increasing gradually in the country*

points in every apartment complex, just like they did with the postbox set-ups in every apartment. This will increase visibility and build confidence in consumers looking to buy an EV. We also recommend creating a pool of capital that startups in this sector can tap into for long-term debt to the tune of

\$100 million each. It will go a long way in helping accelerate capacity creation in the industry. Increasing usage of vehicles is shifting to models like lease/pay-as-you-use etc. and recommend supporting these with existing incentive programs," concluded Mehta.

Mercom has been consistently tracking the infrastructure development for EVs, and this year has seen tremendous progress. The Department of Heavy Industries has, as of January 2020, approved 2,636 electric vehicle charging stations in 62 cities across 24 states and union territories under the second phase of FAME India (Faster Adoption and Manufacturing of Electric Vehicles in India) program. The Energy Efficiency Services Limited (EESL), in partnership with the New Okhla Industrial Development Authority (Noida), plans to set up 162 public charging stations and related infrastructure. Tata Power announced its plans to expand its EV charging network in the country to over 700 by the end of the financial year 2021. There also have been a slew of tenders by government agencies to set up EV charging stations. ☺





# DISCOMs' Dues Keep Mounting

*The dues reached ₹1.17 trillion by July 2020 despite the government's support measures in recent months aimed specifically to provide fiscal support to distribution companies*

By : Rakesh Ranjan Parashar

**T**he distribution companies (DISCOMs) owed renewable generators nearly ₹103.11 billion (-\$1.4 billion) in overdue payment (excluding dues under dispute) spread across 579 invoices at the end of July 2020, according to data from the Ministry of Power (MoP).

Per the data released by PRAAPTI, the outstanding dues to renewable generators stood at ₹7.17 billion (-\$97.25 million), with ₹123.7 million (-\$1.68 million) under dispute.

Distribution companies owed renewable generators ₹101.11 billion (-\$1.3 billion) in overdue payments (excluding dues under dispute) spread across 544 invoices at the end of June 2020.

The government portal also showed that 65 DISCOMs owed ₹1.17 trillion (-\$15.87 billion) in overdue payments spread across 18,658 invoices at the end of July 2020. In June, 65 DISCOMs owed power generators ₹1.16 trillion (-\$15.78) in overdue payments spread across 18,281 invoices.

The DISCOMs paid ₹139.3 billion (-\$1.9 billion) against the overdue amount, an increase of 86% when compared to June and ₹16.9 billion (-\$230 million) against the outstanding dues at the end of July 2020. The overdue amount at the end of July stood at ₹1.17 trillion (-\$15.95 billion), and the outstanding amount stood at ₹126.73

billion (-\$1.73 billion).

The state of Rajasthan registered the highest backlog with an overdue amount of ₹356.26 billion (-\$4.8 billion), out of which ₹331.47 billion (-\$4.49 billion) have been unpaid for more than 60 days.

Tamil Nadu followed with an overdue amount of ₹190.64 billion (-\$2.58 billion), out of which, ₹168.07 billion (-\$2.28 billion) have been overdue for more than 60 days. Uttar Pradesh was another state that had a huge backlog, with an overdue amount of ₹132.87

Maharashtra, Telangana, Karnataka, Odisha, Kerala, Jharkhand, Goa, Delhi, Himachal Pradesh, Uttarakhand, and Jammu and Kashmir as the 'worst' states for ease of payments by the DISCOMs.

As per the data, Adani Green Energy Limited, Tata Power Company, and NLC India Limited were owed amounts of ₹12.01 billion (-\$162.89 million), ₹13.78 billion (-\$186.9 million), and ₹19.62 billion (-\$266.1 million) respectively.

The Ministry of Power recently suggested that the power generation and transmission companies should reduce

## *Arunachal Pradesh, Manipur, Tripura, Chhattisgarh, and Himachal Pradesh were the 'best' states for payments by DISCOMs*

billion (-\$1.8 billion), out of which ₹107.83 billion (-\$1.46 billion) have been unpaid for more than 60 days.

Going by the report, Arunachal Pradesh, Manipur, Tripura, Chhattisgarh, and Himachal Pradesh were termed as the 'best' states in terms of ease of payments by DISCOMs. Bihar, West Bengal, and Meghalaya were termed as 'good.'

The portal rated the states of Assam, Nagaland, Rajasthan, Madhya Pradesh,

the late payment surcharge up to 12% annually for distribution companies. This suggestion would apply to all late payments made under the liquidity infusion program.

REC Limited recently reported that it had approved over ₹300 billion (-\$4 billion) to distribution companies in the country as of July 31, 2020. Similarly, PFC approved ₹306.07 billion (-\$4.09 billion) as of July 31, 2020, as part of the liquidity package for DISCOMs. 

### DISCOM Dues to Power Generators as of July 2020

Details	As of June 2020		As of July 2020		
No. of DISCOMs	66		65		
No. of participating power generators	215		215		
No. of overdue* invoices	18,281		18,658		
Overdue and Outstanding	₹ in Billion	~\$ Billion	₹ in Billion	~\$ Billion	% of Change
Overdue amount at the beginning of the month	1,104.51	15.08	1,156.30	15.78	5%
Total amount billed to DISCOMs	146.16	2.00	150	2.05	3%
Amount paid by DISCOMs against overdue	75.02	1.02	139.3	1.90	86%
Amount paid by DISCOMs against outstanding	17.64	0.24	16.9	0.23	-4%
Overdue amount at the end of the month	1,156.28	15.78	1,168.70	15.95	1%
Outstanding amount at the end of the month	144.91	1.98	126.73	1.73	-13%

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

Source: PRAAPTI

Mercom India Research

# World's Largest Utility-Scale Solar Developers

*Adani Green topped the list in Mercom Capital Group's report revealing the top 10 global large-scale solar photovoltaic developers with a portfolio of 12.3 GW of solar projects*

By : Nithin Thomas Prasad



**A**dani Green Energy was the top solar photovoltaics (PV) developer in the world based on its operational, under-construction, and awarded projects, according to Mercom Capital Group’s latest report covering the top large-scale solar developers in the world.

According to the report, the Ahmedabad-headquartered company has a portfolio of 12.3 GW of solar projects under different stages of execution. Hong Kong’s GCL New Energy, with its 7.1 GW solar asset base, ranked second while Tokyo-based SB Energy was ranked third with 7 GW of solar projects.

Adani also had the largest portfolio of under construction and awarded capacity, with 10.1 GW of projects, while SB Energy ranked second with 3.4 GW of projects.

The report added that several other developers could have made it on the list based on the size of their portfolio, but an essential requirement for qualification expected companies to have projects in at least two different countries. Developers like NextEra Energy could not be added to the list

as they were only operational in one country.

The report went on to show that the top ten large-scale solar developers accounted for 33 GW of operational solar projects globally. Here is a list of the top ten solar developers in the world as per Mercom Capital’s report:

“Top developers are expanding presence in mature markets in pursuit of policy certainty, steady returns, and lower risk. They are also chasing growth in emerging markets, trying to lay the groundwork and tap into the enormous future potential these regions represent, despite the risks and ultra-competitive auctions,” said Raj Prabhu, CEO of Mercom Capital Group.

For the top 10 global solar developers, the Asia-Pacific (APAC) region made up 52.4% of developers’ capacity, followed by the Americas at 42.1% and Europe, the Middle East, and Africa (EMEA) at 5.5%.

In June 2020, Adani Green secured a bid to develop 8 GW of solar projects along with setting up a solar cell and module manufacturing capacity of 2 GW. This win, the largest in the world in a single bid, will entail a total investment

of approximately \$6 billion (₹452 billion).

Adani had also ranked among the top three suppliers of solar modules in India in terms of shipments in the calendar year 2019. These three manufacturers

## *The top ten large-scale solar developers accounted for 33 GW of operational solar projects globally*

accounted for approximately 25% of the total market share. The findings were released in Mercom India Research’s India Solar Market Leaderboard 2020. 

### TOP 10 GLOBAL LARGE-SCALE SOLAR PV DEVELOPERS

RANK	DEVELOPERS	COUNTRY (HEADQUARTERS)	TOTAL CAPACITY (MW)
1	 Adani Green Energy	India	12,320
2	 GCL New Energy	Hong Kong	7,145
3	 SB Energy	Japan	6,972
4	 Enel Green Power	Italy	5,995
5	 Brookfield Renewable	Canada	5,690
6	 First Solar	U.S.	5,195
7	 AES Corporation	U.S.	3,937
8	 Invenergy	U.S.	3,699
9	 Lightsource bp	U.K.	3,696
10	 ENGIE	France	3,493

# Recommendations for Module and Inverter Quality Standards

*The MNRE has issued recommendations from the expert committee for the quality control standards for modules, inverters, and battery storage*

By : Rakesh Ranjan Parashar

**T**he Ministry of New and Renewable Energy (MNRE) has issued a notification detailing the recommendations of the expert committee on implementing the quality control order titled 'Solar Photovoltaics (PV) Systems, Devices, and Components Goods Order 2017' under the Bureau of Indian Standards (BIS) Act.

The order includes solar modules, inverters, and battery storage with standards adopted from the International Electrotechnical Commission (IEC) standards for these products.

On June 14, 2019, the BIS published the revised standards for solar PV modules and inverters and had suggested that MNRE hold stakeholder consultations before it is implemented on June 11, 2020. Subsequently, the BIS had extended the timeline of implementation, taking into account the COVID-19 lockdown.

Now, the ministry has invited comments and suggestions from all the stakeholders on the recommendations of the experts' committee by September 07, 2020.

## Context

MNRE set up a three-member expert committee comprising representatives from the MNRE, Solar Energy Corporation of India (SECI), and a BIS-

certified test lab to discuss the revised standards for implementation.

Out of the recommended standards, five are for crystalline modules, and seven are for thin film-based modules.

The expert committee noted that the existing standards were in many parts incoherent, and there was a need to organize it based on

*The committee recommended two separate standards – one for crystalline and the other for thin-film modules*

technology, inclusive of all relevant testing requirements for efficient implementation. They felt that one standard for one project with testing sequences adequately organized is the way to go forward, and it would simplify the testing and certification process. Taking this into account, the committee recommended two separate Indian standards—one for the crystalline

modules and the other for thin film-based modules.

The committee also noted that the fire test for modules as per the existing conditions should be continued as it is highly relevant in field conditions. Regarding the revised IS 16169 (2019) standard for inverters for the island prevention measure test, the committee recommended that the same should be adopted for implementation. The committee suggested that one inclusive standard should be in place to take care of all testing requirements for off-grid and grid connection requirements.

The experts' committee recommended two separate Indian Standards for crystalline and thin-film modules by combining related standards, including the standard on PID (Potential Induced Degradation) test for crystalline modules, and implementation of the revised standards on inverters.

Mercom had earlier reported that the mandatory certification was adding to cost and restricting new technologies. The MNRE may need to consider revising the regulations based on the latest technologies and realities on the ground. The standards for product quality should not limit access to the latest in equipment technology and prevent the Indian market from falling behind compared to the rest of the world. 





# Details of Bank Guarantee Release Process

*MNRE underlined that performance bank guarantees would be partially or fully released to developers who do not have any defaults in their obligations*

By : Nithin Thomas Prasad



**T**he Ministry of New and Renewable Energy (MNRE) has clarified its stand on the release of performance bank guarantees (PBGs) to developers.

The government earlier announced that the supply chain disruptions caused due to the pandemic would be considered a force majeure event. It acknowledged that they were issues in the movement of goods and services following the lockdown, which led to liquidity issues for contractors.

On May 13, 2020, the Department of Expenditure (DoE) under the Ministry of Finance (MoF) issued a notice clarifying

that performance bank guarantees can be released to solar project developers as long as they do not have any defaults in their contractual obligations or to those who have claimed relief under the force majeure clause of their agreements.

In these circumstances, the government department or agency can return the amount based on the amount of work completed under the contract. It noted that if the contractor or supplier violated their obligations, the contractee need not abide by these directives. It further clarified that these guidelines are only applicable in the event of non-

performance of obligations as a result of the COVID-19 pandemic and the nationwide lockdown.

The DoE also issued another notice on May 13, 2020, clarifying that the invocation of the force majeure clause by contractors would only be valid if the parties did not have any defaults in their contractual obligations as of February 19, 2020. This was the date the government had announced that supply chain disruptions due to the spread of the Coronavirus would be considered a natural calamity under the force majeure clause.

On June 25, 2020, the MoF issued a

notification clarifying that its guidelines for returning performance security amounts would apply to all government agencies. The Ministry said that there were doubts about whether central public sector undertakings (CPSUs) would be included under the scope of government agencies. It explained that government agencies included central ministries or departments, their attached and subordinate offices,

autonomous bodies covered by the General Financial Rules, 2017, and CPSUs.

This notice also stated that parties involved in Public-Private Partnership (PPP) concession contracts (construction or work contracts, goods and services contracts, and PPP contracts with government agencies) with a completion date on or after February 20, 2020, would receive a three to six months'

extension without any cost implications or penalties on the contractor.

The duration of the extension will be decided on a case-to-case basis based on the period for which the performance of obligations was affected by the force majeure events.

In August, the MNRE issued a notification saying that all under-development renewable projects as on the date of the lockdown would be given an extension of five months. The extension would apply from March 25, 2020, to August 24, 2020. If invoked by renewable developers, this blanket extension will be given without a case to case examination, and no evidence will be required for the grant of such an extension. ☺

*These guidelines are only applicable in the event of non-performance of obligations as a result of the COVID-19 pandemic*



# Hi-MO 4

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A wide-angle, high-angle photograph of a modern industrial manufacturing facility. The floor is clean and white, with rows of complex machinery and equipment stretching into the distance. Several workers in white lab coats are visible, some standing near the machinery and others in the background. The ceiling is high with recessed lighting and several large, cylindrical pendant lights hanging down. The overall atmosphere is one of a high-tech, organized production environment.

# Technology Key to Unlocking Domestic Solar Manufacturing Potential

*India has a long road ahead when it comes to establishing itself as a significant solar manufacturing hub. Embracing new technology is the first milestone in that journey*

By : Rakesh Ranjan Parashar

**T**he government of India has been promoting self-reliance and is trying to limit India's dependence on imports and expand domestic manufacturing capabilities. So far, duties have been the means to restrict imports.

Recently, the Department of Revenue under the Ministry of Finance issued a notification extending the imposition of safeguard duty on imported solar cells and modules to India for another year starting July 30, 2020. Also, along with the imposition of safeguard duty, the government proposed a 20% basic customs duty (BCD) on all imported solar cells, modules, and inverters. There are speculations that this duty may be in the range of 10-20% on top of the safeguard duty.

According to Mercom India Research, India has approximately 15.5 GW of solar module manufacturing capacity and around 3.3 GW of solar cell

## *India has nearly 15.5 GW of solar module manufacturing capacity and 3.3 GW of solar cell manufacturing capacity as of June 2020*

manufacturing capacity as of June 2020.

As India tries to maximize the opportunities for solar manufacturing, some innovations and technological advancements are bound to make their way to the Indian market. One such technical upgrade is the increasing size of solar cells and wafers.

Traditionally, the size of solar cells seen in the Indian market has been about 157mm, but now things are set to change. While bigger cells would

increase the efficiency of solar systems, it could also mean massive investment for companies, as in many cases, it would mean acquiring new machinery.

Avinash Hiranandani, Global CEO, and Managing Director, RenewSys, said, "With changing technology and cell sizes going up, RenewSys is poised to order state-of-the-art European machinery within the next six months. This will take our capacity from an existing 750 MW to 1 GW. We are also working on a





plan to add another 1 GW to our module manufacturing capacity, taking our total capacity to 2 GW in phases. The company is also evaluating an expansion of its cell line and technology, and will be targeting at least 500 MW of new

the rise in the size of wafers becoming the norm, it could be difficult for existing cell and module manufacturers to adopt the larger wafer sizes, as capital spending would have to increase on certain upgrades, and new production

of cells is also increasing. Now, the most commonly used wafers are the 166 mm wafers, which have a module wattage output of 440Wp-475Wp. Now, we are concentrating on 182mm solar wafers as we advance. There is a need to streamline the whole process, and we don't need a massive upgrade in technology to achieve that. Some manufacturers have already started manufacturing 217 mm solar wafers with a module wattage output of 600Wp. Right now, our focus is on 182 mm wafers. The 210 mm wafers have some issues of compatibility with inverters and other products, and we are trying to rectify it."

"As of now, we have a capacity of 10.8 GW. The situation is not that good in China, and the prices of solar modules and cells are going up. Things

## *Traditionally, the size of solar cells seen in the Indian market has been about 157mm*

(additional) Indian cell capacity in this project."

In the absence of a common standard, companies have adopted wafers of varying sizes, which has resulted in increased manufacturing costs throughout the supply chain. With

lines would have to be installed.

A top executive from Hanwha Q CELLS commented on the trend, saying, "Previously, we were focusing on the 157.8 mm wafers with a module wattage output of 380Wp-405Wp. But things are changing now, and the size

are a bit uncertain right now, and there is a shortage of supply. Given the uncertainty surrounding the imposition of BCD, things are going to continue in the same vein in the near future. The rooftop segment has been hit the hardest because of the ensuing pandemic, and it seems that it will take some time before things turn to normal,” the executive added.

Jupiter Solar is planning to add 200 MW of cell manufacturing capacity to the existing facility. The new capacity is expected to be commissioned by December 2020. The company is also planning to come up with a greenfield project for the manufacturing of solar cells.

Speaking on the increase in the size of solar cells, Dhruv Sharma, CEO of Jupiter Solar Private Limited, said, “We have equipment that is capable of handling cells of all sizes from 158mm to 210mm. We will be flexible to adapt to what the market demands and the types of wafers that are regularly available in

the market. We are planning to spend ₹500 million (-\$6.7 million) to expand manufacturing capabilities and ₹3 billion (-\$40.3 million) on new projects.”

Recently, LONGi, along with six other leading companies, announced the M10 silicon wafer standard size (182mm x 182mm) in the development of next-generation silicon wafers, cells, and module products. It seems to be a step in the right direction as it would lead to the standardization of wafer sizes. Modules with larger wafers have higher power and can reduce BOS costs, which in turn will reduce the overall cost of the system.

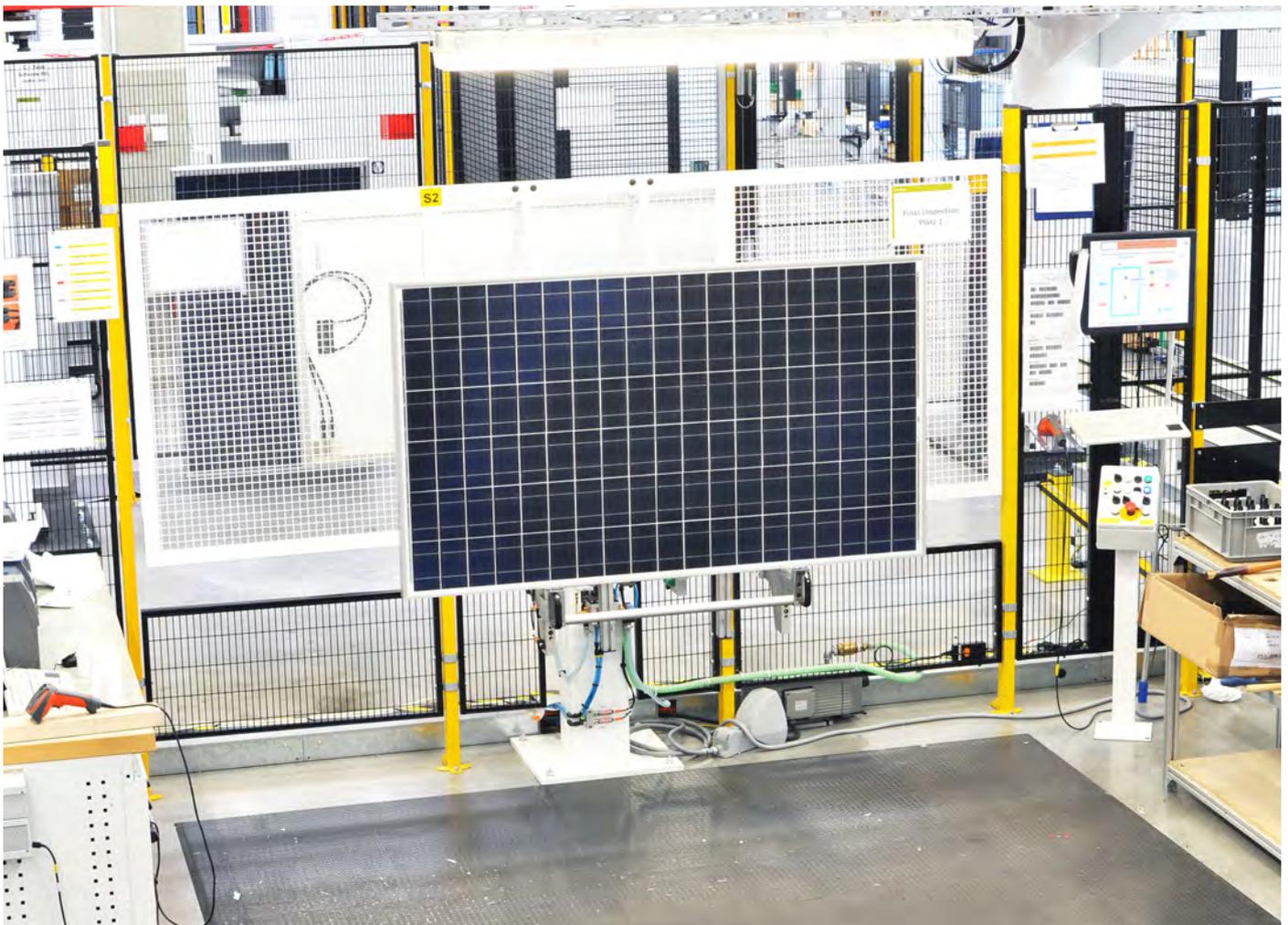
While expanding India’s solar manufacturing capacity is essential for the domestic industry’s growth, there is much to be done to lay a solid foundation for local manufacturers.

“BCD is key for any long-term investment planning by domestic solar manufacturers. Preferential duty or equalization levy for special economic zones (SEZs) has to be announced

along with the announcement of BCD. A ‘Tech Upgrade Fund’ will be of prime importance as well. Due to the fast-paced nature of this industry, various technology upgrades are required,” Hiranandani added.

The bigger-sized cells and wafers have several benefits, but then again, India has been an extremely price-sensitive market. The associated expenditure with adopting these new sizes could deter many manufacturers from taking the leap. So far, the government has not put out any plans to set up funds for R&D.

“Just look back two years, and you get an idea of how fast technology moves in the global solar industry. Unless technology is constantly upgraded, you could end up with older equipment, obsolete technology, higher-priced products with lower efficiency. Announcing new cell and module production units is just the first step; you have to innovate and invest or risk being left behind,” said Raj Prabhu, CEO of Mercom Capital Group. 



# Moving Towards 100% Renewable Powered Future: Amazon Interview

*Amazon said its multi-pronged approach to sustainability includes eco-friendly packaging initiatives, energy-efficiency, and water conservation*

**L**arge corporations can play a significant role in spearheading the transition towards green energy, decarbonization, and a sustainable future. Over the last few years, Amazon, an e-commerce giant and one of the world's largest companies,

has announced several initiatives to emphasize its commitment to these goals.

In May, the company revealed plans to develop 615 MW of renewable projects across China, Australia, and the U.S. as part of its commitment to meeting 80% of its power requirements

through renewable sources by 2024. The company also plans to make 50% of all of its shipments net-zero carbon by 2030.

Amazon also co-founded The Climate Pledge alongside Global Optimism to combat climate change back in 2019.

The Indian arm of the global giant



has also taken several measures to incorporate green energy and sustainability efforts into its operations. These include setting up rooftop solar projects at its operation centers and the addition of electric vehicles to its delivery fleet.

Mercom recently interviewed a spokesperson for Amazon India to talk about the company's green initiatives in the country. Here are the edited excerpts:

### **Could you tell us about Amazon India's progress towards its plans to add 10,000 EVs to its delivery vehicle fleet?**

Earlier this year, we announced our commitment to include 10,000 electric vehicles (EVs) in our delivery fleet by 2025. This commitment comes after successful pilots across different cities in 2019. Learnings from these have helped us create scalable and long term EV variants to build this large fleet. These EVs are in addition to the global commitment of having 100,000 electric vehicles in the delivery fleet by 2030.

The introduction of EVs is aimed at reducing carbon emissions and the environmental impact of our delivery operations. The fleet of 10,000 EVs will include 3-wheeler and 4-wheeler vehicles, which have been designed

and manufactured in India. This year, these vehicles will operate in over 20 cities of India - Delhi NCR, Bangalore, Hyderabad, Ahmedabad, Pune, Nagpur, and Coimbatore, to name a few, and this number will continue to grow. We have been working with several Indian original equipment manufacturers (OEMs) to build a fleet of vehicles that ensure sustainable and safe deliveries of customer orders.

We are confident that our commitment towards building an energy-efficient supply chain and continued investments in the electrification of the fleet will help us achieve our commitment in 2025.

### **The company announced plans to install 8 MW of rooftop solar projects at its fulfillment centers back in 2018. Has Amazon India achieved this target? Are there any plans for further additions in the future?**

Today, we have ten large fulfillment centers and sort centers in the country that are powered by rooftop solar panels, and we will continue to expand this across the network. This investment has helped us to generate nearly 9 MWh of solar energy by the end of 2019 to support the annual energy needs of these buildings, reducing dependency on conventional sources of energy.

These are expected to decline about 12,000 tons of carbon dioxide emissions by the end of this year.

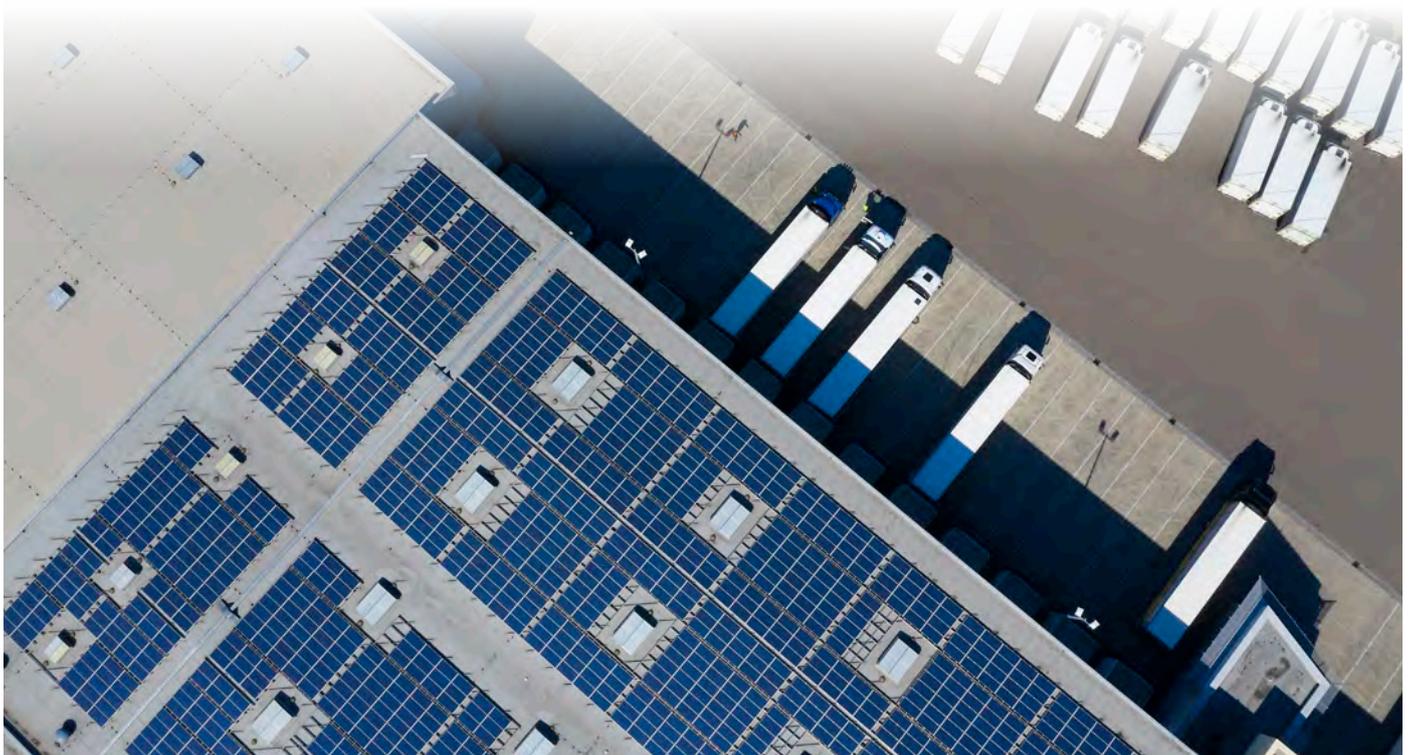
We will continue to install rooftop solar panels across our buildings and, in the long-term, move towards a global infrastructure that is powered by 100% renewable energy.

### **Amazon had set a goal to make 50% of its shipments net-zero carbon by 2030. What is Amazon India's role in this?**

Shipment Zero is the company's vision to make all Amazon shipments net-zero carbon, with 50% of all shipments net zero carbon by 2030. The sustainability initiatives launched by Amazon India are a part of this global sustainability goal. Implementation of plastic-free packaging alternatives, reduction of plastic consumption in customer shipments through packaging optimization, minimizing packaging waste, and increasing recycled content in our plastic packaging - all contribute towards this goal.

### **Could you tell us more about Amazon India's sustainability initiatives?**

Our businesses across the globe are aggressively working towards protecting the planet through innovative





sustainability measures. Our multi-pronged approach to sustainability includes eco-friendly packaging initiatives, energy-efficiency, and water conservation.

Packaging has remained at the forefront of our commitment towards building a supply chain through which we can delight our customers while minimizing environmental impact. We will continue to adopt innovative and optimized packaging to develop plastic alternatives, reduce packaging material consumption, and, therefore, plastic waste.

- In June 2020, we successfully eliminated 100% single-use plastic in our packaging across our fulfillment centers in India. We could achieve this milestone by introducing eco-friendly packaging innovations such as paper cushions and plastic-free paper tape.
- We have ensured that all the plastic packaging material originating from our fulfillment centers is 100% recyclable through the available collection, segregation, and recycling channels.
- We continue to educate sellers, who directly fulfill customer orders, to

join us in this directional change in packaging.

- We have also partnered with brands to develop e-commerce, friendly packaging.
- We have taken aggressive steps towards minimizing packaging waste through initiatives such as packaging-free shipment (PFS).
- PFS is a sustainable packaging solution in which customer orders are shipped in their original packaging without any additional packaging or significantly reduced packaging.
- PFS was launched in India in June 2019 in nine cities, and within a year, we have been able to successfully expand this program to more than 100 cities.
- In partnership with collection agencies, we have also been collecting and recycling plastic waste equivalent to 100% plastic waste generated from usage across the Amazon fulfillment network.

**Energy:** In addition to the installation of solar panels in our buildings and launching EVs in our delivery fleet, we have invested in advanced building

energy management systems that ensure lighting and climate controls are only used when and where our buildings are occupied.

**Optimizing entire supply chain:** We are placing products closer to customers and shipping more orders in the same box every year. While we continue to expand our delivery network, this helps reduce our transportation and packaging environmental footprints significantly. We have invested in inventory placement technology and infrastructure to optimize the processes within the supply chain every year.

**Water conservation:** Many of our fulfillment centers can collect and recycle water, and we use this as a baseline for new buildings that are added to our fulfillment network. We have also invested in creating awareness among our tens of thousands of associates, communities, and customers on water conservation.

According to the company website, as of June 2020, Amazon had 91 renewable energy projects across the globe with a cumulative capacity of 2.9 GW that can deliver over 7.6 million MWh of energy annually—enough to power more than 680,000 U.S. homes. 🌱



# RBI Doubles Priority Sector Lending Cap for Renewables

*Recently, the apex bank came out with the details of priority sector lending, increasing the lending limit for renewables to ₹300 million*

By : Rakesh Ranjan Parashar

**T**he Reserve Bank of India (RBI) has come out with the details for the priority sector lending. The apex bank has increased the lending limit for the renewable sector. The revised guidelines have taken into account the views of all the stakeholders.

As per the revised guidelines issued by the bank, the limit of bank loans has been increased to ₹300 million (-\$4.09 million) to borrowers who are generators of solar, biomass, wind, and micro-hydel power. Public utilities based on non-conventional power sources like street lighting systems and remote village electrification, among others, will also be eligible for priority sector classification. For individual household rooftop systems, the limit remains the same at ₹1 million (-\$13,363) per borrower.

Under the previous priority sector lending, a limit of ₹150 million (-\$2.01 million) was set for large-scale renewable projects like solar and wind, biomass and mini-hydel projects, and non-conventional energy-based public utilities like street lighting and remote village.

With the priority sector lending limit raised, there will be more liquidity infusion into the sector, which could also bring down the interest rates.

Earlier this month, the bank had introduced several policy measures to enhance liquidity support for the financial market and other stakeholders to ease the financial stress caused by the COVID-19 pandemic.

According to the new directions, loans up to ₹500 million (-\$6.8 million)

*For individual household rooftop systems, the limit remains the same at ₹1 million per borrower*

will be provided to startups engaged in activities other than agriculture and which are not in the category of micro, small, and medium enterprises (MSMEs).

In May this year, RBI had announced the third round of monetary measures to boost the economy amid the lockdown caused by the COVID-19 pandemic. The bank had announced a reduction in the policy repo rate under the liquidity adjustment facility (LAF) by 40 basis points (bps) to 4% from 4.40%. The marginal standing facility (MSF) rate and the bank rate are reduced to 4.25% from 4.65%. These rates were kept status quo in the second round of monetary measures announced by RBI in April.

Previously, Mercom had reported about the need for the RBI to decouple the lending to renewables from the power sector and provide the much-needed boost to the renewable sector.

Union Power Minister R.K. Singh had also asked the banks and financial institutions to categorize renewable energy as a separate sector, different from the power sector so that funds can easily flow to renewable energy projects. So far, nothing has come of it yet. 





# Solar Curtailment a Global Issue

*As solar generation surges in the coming years, curtailment is likely to increase especially in markets like China, Chile, and the U.S., according to an NREL study*

By : Debjoy Sengupta

**T**he trend of curtailment of renewable power has started taking shape globally. Power firms in China, Chile, several U.S. markets, including Arizona, California, Hawaii, and Texas, had to curtail at least 1% of their potential solar generation in 2018, according to a recent

report by National Renewable Energy Laboratory (NREL) researchers.

In the global market, curtailments are driven by the location of the projects, transmission limits, and oversupply. Reduction in solar absorption also followed seasonal patterns and was influenced by policy and grid planning.

The study on global markets predicts that solar power curtailment is likely to increase in these and other markets around the world as solar power capacity rises.

In India, Central Electricity Authority discovered that thermal power projects might be able to scale down their

**CEA: Estimated Power Generation Mix in India by 2029-30**

Generation	Capacity (GW)	Generation (BU)
Hydel	61	207
Small Hydro	5	
Pumped storage	10	4.4
Coal-fired	266	1,393
Gas-based	25	
Nuclear	18.9	113
Solar	280	801
Wind	140	
Biomass	10	
Battery Storage	27/108	-

Source: CEA

Mercom India Research

capacity generation to a minimum of 40%, beyond which running the project would not be techno-economically feasible.

CEA, the power advisory arm of the Indian government, predicts that up to 14.6% of domestic renewable power may be curtailed on certain days, in a report that estimates optimal generation capacity mix until 2029-30.

The reasons could be a mismatch in power demand and renewable generation during a day, the ability of thermal power projects to scale down production, gas availability, and minimum power flow necessary for hydro projects.

Solar power curtailment has been mired in controversy in Karnataka, Telangana, Punjab, and Andhra Pradesh. Solar developers in these states have already sought state regulatory commissions and court intervention. Solar developers have sought transparency in grid curtailment issues.

Globally, in terms of geographical constraints, limited transmission capacity between solar-heavy regions

and load centers are crucial drivers in reducing solar power injection into the grid in areas such as Chile, China, and Texas.

In each case, grid planners have responded with initiatives to increase transmission capacity connecting solar resources to load centers.

“Grid flexibility, storage, demand response, and regional coordination could reduce losses. Optimal rather than minimal curtailment is more efficient for future grid contexts,” the global study indicated.

Increasing grid flexibility and technological advances such as low-cost battery storage could avoid future

***Grid flexibility,  
storage, demand  
response,  
and regional  
coordination  
could reduce  
curtailments***

curtailments.

According to CEA, installed capacity by the end of 2029-30 is projected at 817 GW. It is expected to include 40% non-fossil fuel power generation capacity by 2030.

Projected gross electricity generation during the year is likely to be 2,518 billion units in which non-fossil fuel generation would occupy 44.7%.

Curtailment is generally considered to be an opportunity lost, and various grid and market customs discourage stepping down solar generation. However, changing grid technological contexts are forcing a re-examination of solar generation curtailment and its stigma.

As grids see higher levels of solar generation, it becomes more efficient to emphasize an optimal rather than a minimal solar power generation restrictions.

“A shift in thinking toward curtailment management rather than prevention could increase the value of delivered and curtailed solar power output to the grid. Various grid flexibility measures—including flexible generation, storage, load flexibility, and regional coordination—could be key components of a curtailment management scheme,” opines the global study. <sup>10</sup>



# SECI and Maharashtra Commission Butt Heads Over Jurisdiction

*While SECI contested that the dispute was within the jurisdiction of the Central Electricity Regulatory Commission, MERC established that it was well within its rights to hear the case*

By : Nithin Thomas Prasad



The Maharashtra Electricity Regulatory Commission (MERC) has asserted that it was the appropriate

Commission to adjudicate a dispute between the Solar Energy Corporation of India (SECI) and the Maharashtra State Electricity Distribution Company Limited (MSEDCL).

#### **Background:**

The MSEDCL had filed a petition with the Commission seeking compensation from SECI following a shortfall in the supply of power as agreed upon under the power sale agreements (PSA) between both the parties. The parties had entered into two PSAs for the supply

of power to the MSEDCL from 1 GW of solar projects in the state back in 2016.

However, due to delays in the commissioning of some of these projects, the sale of power from them was delayed, leading to a shortfall in power supply to the MSEDCL. In its petition, the MSEDCL sought for orders declaring that SECI did not perform

its contractual obligations and for compensation to the tune of ₹1.32 billion (-\$17.9 million) towards losses due to the shortfall in the supply of power.

The state distribution company (DISCOM) stated that despite its letters to SECI claiming compensation for the losses, SECI did not reimburse the claimed dues and denied all claims allegations made by the MSEDCL.

In its response, SECI argued that the dispute was outside the scope of the MERC and the petition filed before it by the MSEDCL was “misconceived and not maintainable.” It argued that it was a generating company owned and controlled by the central government and that all matters connected to it fell under the regulatory scope of the Central Electricity Regulatory Commission (CERC). It contended that the MERC had no jurisdiction

to entertain the MSEDCL’s petition claiming relief from SECI.

**Commission’s Stand:**

The MERC stated that through this interim order, it would first decide the issue of its jurisdiction in the matter.

Upon analysis of the arguments presented by both parties, the state Commission said that even though SECI has been incorporated as a generating company, in the present case, it was performing the role of a trading licensee. It noted that under the provisions of the Electricity Act, an entity could play different roles, including a generating company, or a transmission, distribution, and trading licensee.

MERC noted that it had the power to determine the role played by each party as per the agreement and adjudicate as

necessary. It said that as per its findings, SECI was not a generating company in this case and that the provisions applicable for central sector generating companies were not applicable here. It concluded that SECI’s role as per the PSA was that of a trading licensee.

The Commission also explained that any dispute involving a state distribution licensee for the procurement of power in the state was within the jurisdiction of the state Commission.

**Final Order:**

In its final order, the MERC declared that it was the appropriate Commission to handle the present dispute. It directed SECI to file its submissions on the merits of the petition and to send a copy to the MSEDCL within two weeks from the date of the order. Subsequently, it directed the MSEDCL to file its rejoinder within a week of SECI’s submission.

It notified that the date for the hearing on the main prayers of the petitioner would be disclosed by the Secretariat of the Commission separately. ☺

***MERC said that SECI’s role, in this case, was that of a trading licensee and not a generating company***





# Backend Infrastructure for Smart Meters

*The new facility will facilitate the roll-out of smart meters by offering a plug and play architecture with a scalable backend infrastructure*

By : Rakesh Ranjan Parashar

**T**he Power Finance Corporation Limited (PFC), in a recent filing on the Bombay Stock Exchange (BSE), said that it had approved the infusion of ₹1.5 billion (-\$20.4 million) in a joint venture company.

The joint venture company will be promoted by NTPC Limited, the Power Grid Corporation of India Limited (PGCIL), REC Limited, and PFC for providing a common backend infrastructure facility (CBIF) to distribution companies (DISCOMs) for

faster roll-out of smart meters in the country.

In another BSE filing, REC announced that its board, in a meeting on Tuesday, approved the infusion of ₹1.5 billion (-\$20.04 million) as equity in the joint venture company for CBIF.

Reportedly, the boards of NTPC and PGCIL are still to approve the infusion of ₹1.5 billion (-\$20.04 million) each in the joint venture. The report further points out that there will be an equity investment of ₹6 billion (-\$81.53 million) by the four promoters, and the debt component will be ₹14 billion (-\$190.25 million).

As per the report, the development of a CBIF will facilitate the roll-out of smart meters by offering a plug and play architecture with standardized, integrated, and scalable backend infrastructure.

CBIF is expected to help the DISCOMs install smart meters in a phase-wise manner, wherein the meter data management (MDM) services can be expanded depending on the demand and requirement. It will also help in centralizing the metering data, and the facility will be offered to DISCOMs as a software or solution-as-a-service approach, where the DISCOMs will be charged only a usage fee.

In April 2019, the government announced its plans to replace all existing electricity meters with smart

***REC and PFC have already infused ₹3 billion while NTPC and PGCIL are yet to approve the funding***

prepaid meters. The process of switching over was to be completed in three years. The program is implemented by Energy Efficiency Services Limited (EESL), which has installed over 1.2 million smart meters in India to date.

Another government program, Integrated Power Development Scheme (IPDS), aims to strengthen the power distribution system in urban areas. The program is designed to help reduce aggregate technical and

commercial (AT&C) losses, establish IT-enabled energy accounting, auditing, and improve power bill collection efficiency. PFC is the nodal agency for the implementation of the program. Providing infrastructure for smart metering is part of this program. A centralized/common backend infrastructure facility managed by the central government is planned to be set up at the national level through system integrators, smart meter service providing agencies to manage meter data, billing, and related systems of smart metering projects.

The integration of utilities and states for setting up the CBIF and the assimilation of existing multiple billing systems, along with a sustainable payment security mechanism for implementing agencies, is being implemented by PFC for which the amount is being infused.

Smart meters can unlock a slew of capabilities that the utilities in India badly need - increase billing efficiency, remote billing, automatic outage reporting, flexibility with time-of-use tariffs, and add new revenue streams. 





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# Should Delayed Transmission Projects be Penalized?

*As the pandemic has already slowed down the pace of solar installations, delayed transmission projects could throw another spanner in the works*

By : Debjoy Sengupta

**S**olar power project development slowed down drastically since March when India imposed a lockdown to control the COVID-19 pandemic. Solar installations declined more than 80% in Q2. Only 205 MW was installed in the country with completion of most projects moved to Q4 and 2021.

There is a growing concern among project developers that power transmission projects, which are also delayed, may further delay the commissioning of solar projects. It is likely to lead to hefty fines for

developers.

Solar project developers have urged the government to levy penalties on transmission projects that miss their completion deadlines, an industry association's spokesperson told Mercom.

"Hefty penalties are levied on delayed solar power projects for reasons attributable to the developers or even beyond their control. If solar developers are required to pay heavy penalties for missing project deadlines, why wouldn't transmission utilities pay similar penalties for delay in their projects," said Praveen Golash, spokesperson at



Solar Power Developers Association (SPDA).

“We have urged the government to consider levying similar penalties for transmission projects,” he said.

A month’s delay in completing a 100 MW project can cost a developer ₹1.28 million (\$17,413) in penalties. For others, it could result in a ₹0.005 reduction of power tariffs discovered through reverse auctions for each day’s delay beyond three months. The reduced tariff continues for the entire term of the power purchase agreement (PPA).

These tariffs could be reduced to zero if delayed by two years and could also lead to the termination of PPAs.

The Coronavirus crisis has disrupted momentum in all segments of the renewable industry. Transmissions projects are delayed, and several substations are not ready yet. Those in the tendering stages are facing delays.

The Central Electricity Regulatory Authority (CERC) has recently clarified that if there is a delay in the commercial operation of the projects, developers need to pay yearly transmission charges if the network is operational.

On the other hand, if projects have achieved commercial operation but

transmission networks aren’t ready, the latter will make an alternate arrangement for wheeling the power at its own cost. Until an arrangement is in place, the transmission company will pay interstate transmission charges to the developers.

Addressing this in a Mercom webinar, Dilip Nigam, Advisor at MNRE had said that since the transmission charges do not make up for the losses faced by the developer adequately, the ministry is proposing the developers are paid for the deemed generation.

The power ministry has waived the interstate transmission system (ISTS) charges for power projects commissioned before June 30, 2023. Deadlines for these were revised from December 31, 2022, set previously. However, industry executives expect projects to get delayed beyond this date due to the pandemic.

“Payment of transmission charges to the generator may not adequately compensate its losses,” an industry executive said. “Transmission charges have either been waived or are much less than the loss in revenue. It has prompted the solar power project developers to propose a compensation

system based on deemed generation.”

According to another developer, “All the transmission projects are running late. Every project developer is considering bidding from Rajasthan,

*While 12 GW of solar projects are under construction, 3.2 GW of interstate transmission system projects have been completed*

especially the Fatehgarh area. However, none of the substations there are have come up on time. The ones that are in the tendering stage are facing delays,”



Golash added, “Solar power project developers fear it will result in lost opportunity - for not being able to wheel the power to the grid and earn revenue. However, the government has extended project deadlines for both solar and transmission projects. It may come as some respite to them.”

## *A month's delay in completing a 100 MW project can cost a developer ₹1.28 million in penalties*

An extended deadline provides solar power project developers an option to stagger their orders for modules, thereby deferring their expenses to the near future.

“If transmission projects are delayed, we can slow down solar power project

construction. However, there is never any clarity on revised commissioning dates,” said a senior industry executive. “New dates for commercial operations are announced when the power project developer is at an advanced stage of implementation. It leaves little room for staggering investments or deferring orders.”

“Interest payment during the project period, however, will be extended and may lead to cost overruns,” according to Golash from SPDA.

According to Mercom India Research, over the last 18 months, solar power developers have taken up construction of almost 12 GW of projects. In contrast, some 3.2 GW of ISTS projects were completed, out of 15.2 GW under construction.

Of the 12 GW of solar projects, project developers are yet to sign PPAs and power sale agreements (PSA) for about 5 GW. Their power transmission applications will be accepted after PPAs and PSAs are signed.

According to a senior industry executive, a year's delay in commissioning transmission infrastructure results in a generation loss of 2.2 million units for each megawatt of installed solar generation

capacity. A 100 MW solar power generating station scheduled to sell electricity ₹2.5 (\$0.034)/kWh would lose the opportunity to earn ₹550 million (\$7.47 million) in a year. Monthly losses are estimated at around ₹46 million (\$620,000).

A solar power executive estimates monthly revenue losses to range between ₹45 million (\$610,000) to ₹60 million (\$810,000) in the absence of transmission networks for a 100 MW unit.

CERC has directed Solar Energy Corporation of India (SECI) to sign PPAs for ISTS projects in line with

Power Grid Corporation of India's (PGCIL) infrastructure development plans. The aim is to match transmission and generation project completions.

“We need to push the planning and execution of transmission infrastructure aggressively. The act of postponing every auction or bid date is troubling investors ready with funds from November. It is almost a year, and the number of bids has been significantly less. This has a direct impact on the capacity addition two years down the line as this period has been bad in terms of closing auctions,” said a senior industry executive. ☐





# New GTAM Platform Creates a Buzz Among Traders

*The newly-opened green term-ahead market has seen a spurt of activity, with Amplus Power being the first seller to join the platform*

By : Debjoy Sengupta

**S**olar power is trading at premiums ranging between ₹0.40 (-\$ 0.0054)/kWh and ₹0.60 (-\$0.0082)/kWh on the Indian Energy Exchange's (IEX) recently launched renewable energy platform, an executive told Mercom.

"IEX launched its green energy power trading platform a little over three weeks ago, and prices are following a pattern similar to conventional power traded at the day-ahead-market - the platform for trading coal-fired and other forms of conventional power," said Rohit Bajaj,

head- business development at IEX.

Last week, prices at the day-ahead-market selling conventional power inched up by almost ₹0.40 (-\$0.0054)/kWh. In tandem, green prices also jumped from ₹3.40 (-\$0.046)/kWh to ₹3.81 (-\$0.052) /kWh.



“We are witnessing robust demand for green power, and the entire quantity on offer is allocated daily,” said Bajaj.

Over the last three weeks, IEX traded close to 6.5 million units of green power. Amplus power was the first seller to join the platform. Its entire offer from a 150 MW solar power project has been sold since the first day of trading. Amplus’s generation facilities are expected to produce a total of 1,1890 million units of electricity over their 25 years lifeline.

It was followed by Karnataka state utility, entering the market with 100-150 MW of sale offers in a few time slots between 12 noon and 2 pm.

States generating surplus renewable power, including Karnataka, Tamil Nadu, Andhra Pradesh, and Telangana, are in the process of joining the platform for selling their excess energy. IEX executives believe they would initiate selling in the next few weeks.

“IEX is also receiving inquiries from small and mini hydel plants, the power from which can be bought to fulfill

## *States generating surplus renewable power like Karnataka are in the process of joining the platform*

non-solar Renewable Power Purchase Obligations (RPO),” said Bajaj.

On the buy-side, IEX is heavily betting on state utilities requiring green power to fulfill their RPO. It has also received buy orders from consumers in the cement and steel sectors.

Recently Mercom reported on the RPO status of states. Karnataka, Rajasthan, Telangana, and Andhra Pradesh have exceeded their RPO targets. On the other hand, about 15 states/union territories have an RPO deficit of 75-100%.

“A few corporates are wanting to buy 100% green power while users with seasonal power demand or increased demand during certain times of the day will find the platform useful. The green platform allows a minimum buy and sale of 220 kW power over 50 minutes slot. For the conventional platform, it is 1 MW.

If buyers purchase from the conventional platform, they need to procure Renewable Energy Certificates (REC) to fulfill their RPO. These certificates are ruling at ₹1 (-\$0.014)/kWh. A buyer’s power purchase cost then increases by the same amount. In a recent Central Electricity Regulatory Commission (CERC) order, the forbearance (maximum) price for 2020

was reduced to ₹1,000 (-\$13.16) for solar and non-solar RECs, down from 2017's prices of ₹2,400 (-\$31.59)/MWh and ₹3,000 (-\$39.48) respectively. The floor price is now zero for both solar and non-solar RECs, compared to ₹1,000 (-\$13.16) each previously.

The average green power price discovered on the platform was ₹3.32 (-\$0.045)/kWh, and it varied between ₹3 (-\$0.041)/kWh and ₹3.81 (-\$0.052)/kWh over the last three weeks.

"These prices are extremely competitive, much below utilities' power procurement cost, which is around ₹3.60 (-\$0.049)/kWh on an average for the country as a whole," a power sector executive told Mercom.

During the initial days, solar power was trading at around ₹3 (-\$0.041)/kWh, a premium of almost ₹0.40 (-\$0.0054)/kWh over conventional power prices. Initially, not every seller and buyer was aware of the green platform; however, as awareness grew, so did demand. Its premiums over conventional power

## *IEX is expecting sale participation to rise during the year-end*

prices inched up to ₹0.60 (-\$0.0082)/kWh.

"Buyers are likely to be ready to pay premiums over conventional prices as long as the difference is less than ₹1 (-\$0.014)/kWh - the ruling market price for Renewable Energy Certificates," said an IEX executive.

"There is no dearth of buyers. They are waiting for a good quantum of power to be offered," Bajaj said.

IEX expects sale participation to rise during the year-end because power producers with long term power sale agreements are allowed to sell excess power during this time. Producers

with short terms or monthly power sale agreements are likely to find the platform an attractive sale opportunity too.

Traditionally, there was no differentiation between thermal and renewable power sales on the conventional platform. Buyers interested only in renewable energy could not source green power. With the introduction of this green market, these buyers can now fulfill their green energy requirements.

A different market for conventional and green power paves the way for transparent price discovery of electricity based on generation source. Until now, renewable energy (solar or wind) and thermal were being sold at the same price, while they are produced at different costs.

The new trade, along with the waiver of inter-state transmission fees announced by the power ministry, is also likely to help the growth of the renewable market. ☞



# India's Power Demand Shows Signs of Recovery

*While the power demand plunged due to the lockdown that halted economic activities across the country, it has shown signs of recovery over the past couple of months*

By : Nithin Thomas Prasad

**D**ata from POSOCO, the National Load Despatch Centre (NLDC), has shown that power demand in the country rose after it dipped during the COVID-19-induced nationwide lockdown.

The data showed that after the lockdown was lifted, the average daily power demand stood at 3,595 million units (MU) between June 1, 2020, and August 27, 2020. During the 69-day lockdown period between March 24, 2020, to May 31, 2020, demand averaged 3,037 MU.

starts to recover.

The International Energy Agency's (IEA) recent report analyzing the impact of the COVID-19 pandemic and the subsequent lockdown showed that the electricity demand dropped drastically with the implementation of the lockdown measures in various countries. While the demand recovered as the lockdown measures were relaxed in these countries, it was still below the pre-lockdown levels in many. In June, the electricity demand stayed 10% below the pre-lockdown levels in most countries except India, where the

## The data showed that the average daily power demand fell to 3,037 MU during the 69-day lockdown

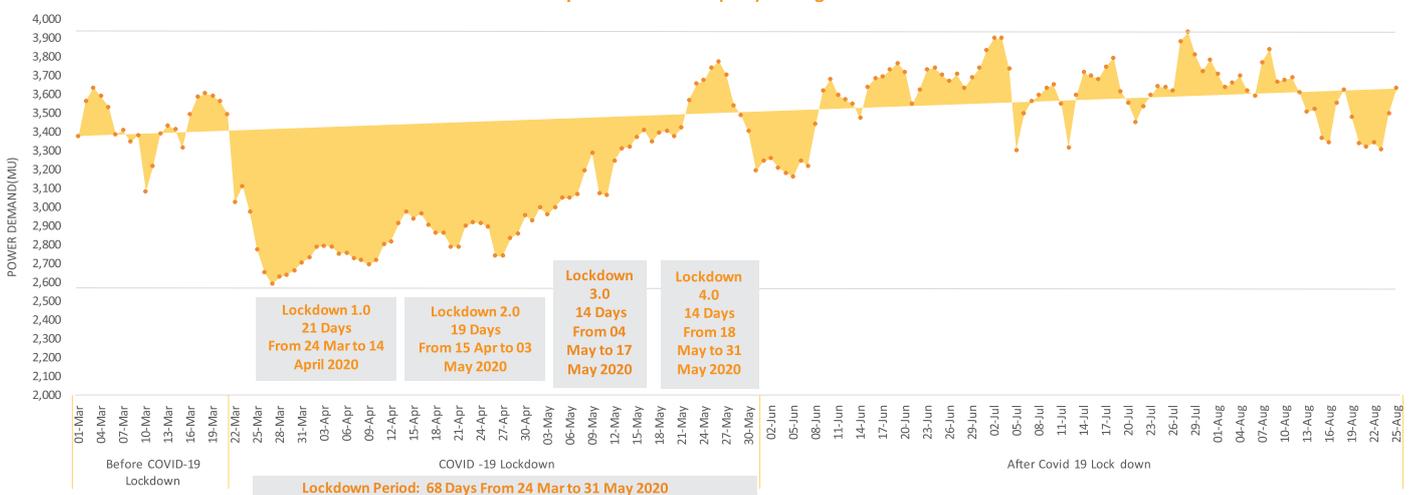
Before the lockdown, the average daily power demand in the country stood at 3,416 MU in the period between March 1, 2020, and March 23, 2020, according to POSOCO's data.

The Central Energy Authority's (CEA) latest Load Generation Balance Report also showed that India would have an energy surplus of 2.7% and a peak surplus of 9.1% in 2020-21. It noted that the electricity demand fell amid the COVID-19 crisis in April and May 2020. CEA said that it expects power demand to meet its trajectory as lockdown restrictions ease, and the economy

recovery was more pronounced. The report added that in India, renewables continued to increase its share in the power mix, and the gap between renewables and coal narrowed down significantly during the lockdown period.

The share of renewable energy (including large hydro) in India's overall installed power capacity mix rose marginally to 36.2% at the end of the first quarter of 2020, from 35.9% at the end of the calendar year 2019, according to the data from CEA, and the Ministry of New and Renewable Energy. 

COVID 19: Daily Power Demand (MU) During Lockdown 2020



Source: National Load Dispatch Center

# China, US, Germany, and India Add Over 22 GW of Solar in 1H

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*The installation numbers are indicative of the resilience of the global solar sector amid a raging pandemic and a sluggish economy*

By : Rahul Nair

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**T**he United States installed 3.5 GW of new solar PV capacity in the second quarter (Q2) of 2020, according to the Solar Energy Industry Association (SEIA). The installations dropped 6% compared to Q1 installations. However, utility-scale solar remained resilient despite the COVID-19 pandemic, representing 71% of all new solar capacity brought online

in Q2.

Solar accounted for 37% of all new electric generating capacity added in the U.S. in the first half of 2020, as Texas and Florida each installed over 900 MW across distributed and utility solar in Q2. The report said a total of 8.7 GW (DC) of new utility PV power-purchase agreements were announced in the second quarter, bringing the contracted

pipeline to a capacity of 62 GW.

In China, according to the latest data released by the National Energy Administration (NEA), 11.52 GW of solar capacity was installed during the 1H of 2020, with 7.5 GW of installations in Q2 2020 alone.

Mercom had reported that in Q1 2020, China led the way with total installations of 4 GW, followed closely



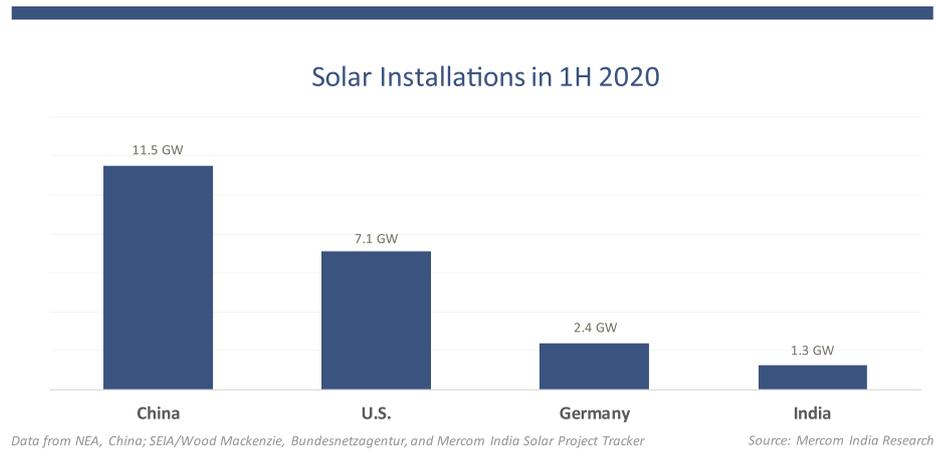
by the United States with 3.6 GW of installations. On the other hand, India added only 1.1 GW of new installations in this period (India reports its numbers in DC). The big three in the solar arena collectively had added -8.7 GW of solar capacity in Q1 2020.

China's solar installations in 2020 are likely to reach 28-34 GW, according to Asia Europe Clean Energy (Solar) Advisory.

Germany inched past India to the third spot not only for the first half (1H) of 2020 with an overall 2.4 GW installations but also for Q2 2020 with 1.2 GW of solar installations.

As per the data released by the federal agency in Germany, the total cumulative capacity at the end of July reached 51.98 GW. Nearly 2.4 GW of solar installations was added in the first half of the calendar year 2020, compared to 2.1 GW during the same period last year.

Meanwhile, India added only 205 MW of solar capacity in the second



additions. Compared to the same period last year, installations during the quarter were down by 86% from 1,510 MW in Q2 2019.

“The growth we see in this report underscores the resilience of the solar industry as we deal with COVID work stoppages, a struggling economy, harmful trade policy, and an uncertain tax environment,” said Abigail Ross

been laid off or furloughed amid this crisis, and SEIA remains firm in our commitment to fight for equitable policy that allows the solar industry to compete and grow our workforce.”

Solar accounted for 37% of all new power capacity installed in the U.S. in the first half of 2020. Texas and Florida installed over 900 MW each in Q2, including large-scale and distributed generation projects. The report said a total of 8.7 GW (DC) of new power-purchase agreements were announced in the second quarter, bringing the contracted pipeline to a total of 62 GW (DC).

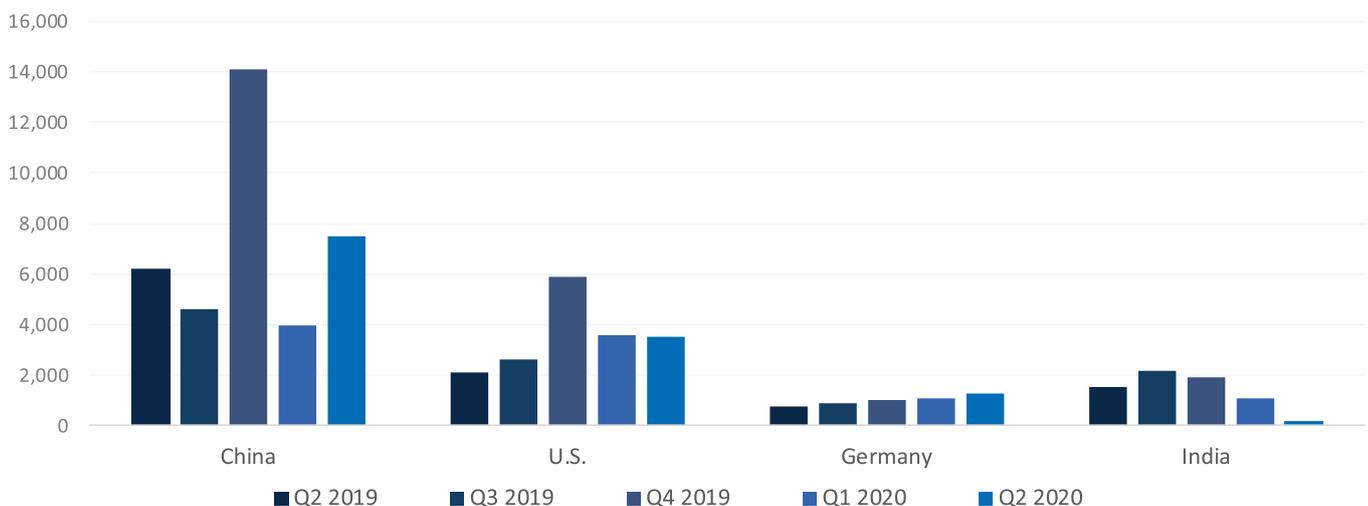
The U.S. solar market is expected to install nearly 100 GW from 2021-2025, a 42% increase in the amount of solar installed over the last five years. 📌

## China continues to be the global leader for solar with 11.52 GW installed during 1H of 2020

quarter of 2020, an 81% decline from the previous quarter's 1,090 MW of

Hopper, SEIA's president, and CEO. “Tens of thousands of our workers have

### Solar Installations by Quarters (MW)





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# WiseEnergy's 550 MW Solar Asset Management Deal in India

*Pratik Ghoshal, WiseEnergy's Global Head of Business Development, spoke to Mercom about its recent deal and the importance of solar asset management in India*

**W**ith rapid installation targets and a large existing operating base of assets, solar asset management is fast gaining traction in the Indian market. Solar asset management includes all aspects of the solar asset lifecycle, primarily focusing on the operating phase but also can be during development and construction. WiseEnergy is a known name in this segment, with its presence spanning across Europe, the U.S., Africa, and India.

WiseEnergy recently signed a multi-year contract to provide comprehensive asset management services for a 550 MW solar portfolio in India that Actis Long Life Infrastructure Fund had recently acquired.

Mercom had a chance to speak to Pratik Ghoshal, WiseEnergy's Global Head of Business Development, to get a detailed understanding of solar

asset management and what it entails. Ghoshal spoke about the various facets of asset management, its scope, as well as its challenges. He also shed some light on WiseEnergy's strategy to navigate through these tough times amid the raging pandemic COVID-19.

Here are the edited excerpts from the interview:

**As a global asset management company in solar, what are some of the challenges posed by the Coronavirus pandemic, and how are you navigating these challenges?**

The COVID-19 pandemic is bringing the world into uncharted waters. The ability to adapt quickly to the challenges imposed by the "new normality" and a problem-solving attitude make a company a survivor and a leader. Given the economic uncertainty for so many investors, businesses and individuals, today, it is more important than ever

to ensure we exceed our clients' expectations and returns by increasing the generation and reducing the risks and OPEX overheads of their current operating solar plants. Even during uncertain periods such as the COVID-19 pandemic, we have demonstrated we can deliver market-leading returns for our clients, thanks to our delivery model, which combines on-site and off-site management, global shared service teams, our proprietary technology platform, and robust H&S practices that allow us to manage assets optimally, no matter the circumstances.

**Solar asset management is more than just O&M. Tell us about your services. Do you typically focus on managing operating projects, or do you also get into the development side?**

WiseEnergy is an international asset management service provider. With its



roots in Europe, WiseEnergy has been operational since 2008 and offers all services required to manage and operate medium and large scale solar plants throughout their entire life cycles. This means that we can manage both the development and construction phase of solar plants as well as the operational asset management phase, including technical, finance, and commercial asset management services. Our 'continuous feedback loop' from supporting investors with acquisitions through to operating plants ensures that our clients receive the benefit of our experience and hindsight.

Leveraging our extensive experience and a library of knowledge that spans over 11 years, 1,500 solar plants, and millions of plant performance data points, we are able to anticipate, identify and proactively address issues that asset owners and operators in India are facing for the first time. In India, our main offer

is comprehensive asset management services. However, we also offer development and construction support, along with other strategic services to our 'strategic growth' customers.

**Can you add some more color to the recently announced 550 MWp/400 MW A.C. asset management deal between Actis Long Life Infrastructure Fund and WiseEnergy? Is this your first deal in India?**

In 2018, WiseEnergy entered the country with the establishment of its Indian subsidiary in Hyderabad, and its first asset management contract with an international client for six operating solar plants in Telangana with a total installed capacity of 104 MWp. The agreement with Actis represents a major milestone for us in India and cements our investment in the region. Not only does the Actis deal increase

our presence in India, one of our key growth markets, it also establishes our partnership with one of the most highly reputed infrastructure fund managers in the world. We are honored that Actis ALLIF chose WiseEnergy to manage its newly acquired solar plants in this country. We are excited about the growth possibilities this brings for both parties in the future.

Today, we can proudly say that we manage 11 assets in India for a total capacity of over 720 MWp (and with another 650 MWp in advanced pipeline discussions), which makes us the largest independent solar asset management company in Asia.

**Can you explain the ways you can deliver Return on Investment(ROI) for your clients?**

WiseEnergy doesn't require an upfront investment from customers; hence metrics like ROI are not relevant





in the traditional sense. However, our delivery model drives yield increase, risk reduction, and OPEX minimization, increasing net asset value, and operating returns. In almost all of our plants, we have consistently surpassed budgeted or acquisition-level IRR targets.

**How does WiseEnergy differentiate itself from the competitors?**

WiseEnergy is uniquely placed to manage and improve our clients' assets through our proactive and innovative approach. Innovation, technology, and experience are the three pillars that set WiseEnergy apart.

First of all, WiseEnergy drives superior results through continuous investment in R&D and a long-term commitment to innovation. We can demonstrate the overall financial impact of different operational interventions in the short- and long-term, which means

we can translate engineering challenges and opportunities into revenue upside and cost savings with confidence.

Then, our proprietary technology platform delivers rapid and high-quality data-driven insights and results, irrespective of asset size, location, or equipment make-up.

Finally, WiseEnergy has not only one of the longest operating histories in solar asset management, but it also has one of the largest teams (over 120 employees) of qualified and experienced solar asset management professionals in the industry. Our global shared services structure provides our clients with access to the breadth and depth of our specialist services globally while our local offices in the U.K., Italy, India, and the U.S. ensure our clients also benefit from the cross-border experience and domestic expertise.

**Can you tell us about some of your**

**important clients across your target markets?**

We are rapidly expanding our geographic footprint as clients understand how our value-add proposition supports their growth strategies and optimal performance of their plants. We are present in Europe with plants in Italy and the U.K., in Asia with plants in India, in Africa with plants in Namibia, and in the U.S. with plants in North Carolina and Virginia. Most of our present and target customers are infrastructure and energy funds, but we also serve large developers and IPPs.

**Has asset management caught on in India? Are there any unique challenges that solar projects in India specifically pose?**

Though it's still the early days, we are seeing a trend among investors and asset owners considering outsourcing of hitherto in-house asset management.

The pattern is more prevalent in new market entrants, especially institutional investors, infrastructure funds that are leading M&A in the industry. However, several incumbents are also discussing outsourcing comprehensive asset management with us so that they can concentrate on asset development-finance-acquisition; they see outsourcing as a platform for significant and rapid growth.

Solar, and in general, all power and infrastructure projects in India need to manage regulatory compliance effectively and in a comprehensive manner, which can vary state-wise and can be more complex than in many other markets. Contracting in India is also challenging and time-consuming to manage. Further, we have seen that many operating assets in the market urgently require performance improvement strategies. Finally, financial asset management is often disparate-disconnected and can make

it very difficult for asset managers, portfolio managers, and senior management to develop a holistic view of asset health and value. Hence the financial and operating status of assets often doesn't match.

By bringing together all regulatory, contracting, technical, and financial activities into a seamless, holistic service, we can dramatically improve the performance of the plants and significantly reduce the total cost of operations.

**What do you think is the best strategy to minimize risks and maximize revenue for projects in India?**

Our aim is simple: we're interested in making our clients' asset operations slicker, easier, and as profitable as possible.

Only a dedicated, comprehensive, holistic, and integrated asset manager can identify and address risks in time

and maximize revenue potential. Asset owners in India now recognize that disparate and disintegrated asset management with large and complex in-house teams are not in the best interest of the asset or its returns. Further, investment in specialized technology platforms to manage assets, such as our proprietary platform, is also key as it increases efficiency and dramatically reduces costly human mistakes.

**How do you see the global solar market next year in light of COVID-19?**

We remain confident that the solar market will continue to grow rapidly and lead the world's transition to clean energy. If anything, COVID-19 has shown the benefits of bluer skies. Regarding India, the market remains a key global driver for solar growth thanks to its ambitious and admirable solar targets and its determination to deliver them. 🌞

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# Industry News and Policy Briefs

**NTPC Limited** announced that its wholly-owned subsidiary NTPC Vidhyut Vihar Nigam Limited, signed a Memorandum of Understanding with Greenko Energies Private Limited to explore opportunities to supply **round-the-clock renewable energy**. The partnership would meet the evolving requirements of DISCOMs and other power consumers in India in real-time.



**NTPC**, in its corporate disclosure to the BSE, declared that it received the approval of **NITI Aayog** and the Department of Investment and Public Asset Management to set up a wholly-owned company for its renewable energy business.

**Sterlite Power**, a power transmission infrastructure developer, announced that it had sold a 14.7% stake in **the India Grid Trust** for an amount of ₹8.4 billion (-\$112.2 million) to institutional and high net-worth individual investors.



The **Ministry of Power** suggested that the power generation and transmission companies should reduce the late payment surcharge up to **12% annually** for distribution companies. This suggestion would apply to all late payments made under the liquidity infusion program.

The **Competition Commission of India** approved the proposed acquisition of New Delhi-based C&S Electric by Siemens Limited. The proposed move would lead to the acquisition of **100%** of the share capital of C&S Electric by Siemens Limited.

**Indian Hotels Company Limited** announced that it had signed a power purchase agreement with TP Kirnali Solar Limited, a wholly-owned subsidiary of **Tata Power Company Limited**. Under the agreement, Tata would provide renewable energy for **IHCL's Mumbai-based hotels** for 25 years.



**Amplus, the Indian arm of Petronas**, a Malaysian government-owned oil and gas company, acquired **100 MW** of solar assets from **ACME Solar**. The deal was valued at ₹8 billion (-\$109 million). This 100 MW project, located in Karnataka's Pavagada Solar Park, was developed under the National Solar Mission (Phase-2 Batch-2). Commissioned in 2018, the project comes with a tariff of ₹4.79 (-\$0.065)/kWh.



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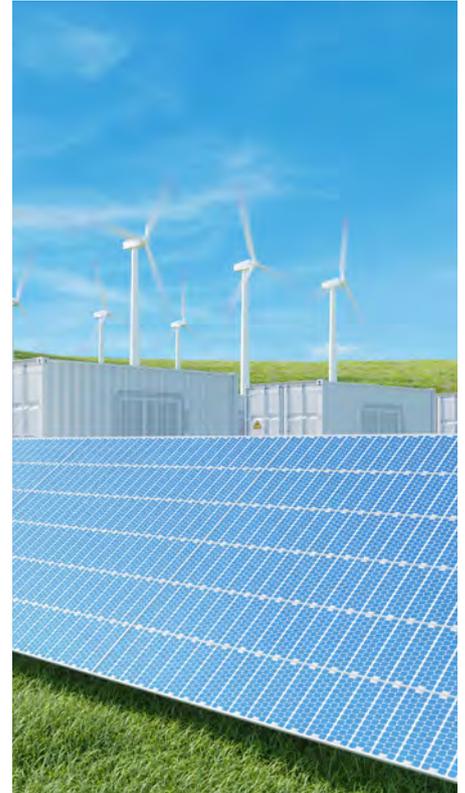
[www.risenenergy.com](http://www.risenenergy.com)

The **Ministry of Road Transport and Highway** announced that all the states and union territories had been allowed the registration and sale of electric vehicles without pre-fitted batteries. The move is likely to provide the necessary boost for the wider adoption of EVs across the country.



The **Central Electricity Authority** released the second part of its 19th **Electric Power Survey**, which forecasts the power consumption across 20 cities in India. The forecast is vital for the power sector to meet the future requirement of various segments and assess electricity demand on a medium and long-term basis.

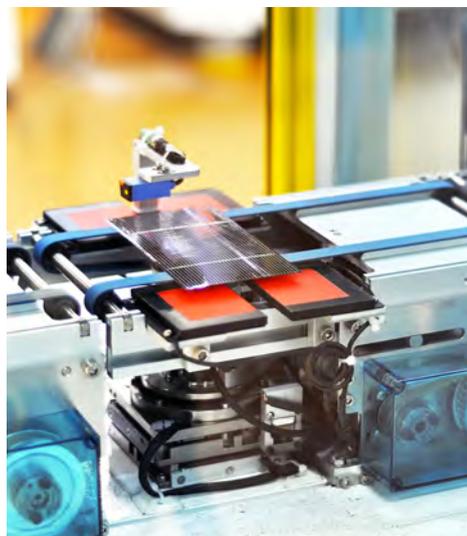
The **‘Global Offshore Wind Report 2020’** published by the Global Wind Energy Council expressed its apprehensions on India meeting its offshore and onshore wind energy targets by 2022. The wind council suggested proper planning for tenders along with demonstration-scale projects to enable India to achieve its targets.



The **Ministry of Power** waived interstate transmission system charges and losses on all solar and wind projects commissioned before **June 30, 2023**. This would apply to solar, wind, and hybrid projects with or without storage.

## Policy Updates States

The state of **Tamil Nadu** released the **‘Electronics Hardware Manufacturing Policy 2020’** to increase the state’s electronic output to \$100 billion (~₹7.3 trillion) by 2025. The government is striving to improve the level of value addition, especially in areas such as **solar photovoltaic cells**, mobile handsets, LED products, and automotive electronics. The renewable energy electronics segment, among others, has been selected as one of the priority sectors for developing the state’s core competencies.



The **state government of Gujarat** has issued amendments to its **wasteland allotment policy** for wind, solar, and hybrid (wind and solar) power projects. According to the amendments, the renewable power project developers selected by the Solar Energy Corporation of India (SECI) will have to commit to installing 50% of the total generation capacity in three years and 100% in five years. Apart from this, all the other land allotment policy conditions issued on January 25, 2019, will be applicable. The amendments said that 50% of the electric capacity is to be installed within three years of the agreement of land allotment, and 100% should be generated within five years of the contract.

## News in Brief



In a huge respite for the electricity consumers in the national capital, the **Delhi Electricity Regulatory Commission (DERC)** reduced fixed charges by 50% for industrial and non-domestic consumers. The notification issued by DERC stated that in the lockdown period (until May 30, 2020), several commercial and industrial establishments did not tap into their contracted capacity. Yet, the fixed charges at the applicable rate were invoiced to them based on the billing demand as per the DERC.

## Center

The Ministry of Power announced that the Cabinet Committee on Economic Affairs, chaired by Prime Minister Narendra Modi, has approved the **asset monetization** of the **Power Grid Corporation of India Limited (PGCIL)** through the Infrastructure Investment Trust (**InvIT**) model. The financial instrument 'InvIT' was launched as a part of a brownfield asset monetization strategy to enhance infrastructure investments, which would provide an opening for the general public and institutional investors to invest in the infrastructure sector.



The **Ministry of New and Renewable Energy** issued new clarifications for the Pradhan Mantri Kisan Urja Suraksha evam Utthan Mahabhiyan (PM-KUSUM) program. According to the clarifications, for Component B and Component C of the program, the state share of subsidy will be a minimum of **30% of the applicable benchmark cost** or the cost discovered in auctions, whichever is lower. The states can provide a higher share of subsidy to reduce the beneficiary farmer's contribution. However, the central finance assistance (CFA) would be limited to 30% of the benchmark cost set by the ministry or the price discovered through tender, whichever is lower, for pump capacity up to 7.5 HP.

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INDIA RESEARCH

# PRODUCT DIRECTORY

## Solar Inverter Supplier



### Growatt New Energy

Growatt is a global leader of PV inverters, storage, and smart energy solutions. Growatt ranked in top 10 global PV inverter suppliers according to IHS Markit. By far, Growatt has shipped 17 GW of PV systems, and established an extensive network with 13 branch offices and warehouses worldwide. Plot 28, Prashasan Nagar, Road No. 78, Jubilee Hills, Hyderabad, 500033  
**Phone 1800 120 600 600**  
**info@ginverter.com,**  
**www.ginverter.com**



### Huawei

Huawei offers leading Smart PV solutions which harnessing more than 30 years of expertise in digital information technology. As the largest global inverter supplier, Huawei is committed to building efficient, smart O&M, safe, reliable and grid-supporting Smart PV plants, and helping customers maximize the return of investment over the plants' lifetime.  
 11th Floor, Capital Cyberscape, Gurugram Manesar Urban Complex, Golf Course Extension Road, Sector-59, Gurugram -122011, Haryana  
**Phone +91-124-4774700**  
**inverter@huawei.com,**  
**www.solar.huawei.com/in**

## Ginlong Solis

Ginlong Technologies is one of the most experienced and largest manufacturers of solar inverters. Presented under the Solis brand, the company's portfolio uses innovative string inverter technology to deliver first-class reliability that has been validated under the most stringent international certifications. Armed with a global supply chain, Ginlong optimizes its Solis inverters for each regional market, servicing and supporting its customers. No.104, wing -A, 1st floor, Techno City Premises Co-Opp. Society Limited, Mahape road, Navi Mumbai- 400710  
 phone +91-224-974 4251  
 indiasales@ginlong.com,  
 www.ginlong.com

## Solar PV Module Supplier



### Delta Electronics India

Delta's new flagship inverter model, the M100 cloud-connected three-phase string inverter solution for cost-efficient decentralized photovoltaic systems for both ground-mounted and large commercial applications. With a maximum AC apparent power of 110 kVA, this high-performance inverter is particularly well-suited to large rooftop, small size megawatt-scale ground-mounted solar plants.  
 A Block, Third Floor, Survey No. 56/18 & 55, Ozone Manay Tech Park, Hosur Road, Bengaluru, Karnataka 560068  
**Phone +91-9980178324**  
**Sushma.B@deltaww.com,**  
**www.deltaelectronicsindia.com**

## Sungrow India

Sungrow is a supplier of PV inverters range (from 3 kW to 5 MW), battery energy storage systems catering to Utility, Commercial and Residential customer segments.  
 301, JMD Pacific Square, Sector-15 (Part II) Gurugram, Haryana-122001. (Factory address- Survey No.85/2, Kaniminike Village, Kengeri Hobli, Bengaluru South Taluk, Karnataka - 560074)  
 info@in.sungrowpower.com,  
 www.sungrowpower.com

## GoodWe

GoodWe, leading solar power equipment manufacturer and Solar String Inverter technology expert, globally ranked no.1 in Energy Storage Inverters and Top 4 On-Grid String Inverter manufacturer with Product basket ranging 0.7kw to 250kW.  
 1202, G-Square Business Park, Sector 30A, Opp. Sanpada Railway Stn., Vashi, Navi Mumbai- 400703  
 phone +91-8802973396  
 sales@goodwe.com,  
 www.goodwe.com



## JA Solar

JA Solar business ranges from silicon wafers, cells and modules to complete photovoltaic power systems, and its products are sold to over 120 countries and regions. On the strength of its continuous technological innovation, sound financial condition, well-established global sales and customer service network, JA Solar has been highly recognized by authoritative associations in the industry as a leading global manufacturer of high-performance PV products.  
 Beijing, China,  
**phone +86-10 6361 1888 -1539**  
**bj.liangjh@jasolar.com,**  
**www.jasolar.com**

## LONGi Solar

### LONGi Solar

LONGi leads the solar PV industry to new heights with product innovations and optimized power-cost ratio with breakthrough monocrystalline technologies. LONGi supplies more than 30GW of high-efficiency solar wafers and modules worldwide yearly, about a quarter of global market demand. LONGi is recognized as the world's most valuable solar technology company with the highest market value.

Room 801, Tower 3, Lujiazui Financial Plaza, Century Avenue 826, Pudong Shanghai, China

phone +86-21-8016 2606  
www.en.longi-solar.com

### ReneSola

ReneSola is rapidly growing global brand of Solar PV Modules. Having cumulative references of more than 20GW worldwide and more than 2.5GW in India, ReneSola serves a large number of customer base worldwide ranging from a small rooftop owner to very large solar farm developers. Phone +86-18106152828  
manoj.tanwar@renesola.com  
www.renesola.com

### REC Solar

REC Group is an international pioneering solar energy company with 23 years of Scandinavian heritage, having its manufacturing facility in Singapore and globally known for its technological leadership in solar panel manufacturing. REC (India) Private Limited - Office no. 1056, Regus Business Centre, Unitech Cyber Park, Tower B, Floor 10, Sector 39, Haryana, Gurugram, India- 122001  
Phone +91-9953943411  
Shikha.upadhayay@recgroup.com,  
www.recgroup.com

### Risen Energy

Risen Energy engaged in developing and manufacturing photovoltaic applications, products includes mono and poly crystalline modules, HJT PV module and energy storage, supplying to Utility scale and distributed solar applications. 2nd Floor, Novel Tech Park, # 46/4 GB Palya, Hosur Road, Kudlu Gate, Behind Trident Hyundai Showroom Bengaluru 560068. phone +91-80-4091 5484, 093100 78313  
umesh@risenenergy.com,  
www.en.risenenergy.com

### Solar PV Module Manufacturer

#### Goldi Solar

Goldi Solar is one of the leading and fastest growing solar PV module manufacturing companies established in 2011 also foraying into the vertical of EPC turnkey projects as one of its arms since 2016 which has grown by leaps and bounds with customers across India and recently diversified as an Individual Power Producer vertical in 2019. 1009, 10th Floor, Infinity Tower, Near Railway station, surat 395003, Gujarat  
Phone +91-2617199999, 2617199900  
info@goldi.one,  
www.goldi.one

### Solar PV Backsheet

#### DuPont Photovoltaic Solutions

DuPont Photovoltaic Solutions represents a portfolio of product solutions with over 40 years of service to the solar industry including DuPont™ Solamet® metallization pastes, DuPont™ Tedlar® films as well as DuPont™ Fortasun™ solar silicones. Performance Specialty Products (INDIA) Pvt. Ltd., 8th Floor, Tower C, DLF Cyber Greens. Sector - 25 A DLF City, Phase III. Gurgaon - 122002, Haryana  
Phone +91-124-409-1818  
swati.chaudhary@dupont.com,  
www.photovoltaics.dupont.com

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website: [www.mercomindia.com](http://www.mercomindia.com)

# Major Tender and Auction Announcements in August

*This is a list of major tenders and auctions from August. A comprehensive list can be found on Mercom's Tender and Auction Tracker and Alerts. Please contact [info@mercomindia.com](mailto:info@mercomindia.com) for more information*



## Top Large-Scale Solar Tenders

NTPC Limited invited bids from engineering, procurement, and construction contractors with land for the development of up to **1,070 MW of solar projects** in Rajasthan. Each project must be at least 50 MW in capacity or higher in multiples of ten.

The Gujarat State Electricity Corporation Limited invited bids for **110 MW of grid-connected solar projects**. The projects would range from 10 MW to 55

MW and would be set up at various substations of Gujarat Energy Transmission Corporation Limited.

The Energy Efficiency Services Limited issued a tender for **279 MW of solar projects** across the state of Maharashtra. The project will be partially funded through the corpus India has received from kFW, the German state-owned development bank, towards the cost of 'scaling up demand-side energy efficiency project.'

## Other Tenders

The Odisha Renewable Energy Development Agency invited expressions of interest for **solar trees**, solar street lighting systems, solar drinking water kiosks, electric rickshaws, and their charging infrastructure in **Konark Notified Area** Committee of the state.

The Defense Research and Development Organization's Estate Management Unit has issued a notice inviting tender for the operation and maintenance of a **1 MW solar power project** at the Research Center Imarat, Hyderabad.

The Uttar Pradesh New and Renewable Energy Development Agency invited bids for solar street lighting systems, **solar projects** with battery backup, solar fencing, and solar water heaters in the state.

The Military Engineer Services invited bids for a **1.5 MW of solar project** at the Air Force Station in Thanjavur, Tamil Nadu. The estimated cost of the project is ₹116.3

million (-\$1.6 million). Interested bidders are expected to make an earnest money deposit of ₹906,500 (-\$12,209). The last date for the submission of bids is October 14, 2020.

The Rajasthan Electronics and Instruments Limited issued a tender for the manufacture and supply of 6,500 polycrystalline **solar photovoltaic modules** with a wattage of 330 W. It also released a notice inviting tender for the supply of 600,000 multicrystalline solar cells with wattages of 4.5W, 4.6W, and 4.67W.

Bharat Heavy Electricals Limited floated a tender for **5 MW** of power conditioning units (PCU) for NTPC Limited's 20 MW solar project in Gandhar, Gujarat. The tender called for four 3-phase grid-connected PCUs housed in one 5 MW container or two 2.5 MW containers.

## Tender Deadline Extensions and Retenders

NHDC Limited, a joint venture between NHPC Limited and Madhya Pradesh government, invited fresh bids for a **25 MW floating solar power project** at Omkareshwar reservoir in Khandwa district of Madhya Pradesh. This was a retender of the capacity that was floated in July last year.

Solar Energy Corporation of India (SECI) once again extended the bid submission deadline for the **2.5 GW** of interstate-connected solar projects under Tranche X (ISTS-X) at the Ultra Mega Renewable Energy Power Park in **Koppal district of Karnataka**. The new submission deadline is September 29, 2020. The tender was initially floated in April this year, and the date for the submission of bids was May 29, 2020.

SECI extended the bid submission deadline for its tender for **7.5 GW** of grid-connected solar power projects

slated to be developed in the districts of **Leh and Kargil**. The revised deadline is now December 2, 2020. This was revised from April 30, 2020, previously.

Bid submission deadline for the tender to procure **5 GW of renewable power** on a round-the-clock basis complemented with thermal power projects was also extended by SECI. The tender was floated in March 2020. SECI did not specify an upper ceiling tariff. However, it said a single "composite tariff" would apply to the project.

The Uttarakhand Project Development and Construction Corporation Limited invited fresh bids for **40 MW** of grid-connected solar power projects. The projects are to be installed near Haripura and Tumaria reservoirs in Udham Singh Nagar of Uttarakhand. This is a retender of the capacity that was floated in January 2019.





### Major Auctions

Vena Energy and JSW Solar won 970 MW of blended wind projects under **SECI's 2.5 GW auction** for interstate-connected blended wind power projects (Tranche IX). Vena Energy Vidhyuth Private Limited won 160 MW of projects quoting the lowest tariff of ₹2.99 (-\$0.0401)/kWh, while JSW Solar was awarded 810 MW of projects at ₹3 (-\$0.402)/kWh under the bucket filling method. JSW had originally placed bids for 970 MW of projects.

O2 Power, Azure Power, Tata Power, and Amp Energy together won **1,170 MW of projects** in NTPC Limited's auction for 1.2 GW of solar projects. O2 Power, Azure Power, and Tata Power were awarded 400 MW, 300 MW, and 370 MW of projects, respectively, at a tariff of ₹2.43 (-\$0.0325)/kWh. Amp Energy secured 100 MW of projects at ₹2.44 (-\$0.0327)/kWh. ReNew Power also placed bids for 300 MW of projects but was not awarded any capacity.

### Top Rooftop Tenders

The Assam Power Distribution Company Limited issued a tender for **2 MW of grid-connected rooftop** solar power projects. The solar systems will be set up in the residential sector across the state under the CAPEX model.

The Bihar Renewable Energy Development Agency floated an empanelment tender for rooftop solar projects for a capacity of **10 MW** (Category-B) and **5 MW** (Category-C) on government buildings in the state. The projects will be developed under the **CAPEX model**.

The New Okhla Industrial Development Authority issued a request for proposal for **10 MW** (AC) of rooftop solar projects on its buildings under the RESCO model. The estimated value of the tender is ₹400 million (-\$5.36 million).

Rajasthan Electronics and Instruments Limited invited bids for the supply, installation, testing, and commissioning of **1 MW** of grid-connected rooftop solar projects across various locations in Bihar.

# How Solis Inverters Are Taking The **1500V** Utility Plant to a New Era of Higher Power With Lower LCOE



## Higher Yields

- 14 MPPTs design, Support 200% DC/AC ratio
- High temperature continuous output power 220kW 50°C



## System Friendly

- Support "Y" type connection in DC side
- Support PLC communication, reduce system cost



## Safe & Reliable

- Fuse-less design, Safe and maintenance-free
- Integrated anti-PID Recovery function to improve system efficiency



## Smart O&M

- String-level monitoring
- Smart I/V curve scanning



**Solis-(208-255)K-EHV-5G**

## MAC FOR HIGHER ROI

MAC 30-70KTL3-X LV/MV



### Higher Yields

3 MPPTs, Max. Efficiency 98.8%



### Easy Maintenance

One-Click Diagnosis, Online Smart Service



### Better User Experience

OLED Display and Touch Button  
Compact and Light



### Safe & Reliable

Type II SPD on AC  
and DC Side

## ELEGANT YET POWERFUL

MIN 2500-6000TL-X



### Better User Experience

OLED Display and Touch Button



### Aerospace Grade Material

Light and Flame-Retardant



### Safe & Reliable

Type II SPD, AFCI Optional



### Easy Maintenance

Online Smart Service



MAC 30-70KTL3-X LV/MV



MIN 2500-6000TL-X



Growatt New Energy