

Volume 01 | Issue 02 | April 2021 | ₹250

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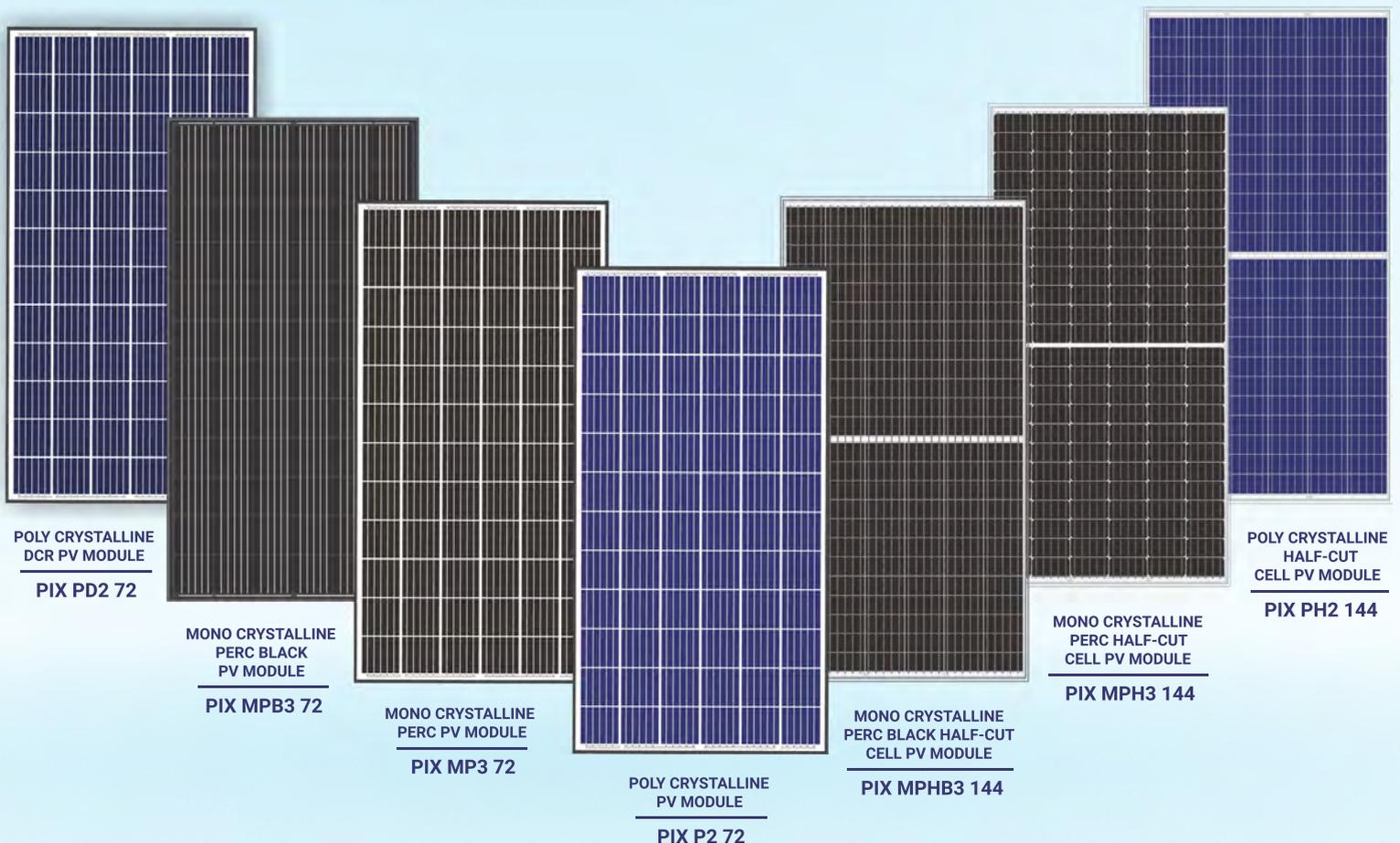
clean energy news and insights

India

Corporate Funding for Solar Rises to \$8.1 Billion in Q1 2021

Buoyed by growing demand for solar assets and higher debt financing activity in Q1 2021, global corporate funding increased by 21%

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CONTENTS

Volume 01 | Issue 02 | April 2021

04

TECHNOLOGY

A New Method to Enhance Efficiency of Perovskite Solar Cell

The method will be applied to the solar cell field and various semiconductor devices like light-emitting diodes, transistors, and optical sensors

06

MARKETS

Countervailing Duty Imposed on Solar Glass Imports from Malaysia

The Ministry of Finance has accepted DGTR's recommendation to impose a countervailing duty on tempered glass imported from Malaysia

08

POLICY

Green Power Tariff for Power Consumers in Maharashtra

The Maharashtra regulator has approved a green power tariff of ₹0.66/kWh for consumers opting for 100% renewable energy

12

POLICY

No Net Metering Facility for Open Access Consumers in Haryana

A rooftop solar system's maximum rated capacity under net metering should not exceed 10 kW and 2 MW under gross metering

15

POLICY

Module Tender Under PLI Program Coming Soon

The much-awaited tender under the Production Linked Incentive program is expected to be announced soon, followed by the auction that will pick winners based on efficiency, the extent of integration, and plant size

20

POLICY

ALMM Enlistment Shrouded in Uncertainty

MNRE has announced the first batch of module manufacturers included in the ALMM list, but clarity regarding the enlistment process is still elusive

24

POLICY

Basic Customs Duty Not Factored in GUVNL Auction

Tariffs quoted in the recent GUVNL auction did not increase significantly to reflect the 40% basic customs duty announcement, which will push prices of modules up

30

INTERVIEW

Investors Need a Strong Operating Knowledge of the Indian Solar Market

Sumant Sinha, Chairman and Managing Director, ReNew Power, spoke to Mercom about his company's journey and shared his insights about the Indian solar industry

CONTENTS

Volume 01 | Issue 02 | April 2021

36

POLICY

Ministry of Power Proposes Net Metering for Rooftop Solar up to 500 kW

The ministry's proposal follows concerns expressed by stakeholders that the net metering cap at 10 kW would make rooftop solar unviable for small players

38

TECHNOLOGY

Floating Solar Projects Help Reduce Impact of Climate Change on Lakes

Results from a research study show that floating solar arrays can lower water temperature and mitigate the risk of blooms of toxic blue-green algae

42

TECHNOLOGY

New Electrolyte to Boost Energy Density in Lithium-Ion Batteries

The type of battery electrode used with this electrolyte, a nickel oxide containing some cobalt and manganese, is the workhorse of today's electric vehicle industry

44

POLICY

Supreme Court Wants Underground Power Lines to Save The Bustard

In an effort to save the rare Great Indian Bustard and Lesser Florican, the court ordered the installation of bird diverters until overhead powerlines are brought underground

50

POLICY

Supreme Court Upholds NCLT's Stay of PPA Terminations by GUVNL

The Supreme Court held that NCLT had the authority to address cases arising solely from or those relating to the corporate debtor's insolvency

54

MARKETS

Corporate Funding for Solar Rises to \$8.1 Billion in Q1 2021

Buoyed by growing demand for solar assets and higher debt financing activity in Q1 2021, global corporate funding increased by 21% compared to Q4 2020

57

POLICY

Tamil Nadu Open Access Consumers to Pay Additional Surcharge

The Tamil Nadu Generation and Distribution Corporation set the additional surcharge payable by open access consumers at ₹0.85/kWh

64

TENDERS & AUCTIONS

Major Tender and Auction Announcements in March

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

Foreword



Just when things seem to be going back to normal, India has been hit by a devastating second wave of the COVID-19 pandemic. This wave is the worst the world has seen so far, and our hearts go out to everybody affected.

The lockdown in 2020 was much different compared to what is going on now. Back in March of last year, when the world's toughest lockdown was imposed, India barely had any cases, but businesses

couldn't function, and the migrant labor pool was gone for months. Even though the current situation is multiple times more serious, there is no national lockdown. Lockdowns are mostly regional, based on where the cases are concentrated. Some of the worst affected states are also big solar markets.

Even though there is nothing official yet, expect more supply chain delays, labor issues, a slowdown in tenders and auctions, commissioning delays, and more. Timeline extensions will come but do not expect announcements any time soon. Government offices and officers are also affected, and most offices are not fully functional at the moment.

Business, economy, routines, day to day activities are all out the window. Health, safety, and survival are the focus right now. Taking care of our employees and families is something we can all do and make a quick impact and contribute positively.

Mercom will be revising its 2021 and 2022 solar demand forecast and provide multiple scenarios to provide better visibility that reflects the realities on the ground.

The rest of the world, however, is up and running, especially the solar industry.

The financing activity in the solar sector started strong in 2021, with Q1 numbers up substantially year-over-year. Even though solar stocks lost some of their sparks in the first quarter after an unprecedented run in 2020, a big IPO and record securitization activity lifted overall fundraising totals. Solar assets continue to be in great demand, with almost 15 GW of projects acquired globally in Q1.

Total corporate funding, including venture capital funding, public market, and debt financing into the solar sector in Q1 2021, came to \$8.1 billion in 36 deals, a 21% increase compared to the \$6.7 billion raised in 43 deals in Q4 2020. Funding was 246% higher year-over-year (YoY) compared to the same period of last year. Following the slow down in the first half of 2020 due to the pandemic, financing activity has picked back up.

Despite disruptions related to the pandemic, project acquisition activity has been booming since the second half of 2020. Solar projects continue to be highly sought-after assets. Selling operating assets helps developers unlock capital and enable them to take on larger opportunities.

The solar industry in India has been extremely resilient over the years. We hope that the same tireless optimism, confidence, and energy will get us through this crisis as well.

Stay safe.

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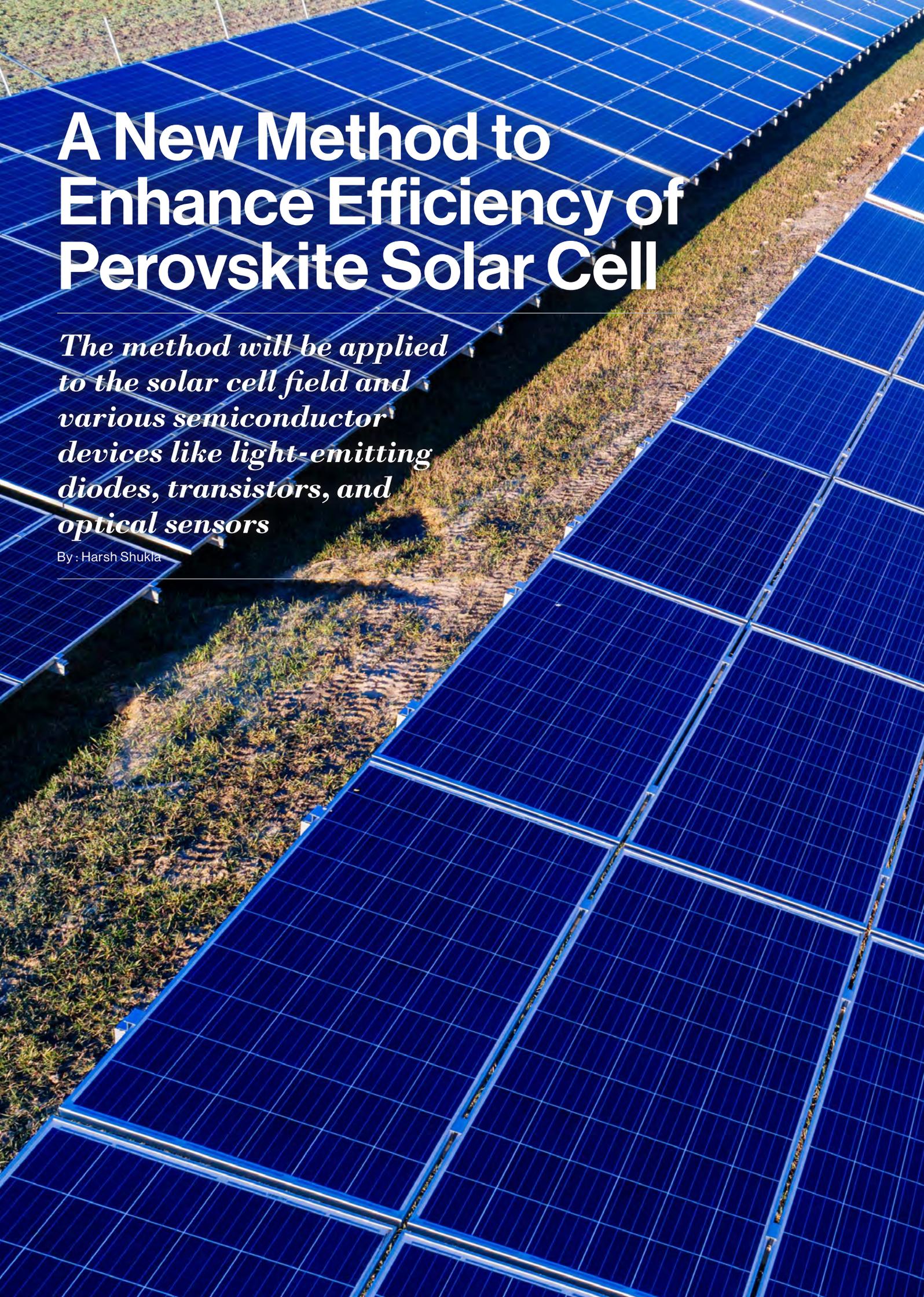
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A New Method to Enhance Efficiency of Perovskite Solar Cell

The method will be applied to the solar cell field and various semiconductor devices like light-emitting diodes, transistors, and optical sensors

By : Harsh Shukla

Researchers at the Gwangju Institute of Science and Technology, South Korea, have claimed that they have developed a new method to increase perovskite solar cells' efficiency by utilizing ions.

The researchers said perovskite solar cells are thin, light, and have a high conversion efficiency of over 25%. However, the efficiency decreases because of the defects in the organic-inorganic complex perovskite materials.

In its report, they explained that defects inside perovskite material have a charge that could be divided into positive electric and negative electric charges. Researchers used a passivation method to control this charge using a material with one charge or unshared electron pair. But only one type of charge can be passivated through this method.

The researchers used L-alanine as an additive to perovskite materials to passivate defects and increase grains in perovskite solar cells to overcome

Perovskite solar cell's efficiency is increased to 20.3% by using L-alanine as an additive to perovskite materials

the problem. They confirmed that solar cell efficiency increased to 20.3% from 18.3%.

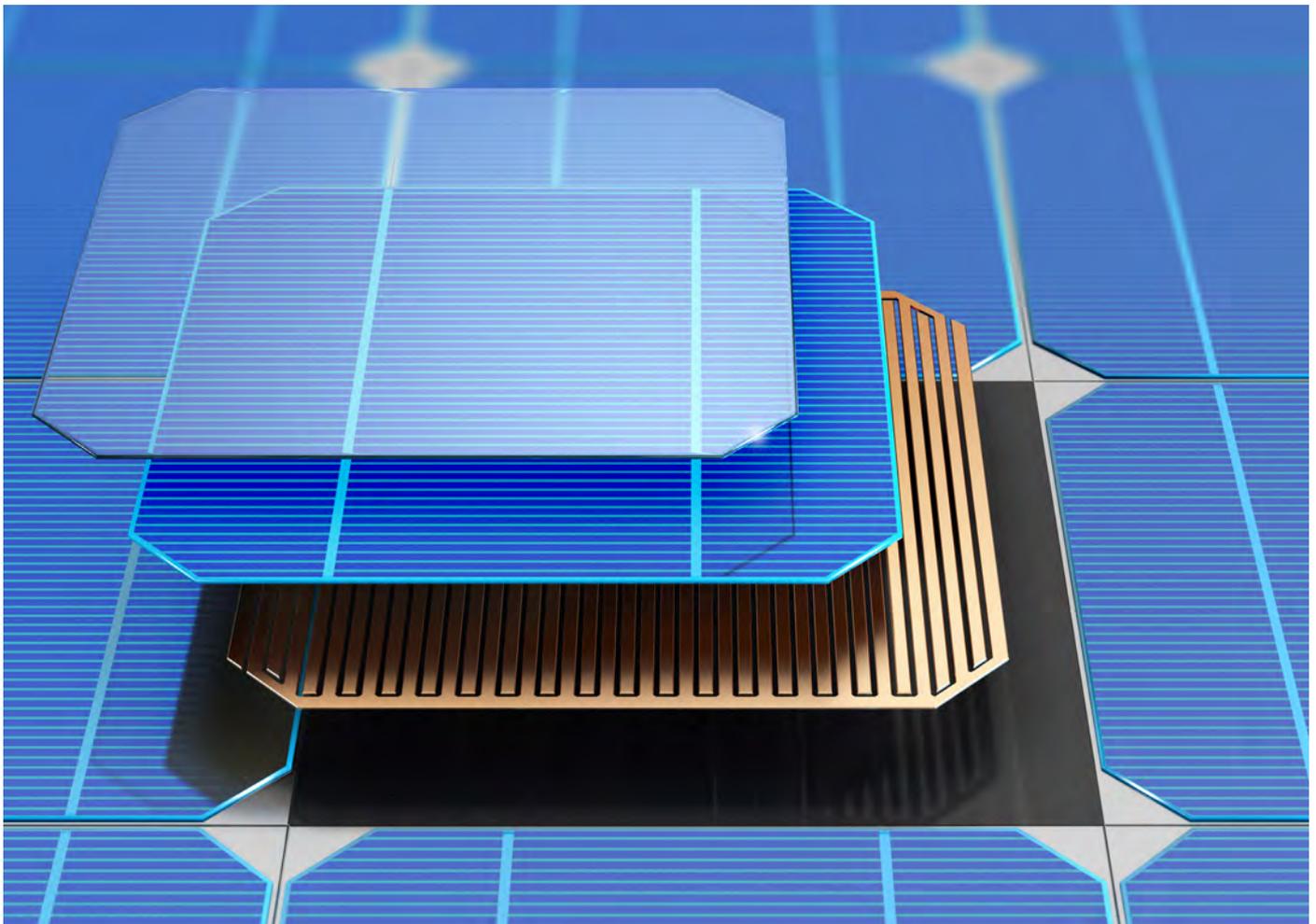
The report confirmed that the improvement in device efficiency was due to inhibition of nonradiative recombination of perovskite materials through photoluminescence spectroscopy - a contactless and non-destructive method of probing the electronic structure of materials - and time-related single-photon calculation techniques.

Kwanghee Lee, the lead researcher, said that the research suggested a new principle that can resolve defects inside materials with a zwitterion molecule.

"This is expected to be applicable not only to the solar cell field but also to various semiconductor devices like light-emitting diodes, transistors, optical sensors using mixed organic and inorganic perovskites."

In October 2020, a research team from the Australian Research Council Center of Excellence in Exciton Science claimed that they had developed a process that can help enhance perovskite cells' commercial use.

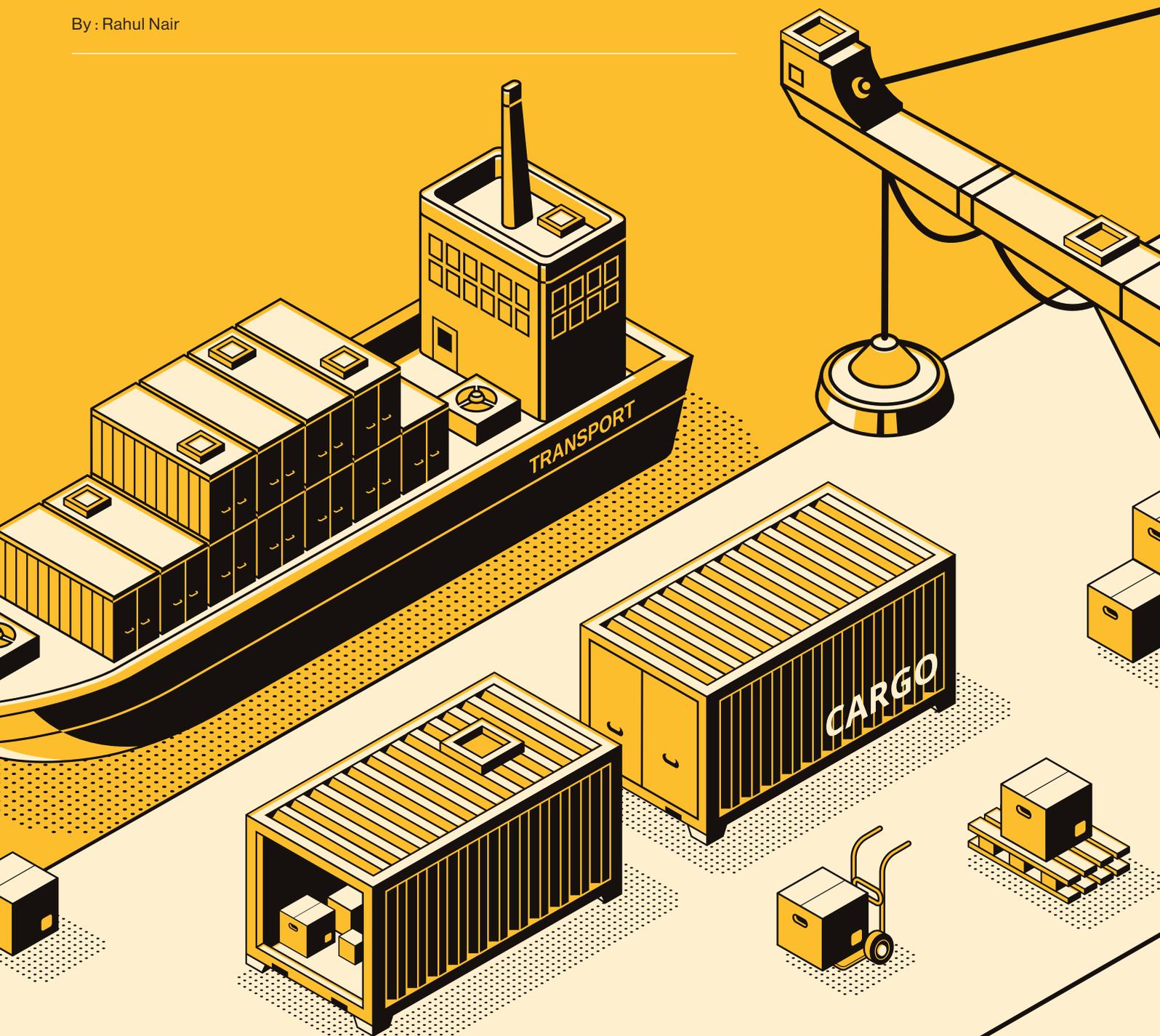
Mercom had earlier reported that a research team from the Iowa State University came up with a technique that made perovskite solar cell material more stable at higher temperatures. 



Countervailing Duty Imposed on Solar Glass Imports from Malaysia

The Ministry of Finance has accepted DGTR's recommendation to impose a countervailing duty on tempered glass imported from Malaysia

By : Rahul Nair



The Ministry of Finance has notified the levy of a countervailing duty on the cost, insurance, and freight (CIF) value on the imports of textured and tempered (whether coated or uncoated) glass from Malaysia.

The countervailing duty imposed under this notification would be applicable for five years (unless revoked) from the date of publication in the Official Gazette and would be payable in Indian currency.

In December 2020, the Directorate General of Trade Remedies (DGTR) had recommended that it would levy countervailing duty on tempered glass from Malaysia to mitigate the benefits enjoyed by producers of the glass in Malaysia.

Indian solar glass manufacturer Gujarat Borosil Limited had petitioned the DGTR to impose a countervailing duty on imports of textured toughened (tempered) glass from Malaysia. Borosil happens to be the sole manufacturer of

Tempered glass manufacturers in Malaysia are subsidized

solar glass in India.

Borosil had said that the producers of tempered glass in Malaysia had benefitted from subsidies provided at various levels by the government of Malaysia and other public bodies. The subsidies comprised both direct and potential transfers of funds or liabilities.

The latest notification states that the duty is applicable if:

- The tempered glass has been exported to India from Malaysia at subsidized prices
- The domestic industry has suffered material injury due to the subsidization of tempered glass
- The material injury has been caused by the subsidized imports of the tempered glass originating in or exported from Malaysia.

The exchange rate applicable for the calculation of such countervailing duty would be the rate specified in the Government of India’s notification.

The countervailing duty will be applicable as follows:

In August 2020, DGTR had published a list of parties interested in its anti-subsidy investigation concerning the import of solar glass from Malaysia. Eight parties expressed their interest in the investigation.

Xinyi Solar (Malaysia) submitted an exporter questionnaire response, and the Embassy of Malaysia offered a government response. Waaree Energies, Isolation Energy, Patanjali Renewable Energy, and Goldi Solar Private Limited had also responded to importer questionnaires. 

Countervailing Duty Imposed on Import of Tempered Glass (Coated or Uncoated) From Malaysia

Description of Group	Country of Origin	Country of Export	Producer	Duty Amount as of CIF value (%)
Textured Tempered Glass whether Coated or Uncoated	Malaysia	Malaysia	Xinyi Solar (Malaysia) Sdn. Bhd.	9.71
	Any Country Other than Malaysia	Any Country Other than Malaysia	Xinyi Solar (Malaysia) Sdn. Bhd.	10.14
	Any Country Other than Malaysia	Any Country Other than Malaysia	Any other	10.14

Source: DGTR

Mercom India Research





Green Power Tariff for Power Consumers in Maharashtra

The Maharashtra regulator has approved a green power tariff of ₹0.66/kWh for consumers opting for 100% renewable energy

By : Rakesh Ranjan Parashar



The Maharashtra Electricity Regulatory Commission (MERC) has, in a recent order, allowed a 'Green Power Tariff' of ₹0.66 (-\$0.009)/kWh to be levied on consumers opting for 100% green energy.

The Commission noted that all consumers, including those in the extra high voltage, high voltage, and low voltage categories, will be eligible to opt for 100% renewable power on the payment of the Green Power Tariff.

Tata Power Company-Distribution (TPC-D) had filed a petition seeking approval for the Green Power Tariff for consumers meeting their requirements through 100% renewable energy.

Background

In its submission, TPC-D said:

- Green Power Tariff being voluntary would give a choice to the consumers to opt for green energy.
- The extra charges for the procurement of renewable energy being charged from the specific consumers would not increase the cost borne by other consumers.
- This would also reduce the hesitation on the part of the distribution companies (DISCOMs) going for the high cost of power purchase from renewable sources, as it will not affect the general tariff.

Considering the methodology adopted by the Karnataka Electricity

Regulatory Commission (KERC), TPC-D computed the Green Power Tariff to be paid by the consumers at ₹0.56 (-\$0.007)/kWh.

In its submission, TPC-D said that

The green power tariff is voluntary for consumers opting to go green

Computation of Green Power Tariff

Total	RE power procurement for multi year tariff period					Non-RE power procurement (only variable) for multi year tariff period					Difference between RE and Non-RE power	
	Million Units (MU)	₹ million	~\$ million	₹/kWh	~\$/kWh	Million Units (MU)	₹ million	~\$ million	₹/kWh	~\$/kWh	₹/kWh	~\$/kWh
Maharashtra State Electricity Distribution Company Limited (MSEDCL)	141,772	574,400	7,895	4.05	0.06	586,029	1,464,120	20,124	2.50	0.03	1.55	0.02
Adani Electricity Mumbai Limited - Distribution	13,295	46,910	645	3.53	0.05	38,206	153,670	2,112	4.02	0.06	-0.49	-0.01
Brihanmumbai Electric Supply and Transport Undertaking	2,949	9,400	129	3.19	0.04	22,534	79,380	1,091	3.58	0.05	-0.34	0.00
Tata Power Company Limited - Distribution	3,927	14,910	205	3.80	0.05	22,377	80,690	1,109	3.61	0.05	0.19	0.00
MindSPACE Business Parks Pvt Ltd.	58.00	170.00	2	2.88	0.04	348.00	1,610	22	4.19	0.06	-1.31	-0.02
Ghodawat Energy Pvt Ltd.	41.00	120.00	2	2.88	0.04	248.00	1,010	14	4.08	0.06	-1.20	-0.02
KRC Infrastructure and Projects Pvt Ltd	35.00	100.00	1	2.89	0.04	190.00	760	10	4.02	0.06	-1.14	-0.02
Total	162,077	646,000	8,879	3.99	0.05	669,968	1,781,250	24,482	2.66	0.04	1.33	0.02

Source: MERC

Mercom India Research

the methodology adopted by it was similar to the one approved by KERC. It insisted that there should be a standard methodology for calculating the Green Power Tariff, and the standard procedure should be followed by all the DISCOMs.

TPC-D said that green power would be supplied to the consumers from the TPC-D's available renewable sources portfolio.

The DISCOM would have to arrange for additional renewable energy only if the renewable power requirement is more than the existing tied-up renewable power capacity. With the existing tied-up capacity being used for renewable purchase obligation (RPO) compliance, it would be appropriate to give the same treatment to the

additional renewable energy purchased for consumers opting for 100% renewable power consumption.

Commission's Analysis

The Commission noted that TPC-D was trying to address consumers' concerns who wish to source all their power requirements from renewable energy only.

It said that TPC-D's proposal would help increase awareness amongst the consumers about the use of renewable energy.

The state regulator observed that computing the cost of Green Power Tariff based on the average cost of renewable energy sources was the correct approach.

Considering the difficulties in

stipulating DISCOM-wise Green Power Tariff, the Commission ruled that the tariff would be uniform for all DISCOMs in the state.

The Commission arrived at a figure of ₹1.33 (-\$0.018)/kWh to be considered as the Green Power Tariff. The Commission decided to levy only 50% of the tariff determined, which is ₹0.66 (-\$0.009)/kWh.

TPC-D's contention that it had to maintain a separate cost allocation for the consumers could not be termed as the primary function of a DISCOM. Therefore, the revenue from the green tariff will be part of the regular annual recurring revenue, the Commission said.

The Commission said that it had set out an increasing trajectory to fulfill RPO compliance by the obligated entities. Complying with the same necessitates DISCOMs to tie up with various renewable sources. The DISCOMs would require an additional purchase of renewable power corresponding to the increasing trajectory.

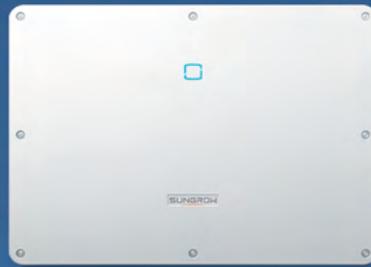
"Given this, if the consumer is not an obligated entity under RPO Regulations, it would be appropriate to count that energy towards RPO fulfillment of the DISCOM which will reduce the additional cost of the utility for purchasing the same and ultimately benefit its consumers" the Commission said. ®



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No Net Metering Facility for Open Access Consumers in Haryana

A rooftop solar system's maximum rated capacity under net metering should not exceed 10 kW and 2 MW under gross metering

By : Rakesh Ranjan Parashar





Open access solar consumers will not have the net metering facility in Haryana, according to the regulations for net and gross metering proposed by the Haryana Electricity Regulatory Commission (HERC).

The draft 'Rooftop Solar Grid-Connected Systems Based on Net Metering and Gross Metering Regulations 2021' says, "The facility of net metering shall not be available to Open Access consumers."

The absence of provisions relating to gross metering in the existing regulations necessitated the revision.

A discussion paper has been prepared about the revision of regulations. Stakeholders had time until April 15, 2021, to submit their suggestions. A public hearing will be held on April 22. The Commission will give final shape to

the regulations based on the feedback received.

According to the proposed regulations, a rooftop solar system's maximum rated capacity, to be installed under net metering, should not exceed 10 kW. Under gross metering, the eligible consumer can install the rooftop solar system up to a maximum rated capacity of 2 MW.

The draft is in line with the Electricity (Rights of Consumers) Rules, 2020, which mandates net metering for loads to 10 kW and gross metering for loads greater than 10 kW.

These regulations will apply to all the distribution licensees and consumers of electricity in Haryana.

The rooftop solar system installed by an eligible consumer may be self-owned or third-party owned.

In case network augmentation

is required for low tension (LT) consumers, the distribution licensee will bear the cost of network upgradation and augmentation.

Maximum rooftop solar capacity allowed under gross metering is 2 MW

If network augmentation is required for high tension (HT) consumers, the cost of network upgradation and reinforcement will be shared equally





by the consumer and the distribution licensee.

The electricity generated from the third-party-owned solar systems based on net metering will be used to meet the eligible consumer's internal electricity needs up to the capacity allowed. Under gross metering, the generation will be fed into the grid at the interconnection point.

The solar meter (a unidirectional meter) must be installed as an integral part of the net metering or gross metering system.

Under net metering, the electricity generated from a rooftop solar system will be capped at 90% of the consumer's electricity consumption at the end of the settlement period, which will be the relevant financial year. In case the solar system is connected to the grid, the 90% capping will be on the electricity consumption from the date of connection to the end of the financial year. The carryforward of excess energy generation will be allowed from one billing cycle to the next up to the end

of the same financial year. There will be no carry forward of excess energy to the next financial year.

In case the electricity generation by the rooftop solar system exceeds the electricity consumed during the billing period, the excess power generated will be carried forward to the next billing period.

In case the electricity supplied by the distribution licensee during any billing period exceeds the electricity fed into the grid, the distribution licensee will raise an invoice for the net electricity consumption after taking into account any electricity credit balance remaining from the previous billing periods.

Under gross metering, the licensee will undertake energy accounting and settlement with either the consumer or the third-party.

The energy accounting and settlement procedure for consumers or third-party owners installing and operating rooftop solar system under the gross metering arrangement will be as per the following procedure:

- For each billing period, the licensee will show the quantum of electricity injected by the rooftop solar system installed at the eligible consumer's premises in the billing period.
 - The distribution licensee will reimburse the eligible consumer or the third-party owner for the quantum of injected electricity by the rooftop solar system during the billing period through 'Solar Injection Compensation.'
 - There will be no deemed generation charges payable to the rooftop system's eligible consumer or third-party owner.
 - The distribution licensee will be responsible for billing the electricity injected by the rooftop solar system into the distribution system.
- The applicant should install the rooftop solar system within 180 days from the letter of award. The duration of 180 days is the maximum permissible time for the applicant to install rooftop solar until the distribution licensee provides an extension. ☺

Module Tender Under PLI Program Coming Soon

The much-awaited tender under the Production Linked Incentive program is expected to be announced soon, followed by the auction that will pick winners based on efficiency, the extent of integration, and plant size

By : Rahul Nair

The government's approval for the Production Linked Incentive (PLI) program under the 'National Program on High-Efficiency Solar PV (Photovoltaic) Modules' has been widely welcomed by the solar industry.

The PLI program aims to achieve gigawatt-scale manufacturing capacity with a budget of ₹45 billion (-\$605 million).

Solar PV manufacturers will be selected through a transparent, competitive bidding process. The incentive will be disbursed for five years after the solar PV manufacturing plants are commissioned, followed by the sales of high-efficiency solar PV modules.

Manufacturers will be rewarded for higher efficiencies of solar PV modules and sourcing their material from the domestic market. The PLI amount will increase with increased module efficiency and increased local value addition.

The tender expected by April-end

Mercom spoke with MNRE Joint Secretary Amitesh Kumar Sinha, who said that due to rising Covid cases and the vaccination drive, some of the senior staff members are currently

unavailable at work, "Therefore we could not push the file to get the MNRE Minister R.K.Singh's approval, else we would have published the notice inviting tender. By the end of this month, we should issue the guidelines and publish the tender. Our target was to wind up the bidding process by June 30, 2021, and we will try and adhere to it."

According to Sinha, three parameters will determine the winning bidders. First

PLI amount will increase with increased module efficiency

is the qualifying parameter of minimum module efficiency. It is followed by two marking systems. First is the extent of integration. Those who put up polysilicon module manufacturing units will get maximum marks. The capacity of the plant is the second criterion. If the bidder proposes to build a plant of 4 GW

or above, then they will get full marks.

He said, "The minimum capacity for the bid is 1 GW, and the minimum extent of integration is for cells and modules, which means the manufacturers must submit bids to produce 1 GW each of cells and modules. Based on the marking system, bidders will be ranked with the highest marks taking the top position, followed by the second-highest marks and so on, until the entire ₹45 billion (-\$595.7 million) outlay is exhausted."

He further added that once the bidder is selected, they will have to present a trajectory of PLI, which they will claim for the next five years, "There is no cap on PLI. In case two bidders score equal marks, the bidder quoting a lower PLI will be given preference."

Big Solar Manufacturers Welcome PLI

According to Animesh A. Damani, Managing Partner, Artha Energy Resources, the PLI program and the already announced BCD on solar modules will spur the manufacturing sector in India.

However, he wanted the government to support the domestic manufacture of other materials such as glass, EVA, and backsheets required for solar PV





modules.

“While the fine print is yet to be assessed, we hope that measures are being put in place to ensure price parity and easy accessibility to cater to the booming demand in the C&I segment. Moreover, as Indian PV manufacturers currently only meet 10-20% of annual domestic demand, the pace of kick-starting domestic manufacturing is of paramount importance. We look forward to a swift and effective roll-out of the scheme,” Damani said.

Smaller Players May Get Squeezed Out

According to Avinash Hiranandani, CEO & Managing Director of Renewsys India, if bigger players announce that they will manufacture everything, including cells, wafers, ingots, and modules, then a huge chunk of the PLI pie will go to them, leaving little for the rest.

He said, “The outlay declared by the government is not enough to boost every domestic player’s production. We expect several players to apply for the program and cannot say how many will get funding. Bigger players will enjoy a huge pricing advantage, especially if they get funding under PLI. However, very small players - the MSMEs (Micro, Small, and Medium Enterprises) - will not be considered for the outlay as

the production capacities for cells and modules are not on the GW scale. India has around 170 module manufacturers, of which 120 are in the MSME category.”

Similar concerns were raised by Akshay Mittal, Director, Blue Bird Solar, who said that only those companies that are eligible and participate in the tender would get the outlay. He said, “I don’t think this outlay will provide any benefit for the MSMEs as they will not be eligible to participate due to production capacity limitations. Of the 100% manufacturers, 80-90% fall under

Three parameters will determine the winning bidders

the MSME category, and they are not covered under this scheme.

Hiranandani told Mercom that Renewsys is waiting for the fine print of the notification. “If we feel that there is a definite benefit for us, we will apply for 1 GW each of cells and modules under the PLI program.”

According to Hiranandani, the PLI program also covers wafers and ingots, and if the manufacturer is keen on backward integration, then they have

the scope to get more funding under the program. “The program encourages manufacturing of the whole value system in India. Whether it is viable to manufacture ingots, wafers, polysilicon, etc., is hard to tell,” he said.

He felt that it was time to look at polysilicon as raw material, like crude oil. “India imports its crude oil from the world but refines it on our shores. Similarly, we need to look at polysilicon as a crude commodity that will be refined for end consumers here on Indian shores.”

According to Mittal, PLI cannot counter India’s dependence on Chinese imports “since there is no one in India manufacturing wafers, ingots, cells, etc. Even now, everyone is importing non-DCR cells. Only those companies with deep pockets can undertake vertical integration, like Renewsys and Adani. There is speculation that the program also allows foreign players to set up factories in India, and the Chinese will try to enter the market.

Meanwhile, Hiranandani expects the cost of raw materials imported from China to go up. “Even China witnesses policy gaps. For example, under the Chinese government’s subsidy policy, a subsidy ceases for some time. During the gap phase, Chinese companies increase production and dump their products overseas. I do not think they will be able

to dictate the rates in India unless they start levying export duties in China. The supply-demand gap will play its role, and China may be tempted to increase rates in India, but India is already a huge market for them. Market dynamics will dictate the pricing,” he said.

Chinese Suppliers Expect Stiff Competition

According to Pradeep Sangwan, Country Head- Econess Energy, most Chinese manufacturers will not opt for joint ventures with their Indian counterparts. “Instead, they may go for Original Equipment Manufacturing (OEM). In 2012-13 demand for DCR (Domestic Content Requirement) went up, Chinese manufacturers tied up with OEMs like Websol.”

“In the manufacturing segment, the top 5-6 Chinese players will survive, while smaller tier-2 and tier-1 companies like Econoess Energy will find it difficult to raise their market share in India from 2022 because the market will go after Indian modules made from Chinese cells. Tier-2 companies’ main market is 335 W modules which they supply to large developers at low rates.”

The PLI program also covers wafers and ingots

According to Sangwan, once the BCD kicks in, the market will shift towards Indian manufacturers. “If Indian manufacturers push the threshold above 440 W, then it will lead to stiff competition with the Chinese manufacturers, especially after BCD. However, this is also speculative as clarity is based on wafer and cell prices, since all raw materials come from China,” he said.

According to an executive at LONGi Solar, the company has been exploring manufacturing options in India for almost 3-4 years.

However, the source added, “We saw new challenges coming up every year. With the implementation of BCD, it is clear that imports will not be feasible for Chinese manufacturers anymore. A couple of years ago, we held an internal

meeting, and we even hired a few consultants to work on this project.”

He further stated that LONGi is keen on carrying out manufacturing in India, “However, we will decide whether to enter through a joint venture or not by June this year.”

Manik Garg, Director, Business Development, Saatvik Green, felt that PLI by itself would not be of help in competing with imports from China. “BCD will do that,” he said.

He said that there was no clarity on how the PLI would be disbursed across the sector. “There is no policy, only a notification reflecting Cabinet approval,” he said, adding that his company would apply for the incentive.

In November last year, the government had said that it would allocate ₹1.45 trillion (-\$19.61 billion) under the PLI program to ten critical sectors over the next five years. Some of these sectors include high-efficiency solar PV modules, advanced chemistry cell batteries, and automobiles and auto components. The government will allocate ₹796.42 billion (-\$10.75 billion) for these three sectors in the next five years. ☺

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

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

Tiger Pro, the best module choice in 2021

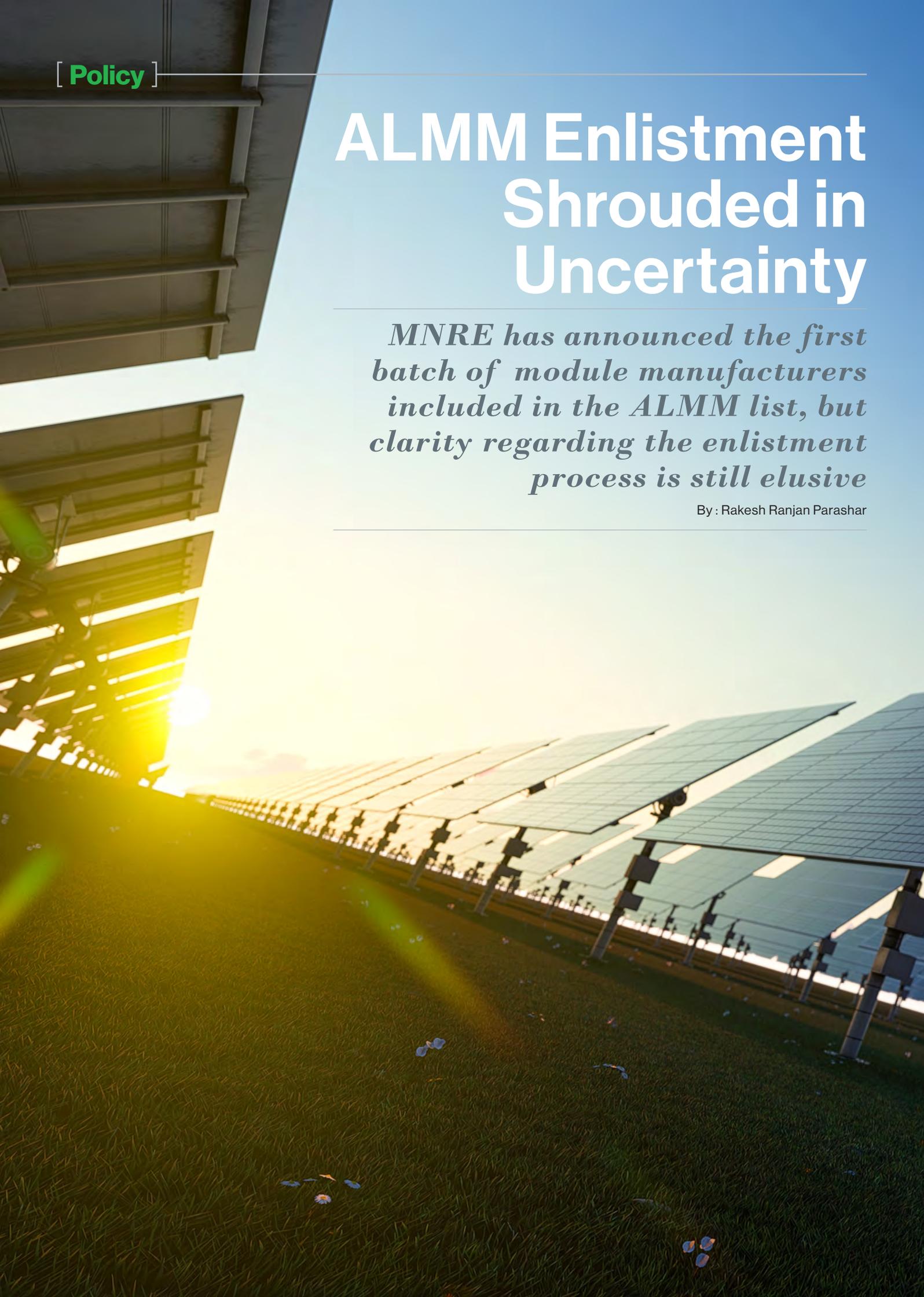
JinkoSolar Tiger Pro module can **optimize the BOS cost** with its advantages on mechanical load performance. Thanks to its **high-power output** and **mature global market acceptance**, Tiger Pro modules are becoming the best module choice in 2021.

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ALMM Enlistment Shrouded in Uncertainty

MNRE has announced the first batch of module manufacturers included in the ALMM list, but clarity regarding the enlistment process is still elusive

By : Rakesh Ranjan Parashar



In an initiative to reduce India's dependence on solar imports and self-reliance, the Ministry of New and Renewable Energy (MNRE), as early as 2018, announced compulsory registration of solar module manufacturers under the Approved List of Models and Manufacturers (ALMM).

The ALMM lists eligible models and manufacturers of solar cells and modules complying with the BIS (Bureau of Indian Standards) certification. Enlisting in ALMM is mandatory for manufacturers supplying to government-owned solar projects. The implementation deadline of ALMM has seen several extensions, and on March 10 this year, the MNRE issued the first batch of manufacturers under the ALMM.

According to MNRE, developers have

to source modules from this list for the bids that they participate in 30 days after the list is published, which is April 10, 2021.

The manufacturers whose modules have been enlisted under the ALMM order include Mundra Solar, Vikram Solar, Bharat Electronics, Emmvee Photovoltaic Power, and ORB Energy. There are no foreign manufacturers on the list so far, putting the developers in limbo.

More Clarity Required

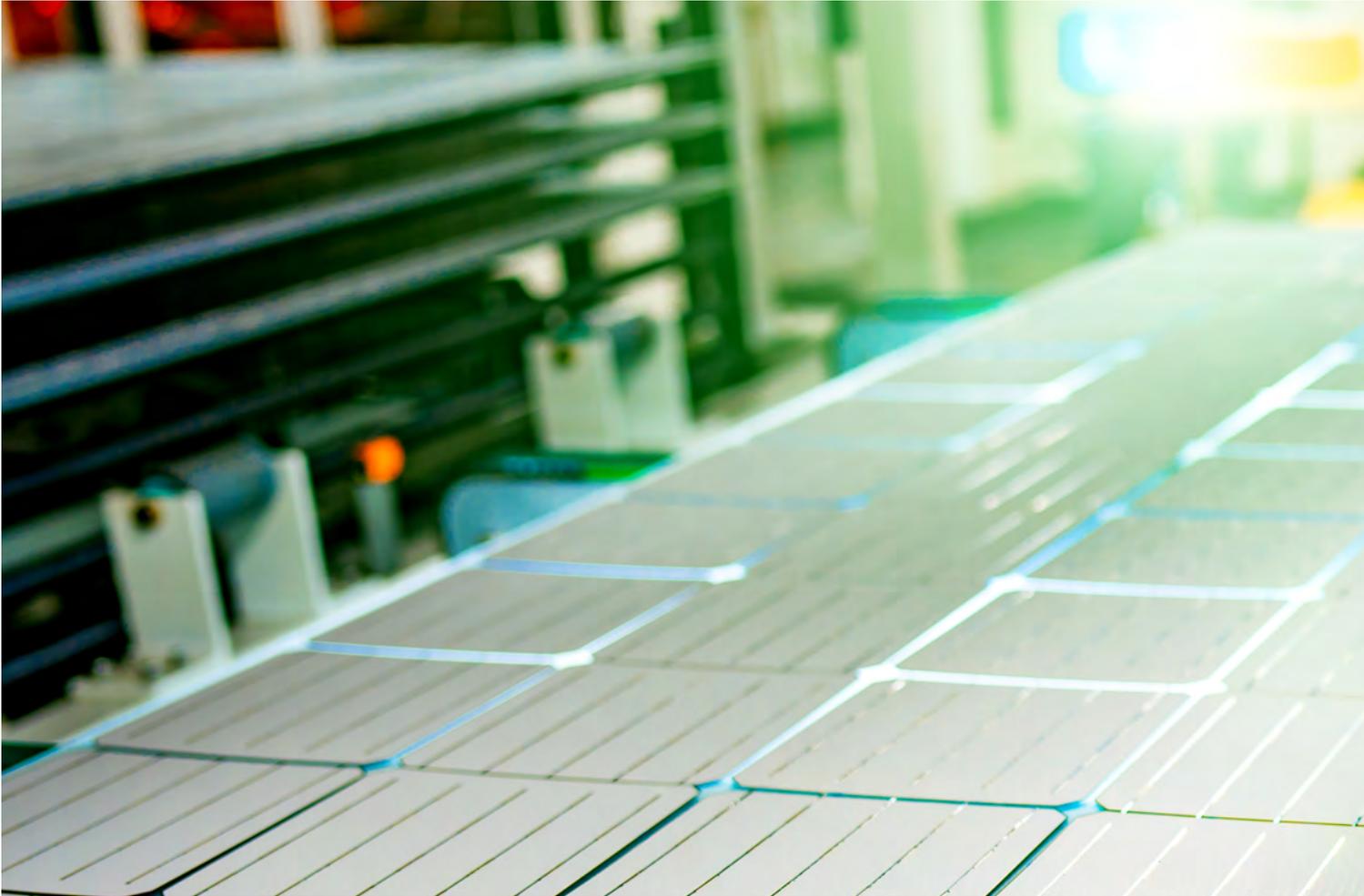
The industry feels there is a need to speed up the enlistment process as it affects future projects. Developers will be impacted the most. With a supply and demand gap in the market, module prices are bound to go up, negatively impacting project costs.

Speaking to Mercom, an executive

at a leading Chinese module supplier, said, "The situation is really bad. What is the idea behind having such a system in place? There is no clarity about the whole process. The government has to clear the air. We were the first to submit the fee of ₹700 million (-\$9.34 million) for enlistment, but we have not received any government communication. We haven't even received an acknowledgment."

With just a few module manufacturers enlisted so far, future projects face uncertainty when it comes to supplies, a nightmare for project developers. "The order has taken effect from April 10, but we are not sure how things will pan out in the future," he commented.

Referring to the Basic Customs Duty (BCD) on cells and modules that will come into force next year, he said,



“The government says it is good for the domestic manufacturing sector, but that will make things difficult for us.”

The executive said that his company wants to withdraw from the ALMM enlistment process. “I want my money back as I don’t want to register for the enlistment process. We have 400W modules in India, which are outdated.”

He said that as of now, no big projects had been executed using modules sourced from Indian manufacturers.

“Most of the Chinese suppliers have paid for registration, but there’s still no clarity. The government is just putting stumbling blocks. The international flights have not started, so things are going to take time.” he said.

Covid-19 Crisis Adding to Delays

The ALMM enlistment process is long, with companies having to share their financial details, capacity, and purchase details of raw materials, among others. The Chinese players believe that this causes an unnecessary delay. While the Covid-19 induced travel ban continues to

The implementation deadline of ALMM has seen several extensions

be in force, things are only going to take longer, and with the second wave of the pandemic in full force in India, there is further uncertainty.

Commenting on the long-drawn-out inspection process, Mohit Shrimal, a senior executive with LONGi Solar, said, “We have registered for ALMM, and they have to go to our factory (in China) and do the inspection. Unless the travel ban is lifted, they cannot do a factory visit. The inspection process will take

time until the situation on the ground improves. The government has not reached out to any foreign suppliers as yet, and I think it is going to take some time.”

The government feels that the ALMM order is a positive move for domestic solar modules and cell manufacturers. While the absence of foreign names on the list will help the local manufacturers, stakeholders believe that more clarity is required to implement the order and make it a fair deal for all manufacturers.

Speaking at the recent Mercom India Solar Summit 2021, Amitesh Kumar Sinha, Joint Secretary, MNRE, said that it would take another year or year and a half to enlist foreign manufacturers, given the pandemic situation and travel bans.

“We will keep adding manufacturers to the list. I see India as a future manufacturing hub, and in the next two to three years, we will try our best to become self-reliant in the module manufacturing space,” he said.



Developers Worried

Many developers believe that the implementation of ALMM will deter foreign players from supplying to the Indian market. With the domestic market still far away from being self-reliant, project developers are staring at a supply bottleneck in the foreseeable future.

Putting things in perspective, Apoorva Ekbote, Senior Manager with Vector Green, said, “It will certainly affect the project developers. Recently, in the hybrid tender published by SECI, they have specified that modules from manufacturers in the ALMM list will only be allowed. This is going to be the norm and will certainly affect our participation in future bids. In India, the maximum module output is limited to 400W, and it is only available with a few manufacturers, and only a handful are offering half-cut modules. The project configuration will change when we opt for Indian module manufacturers. Even if we are going to bid, we will have to network with Indian manufacturers to

As of now, no big projects have been executed using modules from Indian manufacturers

procure modules for large projects.”

“Many questions need to be answered. In India, you only get modules of 350W to 360W output, and this will increase the balance of system (BoS) cost,” he said.

ALMM aims to have a quality benchmark for modules and prevent low-quality Chinese manufacturers from dumping their products in India. “The intent is right, but MNRE has to visit the factories, and we are also getting inputs from manufacturers that they have paid the registration fee, but there has been no clarity.”

“MNRE should reassess the situation and give a window to developers. It will also affect the capacity addition targets, and any capacity addition for

Indian module manufacturers will take some time. Right now, it’s a complicated scenario for all the developers,” Ekbote added.

While the government’s initiative to ensure quality products for the Indian solar industry is commendable, it would do more harm than good to the industry without quick implementation.

“As it stands right now, lack of clarity about ALMM means supply uncertainty, limited module choices, no access to newer technologies, and cost increases for developers of large-scale projects. At a minimum, the industry should have clarity so developers can plan their procurement strategies and adjust their bid prices accordingly,” said Raj Prabhu, CEO of Mercom Capital Group. 



Basic Customs Duty Not Factored in GUVNL Auction

Tariffs quoted in the recent GUVNL auction did not increase significantly to reflect the 40% basic customs duty announcement, which will push prices of modules up

By : Rahul Nair





he Indian Government's endeavor to encourage domestic manufacturing of solar modules and cells led to the imposition of BCD (Basic Customs Duty) on solar modules with HSN Code 85414012 BCD (40% BCD), and solar cells with HSN Code 85414011 (25% BCD), from April 1, 2022.

With the new order in, there is an expectation that project costs will skyrocket.

In January 2021, the Gujarat Urja Vikas Nigam Limited (GUVNL) had floated a request for selection (RfS) to purchase power from 500 MW of grid-connected solar projects to be set up in the state in Phase XII.

The tender had received a good response and was oversubscribed. Despite being the first auction after the BCD announcement, there was no significant increase in the quoted tariffs.

Spring Ujjvala Energy, NTPC Renewable Energy, Coal India, and TP

Saurya, a Tata Power subsidiary, were declared winners in the auction to purchase power from 500 MW grid-connected solar projects.

Spring Ujjvala Energy won a capacity of 120 MW quoting ₹2.20 (-\$0.030)/kWh. NTPC Renewable Energy, Coal India, and TP Saurya won 150 MW, 100 MW, and 60 MW, respectively, quoting

Lowest quoted tariff was up just 11% from the previous auction

₹2.20 (-\$0.030)/kWh. SJVN had quoted ₹2.21 (-\$0.030)/kWh for 100 MW but won 70 MW capacity under the bucket filling method.

Since this was the first auction after

the announcement of BCD, bidders were forewarned to take the duty into account while quoting tariffs in all future bids where the last date of bid submission fell after the notification dated March 9, 2021.

The lowest quoted tariff was up just 11% compared to GUVNL's previous auction for 500 MW of solar projects, which set a new record for the lowest tariff with ₹1.99 (-\$0.0270)/kWh in the auction.

Mercom spoke with stakeholders to understand the implications of such low bids winning tenders, especially with the imposition of BCD.

One of the winning bidders, who spoke to Mercom, said that GUVNL is particular about regulatory approvals before signing the power purchase agreement. "As a bidder, we are assured that there is no uncertainty regarding the project's future. So, a developer can take a call on importing modules before the BCD imposition. Some parties



may import all of it in one go before the duty kicks in. Others may take a 50-50 approach towards importing from China.”

The developer said that the GUVNL tender had enough window to factor in BCD, but future tenders won't allow bidders the same margin. “We expect everyone to get the modules before April 2022.”

According to the developer, who wished to remain anonymous, if the whole BCD is factored in, the tariff will be higher, at around ₹2.50 (-0.034)/kWh. “The biggest challenge with SECI (Solar Energy Corporation of India) auctions is that the tariff approval is delayed from CERC (Central Electricity Regulatory Commission), and so is the power purchase agreement (PPA). Lenders don't invest unless the PPA is approved. If we want to import all the modules, we will have to open all letters of credit (LCs). LCs can't come from equity loans, and 60% of the project cost needs lenders' money. For the lenders, these regulatory approvals are significant.”

Another successful bidder in the GUVNL tender said that BCD was not factored in when quoting the tariff. According to the developer, the prices had gone up, and many developers

had burnt their fingers. “There is a lot of uncertainty in the market regarding pricing. There was a lot of confidence in the market earlier, but now there is talk of variation and rising price trends. The

If the 40% BCD was factored in, the tariff could have gone up as high as ₹2.50/kWh

price is rising because of BCD.”

He said, “In the GUVNL tender, the BCD was not directly factored in. However, the BCD has impacted the market and pushed the module prices upwards. The supply chain will push prices whether developers are sourcing from India or China. We have spoken to several module manufacturers. No one feels confident enough to make any predictions about the market at this point.”

According to the developer, the industry was earlier expecting a fall in module prices. “Instead, we see an

upward trend. This can be attributed to the shortage of raw materials as well. There is also a supply chain disruption which can also be attributed to Covid-19. However, I feel there is a possibility of the Chinese rigging the prices which can lead to costs going up.”

The developer claims that major players like Tata Power and L&T face issues since the big Chinese module manufacturers broke their contracts, as BCD will affect their future consignments.

“The Chinese manufacturers broke the contracts which quoted 17-19 cents, and now they are demanding 25-26 cents. The Chinese see more scope in earning profits in the present contracts than in the future contracts. India generates a huge demand for the Chinese suppliers, and with BCD implementation, the equation will change,” the developer said.

“However, the spike in module prices will not sustain for long, and by the second or third quarter, they will come down. For the market to be in a good zone, the prices should be arrived at using scientific methods that ensure the product's longevity in the market. Else, it will become a speculative market, which was the norm a few years ago,” the developer said. ☺

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Solar Auctions Surge 163% in Q1 2021

In the first quarter of the year, tenders for 10.6 GW of solar projects were announced, with over 7.8 GW auctioned in the country

By : Rakesh Ranjan Parashar

Government agencies announced tenders for 10.6 GW of solar power projects in the first quarter (Q1) of 2021, an increase of 27% compared to 8.3 GW in the previous quarter, according to Mercom India Research.

The numbers were, however, down by 23% compared to the same period last year.

The quarter witnessed over 7.8 GW of auctions, an increase of 163% compared

to 2.9 GW in the previous quarter. However, the figures were down by 32% compared to 11.4 GW of auctions during the same period last year.

The Indian Renewable Energy Development Agency (IREDA) accounted for 47.1% of all the tenders floated in Q1 2021.

Major Tenders in Q1 2021

In January, the Gujarat Urja Vikas Nigam Limited (GUVNL) floated a

request for selection to purchase power from 500 MW of grid-connected solar photovoltaic (PV) projects to be set up in the state in Phase XII.

Also, in January this year, IREDA floated a tender for the setting up of 5 GW of grid-connected solar power projects in India (Tranche III) under the Central Public Sector Undertaking (CPSU) program (Phase II).

In another tender, the Maharashtra State Power Generation Company



invited bids from solar power developers for setting up 250 MW of grid-connected solar photovoltaic projects at the Dondaicha Solar Park in Dhule, Maharashtra.

In February, NTPC invited bids to build 735 MW of grid-connected solar projects in three blocks of 245 MW each at the Nokh Solar Park in Rajasthan.

Later in March, the Solar Energy Corporation of India (SECI) invited bids to develop 1,785 MW of solar projects (Tranche IV) in Rajasthan.

Also, in March, GUVNL reissued tenders to purchase 800 MW of solar power from grid-connected solar projects at the Dholera and Raghnesda solar parks in the state. The first tender was for 700 MW of solar projects (Phase IX-R) to be set up at the 1 GW Dholera solar park. The second tender was for developing 100 MW of solar projects (Phase X-R) at the Raghnesda Solar Park.

Auctions in Q1 2021

In January, the renewable energy arm of Larsen and Toubro (L&T) won the engineering, procurement, and construction (EPC) contract for the

200 MW project in Gujarat through an e-reverse auction conducted by NTPC.

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

In February, Andhra’s solar auction for 6.4 GW of solar projects spread over

IREDA
accounted for 47.1% of all the tenders floated in the quarter

ten locations resulted in tariffs ranging between ₹2.47 (-\$0.033)/kWh and ₹2.58 (-\$0.035)/kWh. It was the lowest tariff in a solar auction in the state to date. The previous low tariff discovered in the state auction was ₹2.70 (-\$0.039)/kWh in 2018.

Later in the quarter, Torrent Power

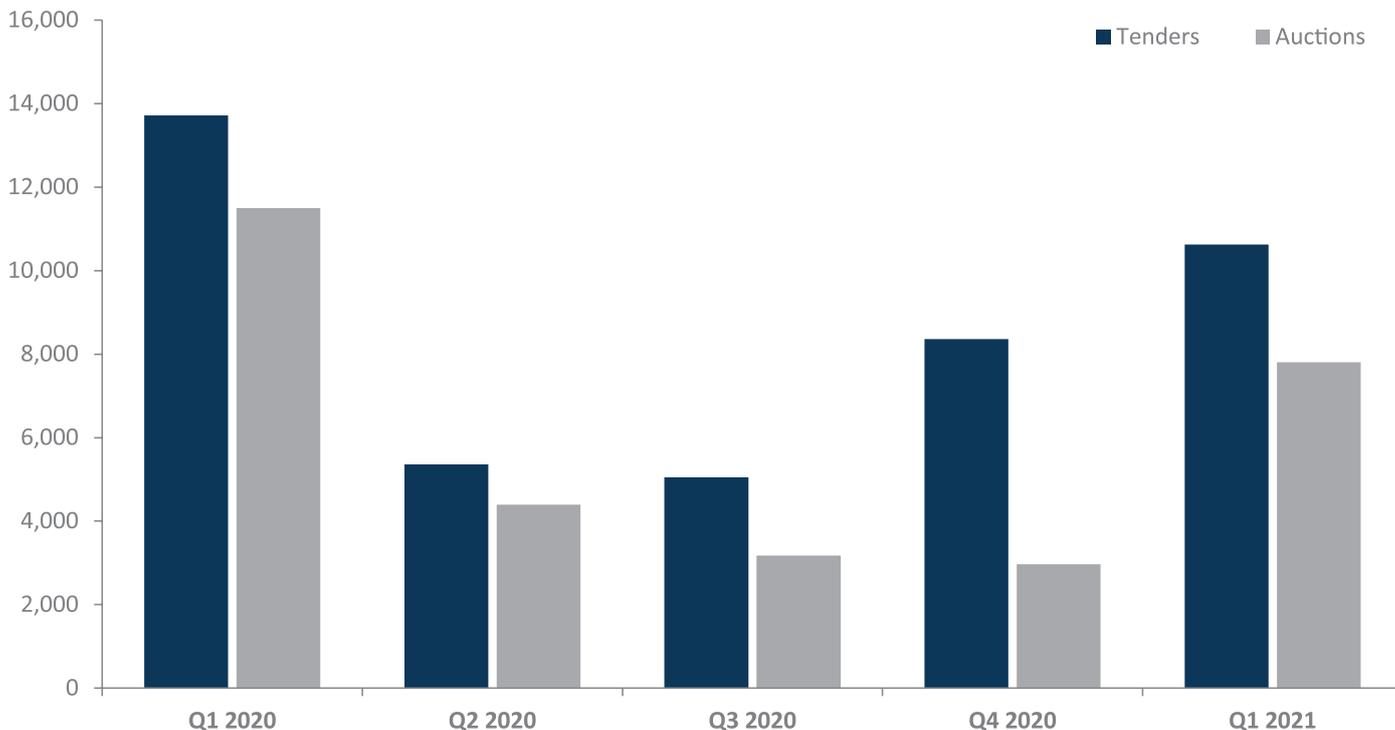
Generation and Adani Green Energy were declared winners in Torrent Power Limited’s auction to develop 300 MW of grid-connected solar projects in Gujarat. Adani Green and Torrent Power quoted a tariff of ₹2.22 (-\$0.03)/kWh and were awarded capacities of 150 MW each.

In another auction, Rising Sun Energy, a New Delhi-based independent power producer, won 190 MW of solar projects quoting a tariff of ₹2.25 (-\$0.031)/kWh in NTPC Limited’s auction for 190 MW of grid-connected solar projects at Nokh Solar Park in Rajasthan.

Later in March, Sprng Ujjvala Energy, NTPC Renewable Energy, Coal India, and TP Saurya - a Tata Power subsidiary - were declared winners in the GUVNL’s auction to purchase power from 500 MW of grid-connected solar projects (Phase XII).

Sprng Ujjvala Energy won a capacity of 120 MW quoting ₹2.20 (-\$0.030)/kWh. NTPC Renewable Energy, Coal India, and TP Saurya won 150 MW, 100 MW, and 60 MW, respectively, quoting ₹2.20 (-\$0.030)/kWh. SJVN had quoted 100 MW at ₹2.21 (-\$0.030)/kWh and won 70 MW capacity under the bucket filling method. ☹

India Large Scale Solar Tenders and Auctions by Quarter (MW)



Source: Mercom India Research (Mar 2021)



Investors Need a Strong Operating Knowledge of the Indian Solar Market

Sumant Sinha, Chairman and Managing Director, ReNew Power, spoke to Mercom about his company's journey and shared his insights about the Indian solar industry

At the Fireside Chat session held on Day 1 of the Mercom India Solar Summit 2021, Sumant Sinha, Chairman, and Managing Director, ReNew Power, shared industry insights in a freewheeling conversation with Priya Sanjay, Managing Director, Mercom India.

Sinha recounted the journey of ReNew Power, which was set up in 2010, and spoke about how renewables will be the only source to meet the power needs

two decades from now.

What contributed to ReNew Power's growth during its initial days?

The early funding the firm received from Goldman Sachs gave it the initial impetus to dig its feet in the Indian renewable energy business ecosystem. Although it has been a roller-coaster ride for the firm, the overall trend is upward. The shift in the Indian regulatory market made the climate conducive for long-

term renewable energy independent power producers to set up shop in the country and expand their businesses.

How did ReNew Power become a sustainable venture?

Being cautious about raising capital ahead of time and not getting overleveraged as a company helped ReNew Power, which recently announced plans to go public through a merger via a special purpose acquisition company, in the long run.



At least from a financial standpoint, not being overleveraged and having a somewhat conservative management strategy covered the risks. Such an outlook helps in creating a sustainable business and keeps in mind the interests of all the stakeholders.

Other key factors that helped the firm stay afloat are enhancing capabilities and building an end-to-end project execution model instead of outsourcing everything. These measures help manage risks better.

Any words of advice for renewables businesses?

Businesses should remain disciplined, execute projects on time, and not get carried away. Delivering numbers as promised is crucial not just for a single project but for several projects on a long-term sustainable basis.

What is the secret sauce that goes into making a successful renewables company?

Being careful about the bids that a firm wins at the decided tariffs and navigating project execution hurdles such as land procurement and permit issues at the local level are important. Staying conservative and not putting too many financial risks onto a business that already has multiple operating risks are equally imperative.

Additionally, businesses should be driven by commonsensical decision-making capability to maintain a balance between being careful and taking risks. Businesses should also invest in development pipelines ahead of time and build domain knowledge.

What should the approach of investors eager to tap the Indian solar market be?

The sector is not too complicated when it comes to participating in auctions and bidding a low tariff. Investors should be cautious about land acquisition issues. The solar sector in India is not a high-margin business anymore. They should also come in with a strong operating knowledge of the Indian market before getting into the business.

Do you think the sector is receiving enough overseas investments?

I would say that a major share of the investment inflow into the Indian renewables market is from overseas. I would, in fact, like to urge the domestic capital investors and Indian banks to put in money in the sector.

How involved is the government in strengthening the Indian solar market?

It is vital that state governments work closely with the industry and reform their distribution utilities.

Utilities also need to invest in technology and upgrade their systems if they wish to go digital and deploy smart meters.

If you study the Union Budget 2021, you would see that the central government is bringing in amendments to the relevant laws to assist the sector. The state counterparts should come up with a matching response.

We also need a strong grid management and a coherent and strategic battery policy at the central level.

What is your take on the government's role in promoting domestic solar manufacturing?

I welcome the government's push for a domestic manufacturing ecosystem. I want to add here that the government should help make domestic manufacturing as competitive as possible to face Chinese competition.

How do you see the renewable energy sector growing?

I am hopeful that 20 years from now, renewable energy will be the only way to go and cover most of our energy needs. ☺

US Calls for Countervailing Duty on Indian Wind OEMs

Based on a one-year investigation, the U.S. Department of Commerce has preliminarily determined that countervailable subsidies are being given to manufacturers and exporters of wind towers from India.

By : Rahul Nair



The International Trade Administration (ITA), under the United States Department of Commerce, has recommended the imposition of countervailing duty (CVD) against wind energy equipment manufacturers from India and Malaysia.

The Department of Commerce has preliminarily determined that countervailable subsidies are being provided to producers and exporters of utility-scale wind towers from India. The department is conducting a probe,

Anti-dumping petitions on import of wind towers from India, Malaysia, and Spain are also filed

and the investigation covers the period between April 1, 2019, and March 31, 2020.

On September 30, 2020, the Department of Commerce received CVD petitions concerning imports of utility-scale wind towers from India and Malaysia, filed on behalf of the Wind Tower Trade Coalition, whose members are Arcosa Wind Towers and Broadwind Towers.

The petitions were accompanied by anti-dumping duty petitions concerning imports of wind towers from India,





The US Dept of Commerce Preliminarily Determines that the Following Estimated Countervailable Subsidy Rates Exist for Indian Companies

Company	Subsidy Rate (%)
Vestas Wind Technology India Private Limited	3.74%
Naiks Brass & Iron Works *	397.16%
Nordex India Pvt. *	397.16%
Prommada Hindustan *	397.16%
Suzlon Energy *	397.16%
Vinayaka Energy Tek *	397.16%
Wish Energy Solutions Pvt. Ltd. *	397.16%
Zeeco India Pvt. Ltd. *	397.16%
All Others	3.74%

* Rate based on adverse facts available

Source: ITA, The United States Department of Commerce

Mercom India Research

Malaysia, and Spain.

The coalition had alleged that India and Malaysia provide countervailable subsidies to producers of wind towers. The coalition argued that the imports of the towers are materially injuring, or threatening material injury to, the domestic industry producing wind towers in the United States.

According to the coalition, the industry’s ‘injured condition’ is

illustrated by a significant and increasing absolute and relative volume of subject imports; underselling and price depression or suppression; declining financial performance; declining production, U.S. shipments, and capacity utilization; negative impact on employment variables; and lost sales and revenues.

The Department of Commerce in November 2020 had assessed the

allegations and supporting evidence regarding material injury, the threat of material injury, causation, as well as negligibility, and have determined that these allegations are properly supported by adequate evidence and meet the statutory requirements for initiation.

The Department of Commerce has preliminarily determined that the following estimated countervailable subsidy rates exist for Indian exporters:

There have been other components that have seen new duties and the repeal of old ones in the renewables sector in the U.S.

In December last year, the U.S. said that it would impose preliminary duties of 120% on all silicon metal imports from Kazakhstan.

The United States Court of International Trade, in November 2020, repealed the exemption of imported bifacial solar panels from the imposition of safeguard duty. For the fifth time, the court addressed the withdrawal of the exclusion of imported bifacial solar modules from safeguard duty, which President Donald Trump had imposed in 2018 to protect the domestic solar industry. ¹⁰

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Ministry of Power Proposes Net Metering for Rooftop Solar up to 500 kW

The ministry's proposal follows concerns expressed by stakeholders that the net metering cap at 10 kW would make rooftop solar unviable for small players

By : Rahul Nair





The Ministry of Power (MoP) has issued a draft amendment to Electricity (Rights of Consumers) Rules, 2020, which allows net metering for rooftop solar systems of loads up to 500 kW or up to the sanctioned load, whichever is lower and net billing (gross metering) or net feed-in for above 500 kW.

The MoP said that stakeholders could send their comments to the ministry by April 30, 2021.

According to the draft amendment, for prosumers availing net-billing or net feed-in, the commissions may introduce time-of-the-day tariffs, incentivizing prosumers to install energy storage for later use or can be fed into the grid during peak hours.

In the case of net metering/net-billing or net feed-in, the distribution company may also install a solar energy meter to measure gross solar energy generated from the grid-interactive rooftop photovoltaic system renewable energy purchase obligation credit if any.

Time-of-the-day tariffs may be introduced to incentivize prosumers

In January this year, the MoP had assured stakeholders from the rooftop solar segment that the government would review its stance on gross metering for installations over 10 kW capacity. Representations received from stakeholders on the issue were being examined, after which the ministry would take a call, it had said.

The provision under the Electricity (Rights of Consumer) Rules 2020, issued in December 2020, mandated net metering for loads up to 10 kW and gross metering for loads greater than 10 kW. This provision was created

under the section addressing the rights of consumers as prosumers. The section said prosumers would enjoy the same rights as the general consumer. They would also have the right to set up renewable energy generation units, including rooftop solar systems themselves or through a service provider.

Last year, Minister of Micro, Small, and Medium Enterprises Nitin Gadkari had brought the Minister of New and Renewable Energy R.K. Singh's attention to a representation made by solar developers in Maharashtra against enforcing gross metering for rooftop solar systems over 10 kW.

The Maha Solar Sangathan had written to Gadkari that the gross metering notification would crush the MSME segment and make renewable energy generation unviable for small players.

Stakeholders had told Mercom that they feared the rooftop solar market would collapse if the net metering were capped at 10 kW. ☐

Floating Solar Projects Help Reduce Impact of Climate Change on Lakes

Results from a research study show that floating solar arrays can lower water temperature and mitigate the risk of blooms of toxic blue-green algae

By : B.S.Nagaraj



A new study by scientists from two universities in the United Kingdom has said floating solar farms could help protect lakes and reservoirs from some of the harms of climate change.

Scientists from Lancaster University and the University of Stirling have completed the first detailed modeling of the environmental effects of floating solar installations on water bodies.

Their results show that floating solar arrays can cool water temperatures by shading the water from the sun. At scale, this could help to mitigate against harmful effects caused by global warming, such as blooms of toxic blue-green algae and increased water evaporation, which could threaten water supply in some regions.

The scientists found that floating solar installations also reduce the duration of ‘stratification’ – this is where the sun heats the water, forming distinct layers

*The effects
on water
temperature
increased
with the size
of the solar
installation*

of water at different temperatures. This tends to happen more in the warmer summer months and can result in the bottom layer of water becoming deoxygenated.

However, the picture is complex, and there are also conditions under which stratification, and therefore detrimental water quality impacts, could increase if floating solar farms are deployed.

There are three commercial-size floating solar arrays in the U.K. and hundreds more across the world. The number of installations is likely to grow significantly in the coming decades as demand rises for renewable energy sources, with more countries committing to net-zero carbon targets.

However, little is known about the impacts – both positive and negative –





these floating solar farms have on the lakes and reservoirs.

“As demand for land increases, water bodies are increasingly being targeted for renewable energy. Deployment of solar on water increases electricity production, but it is critical to know if there will be any positive or negative environmental consequences,” said Giles Exley, lead author from Lancaster University.

“Given the relative immaturity of floating solar farms, it is important to further scientific evidence of the impacts. Our results provide initial insight of the key effects that will help inform waterbody manager and policymaker decisions.”

The research team undertook computer modeling using the MyLake simulation program and data collected by the Centre for Ecology and Hydrology from England’s largest lake, Windermere. Although the researchers believe it is unlikely floating solar farms will be deployed on Windermere, it presents a rich dataset as it is one of the most comprehensively studied lakes in the world.

Exley said: “The effects of floating solar on the temperature of the water body and stratification, both of which are major drivers of biological

There can be detrimental impacts on aquatic life too

and chemical processes, could be comparable in magnitude to the changes lakes will experience with climate change. Floating solar could help to mitigate against the negative effects global warming will have on these bodies of water.”

“However, there are also real risks of detrimental impacts, such as deoxygenation causing undesirable increases in nutrient concentrations and killing fish. We need to do more research to understand the likelihood of both positive and negative impacts.”

The effects on water temperature increased the larger the solar installation, with small arrays of less than ten percent of the lake surface generally having minimal impacts. However, this model concentrated on one lake. Further studies will be needed to determine the optimum size array, design, and effects for individual lakes

and reservoirs - all of which have unique characteristics. Different designs of solar installations also have different shading and sheltering effects for the sun and wind.

Arrays covering more than 90% of a lake could increase the lake’s chances of freezing over in winter, the study found. However, these effects would also be specific to the body of water and design of the installation and require further research.

Conventional solar farms are controversial due to the amount of land they take up. This leads to increased interest in floating solar farms, given the additional space that water bodies provide.

Floating solar has gained traction in India mainly due to the availability of many dams, lakes, and reservoirs where such projects can be easily installed, given the increasing difficulty in acquiring land to develop large-scale projects.

According to a research report by the National Renewable Energy Laboratory, the addition of floating solar projects on the top of water bodies, which already have hydropower stations, can annually generate around 7.6 TW of clean energy from the solar photovoltaic systems alone. ☺



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New Electrolyte to Boost Energy Density in Lithium-Ion Batteries

The type of battery electrode used with this electrolyte, a nickel oxide containing some cobalt and manganese, is the workhorse of today's electric vehicle industry

By : B.S.Nagaraj

A team of researchers at the Massachusetts Institute of Technology (MIT) and other organizations have found a novel electrolyte that could make it possible for lithium-ion batteries, which now typically can store about 260 kWh of energy, to store about 420 kWh of energy.

Researchers worldwide are continuing to push limits to achieve ever-greater energy densities – the amount of energy that can be stored in a given mass of material – to improve the performance of existing devices and potentially enable new applications such as long-range drones and robots.

One promising approach is the use of metal electrodes in place of the conventional graphite, with a higher charging voltage in the cathode. Those efforts have been hampered by various unwanted chemical reactions that take place with the electrolyte that separates the electrodes.

The latest discovery of the novel electrolyte overcomes these problems and could enable a significant leap in the power-per-weight of next-generation batteries without sacrificing the cycle life.

The research is reported in the journal *Nature Energy* in a paper by MIT professors Ju Li, Yang Shao-Horn, Jeremiah Johnson; postdoc Weijiang

Xue; and 19 others at MIT, two national laboratories, and elsewhere. The researchers say the finding could make it possible for lithium-ion batteries to store about 420 kWh of energy. That would translate into longer ranges for electric cars and longer-lasting changes on portable devices.

The researchers say that the novel electrolyte's basic raw materials are inexpensive (though one of the intermediate compounds is still costly because it is in limited use). According to the experts, the process to make it is, however, simple, permitting relatively quicker implementation of the mechanism.

But there are many obstacles still facing the development of such batteries, and that technology may still be years away. In the meantime, applying that electrolyte to lithium-ion

The new electrolyte enables li-ion batteries to store about 420 kWh of energy

batteries with metal electrodes turns out to be something that can be achieved much more quickly.

The new application of this electrode material was found "somewhat serendipitously" after it had initially been developed a few years ago by Shao-Horn, Johnson, and others, in a collaborative venture aimed at lithium-air battery development.

The type of battery electrode they have now used with this electrolyte, a nickel oxide containing some cobalt and manganese, "is the workhorse of today's electric vehicle industry," says Li, who is a professor of nuclear science and engineering and materials science and engineering.

Because the electrode material expands and contracts anisotropically as it gets charged and discharged, this can lead to cracking and a performance breakdown when used with conventional electrolytes. But during experiments in collaboration with Brookhaven National Laboratory, the researchers found that using the new electrolyte drastically reduced these stress-corrosion cracking degradations.

The problem was that the alloy's metal atoms tended to dissolve into the liquid electrolyte, losing mass and leading to cracking of the metal. By contrast, the new electrolyte is highly resistant to such dissolution. 

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Supreme Court Wants Underground Power Lines to Save The Bustard

In an effort to save the rare Great Indian Bustard and Lesser Florican, the court ordered the installation of bird diverters until overhead powerlines are brought underground

By : Rakesh Ranjan Parashar



In an important development, the Supreme Court of India has directed the appropriate authorities to install diverters in the habitats of the Great Indian Bustard and convert the overhead cables to underground powerlines wherever feasible.

The conversion to underground powerlines should be completed within one year from the date of the order, and until such time the diverters should be hung from the existing powerlines.

The matter should be referred to a committee appointed by the Supreme Court to decide feasibility.

The court heard public interest litigation filed by a few environmentalists seeking to protect two species of birds, the Great Indian Bustard and the Lesser Florican, which are on the verge of extinction.

The petitioners said that the overhead powerlines had become a hazard. The birds were dying, colliding with the powerlines. The petitioners requested the court to direct the Gujarat and Rajasthan governments to ensure predator-proof fencing, controlled grazing in the enclosure development, and direct the respondents not to permit installation of overhead powerlines, construction of windmills, and solar infrastructure.

However, the Supreme Court refused to accept the request of the petitioners to stop the development of solar and wind assets in the habitats of the two bird species.

Government's Responsibility

The Supreme Court said that the state and central governments were duty-bound to preserve the endangered

species and bear the expenses incurred.

The bird species should be preserved by laying underground powerlines, and the cost of such projects passed on to the ultimate consumer subject to the approval of the regulatory authority.

Considering the various factors affecting the preservation project, the court spoke of the need to strike a balance between protecting the rare species of birds and allowing the transmission of power appropriately.

Citing a study conducted by the Wildlife Institute of India, the Court noted that it was not feasible to lay underground power cables in certain areas. The conversion of the already existing cables cannot be made in certain locations. In such locations, bird diverters should be installed, and underground powerlines should be installed wherever feasible.





The Supreme Court added that with the implementation of the Compensatory Afforestation Act, substantial funds were available with the national and state authorities, and the Act provides for the utilization of the fund for measures to mitigate threats to wildlife.

“The laying of underground powerlines, particularly of high-voltage though not impossible, would require technical evaluation on a case-to-case basis and general conclusion cannot be reached laying down a uniform method unmindful of the situation,” it said.

Commenting on the order, Aditya K Singh, Associate Partner, Link Legal Law Services, said, “The Supreme Court has made it very clear that all powerlines in the potential Great Indian Bustard area have to be laid underground, if technically feasible. If the committee

The birds were dying by colliding with the powerlines

determines that underground lines are not feasible, then only diverters will be installed.”

“The court has given a strict timeline for implementation, i.e., one year from the date of the order. It will be interesting to see how the distribution companies (DISCOMs) are going to bear the cost. Every entity that has contractual protection of the ‘Change in Law’ will claim the compensation.

DISCOMs being a revenue-neutral entity, will pass the expenditure to the consumers unless there is assistance from the government,” he said.

Singh referred to the court’s remarks about certain central and state funds and hoped that these funds take care of the burden of DISCOMs. “The Supreme Court has relied on sustainable principles to take care of the interest of the environment and the economy. The governments of Gujarat and Rajasthan should utilize their environmental funds to lay the underground cables to ensure the continuous flow of the electricity,” he said.

In February 2019, the Ministry of New and Renewable Energy issued a circular for retrofitting transmission lines and wind turbines to avoid bird collisions in the Great Indian Bustard habitats of Rajasthan and Gujarat. 



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Both-Sides-Contacted Solar Cells Hit 26% Record Efficiency

Fraunhofer ISE researchers demonstrated that backside cell surface design as full-area charge-carrier collecting passivating contact was key to the success

By : Srinwanti Das

Researchers at Germany's Fraunhofer Institute for Solar Energy Systems (ISE) have reportedly obtained a

record conversion efficiency of 26% for both-sides-contacted silicon solar cells.

Led by Armin Richter, the solar cell researchers demonstrated that such a

high-efficiency level is achievable with a new approach. The backside cell surface design as a full-area charge-carrier collecting passivating contact was key to



the success.

The findings were published in the Nature Energy journal under the title “Design Rules for High-Efficiency Both-Sides-Contacted Silicon Solar Cell with Balanced Charge Carrier Transport and Recombination Losses.”

A preferred choice in industrial production due to their lower complexity, both-sides-contacted solar cells had not shown such a high rate of efficiency earlier. Up until now, the figures were mostly limited to solar cells with both metal contacts at the rear – the so-called interdigitated back contact solar cells.

The tunnel oxide passivating contact (TOPCon) technology developed by the experts at Fraunhofer ISE combines the advantages of very low surface recombination losses with efficient charge carrier transport. While industrial standard cells have a pn junction on the front side, the pn junction in the record cell was placed on the backside as a full-surface TOPCon contact.

This cell design seemingly allows better utilization of the wafer for charge carrier transport

This mechanism eliminated the need to keep the full-surface boron doping on the front side of the device, allowing only a local boron diffusion to be directly implemented under the front-side contacts.

The TOPCon rear emitter solar cell (TOPCoRE) thus allows higher voltages and higher fill factors than cells with a collecting emitter on the front side.

This cell design seemingly allows better utilization of the wafer for charge carrier transport, letting the front side get more effectively passivated, for which aluminum oxide is used. Detailed power loss analysis shows that this cell generally compensates for and minimizes both electron and hole transport losses as well as transport and recombination losses.

“Based on a systematic simulation-based analysis, we were able to derive some fundamental design rules for future high-efficiency silicon solar cells above 26% efficiency. Both-sides-contacted solar cells have the potential to reach efficiencies up to 27% and thus surpass the previous world record for silicon solar cells,” said Stefan Glunz, Division Director of Photovoltaics Research at Fraunhofer ISE.

In an earlier study, researchers at Fraunhofer ISE had announced a record efficiency of 25.9% for the III-V/Si tandem solar cell grown directly on silicon. The III-V/Si tandem solar cell was assembled on a low-cost silicon substrate for the first time, paving the way for an economical solution for tandem PV. 

Supreme Court Upholds NCLT's Stay of PPA Terminations by GUVNL

The Supreme Court held that NCLT had the authority to address cases arising solely from or those relating to the corporate debtor's insolvency

By : Rakesh Ranjan Parashar





The Supreme Court, in a recent order, has said that the National Company Law Tribunal (NCLT) and the National Company Law Appellate Tribunal (NCLAT) had correctly stayed the termination of the power purchase agreement (PPA) between a solar power developer and the Gujarat Urja Vikas Nigam Limited (GUVNL).

The court said that allowing the PPA termination would have resulted in the corporate debtor's 'death' due to the PPA being its sole contract.

GUVNL had filed a petition challenging NCLT and NCLAT's jurisdiction over disputes arising from contracts such as the PPA and whether it had the right to terminate the PPA.

Background

On August 01, 2009, the Gujarat government allocated 25 MW capacity to Astonfield Solar Gujarat to set up a solar project. The developer expressed its intent to set up a 10 MW grid-connected solar power project and sell the entire energy to GUVNL.

GUVNL entered into a PPA with the solar developer on April 30, 2010, to

purchase solar power.

The first few years of the PPA went smoothly, but the first major issue arose between July and December 2015. The period was marred by heavy rains and floods, which led to the project's closure for two months. By December 2015, normalcy was restored, and the project

NCLT said that the PPA could not be put on a pedestal higher than the insolvency code

was generating 70% of the total capacity. During June and July 2017, Gujarat was again affected by floods, and it was only able to operate at 10-15% of the total capacity.

As a result of the solar developer's persistent default, the lenders declared the company a non-performing asset.

Later, the developer filed a petition with the NCLT to initiate the corporate insolvency resolution procedure. GUVNL issued the notice for default on May 1, 2019. The developer requested the NCLT to restrain GUVNL from terminating the PPA.

In its submission, GUVNL said that assuming that the NCLT could have had jurisdiction over the dispute, there was no embargo under the insolvency and bankruptcy code (IBC) on the exercise of contractual rights by it.

Consequently, NCLT restrained GUVNL from terminating the PPA and held that the PPA clauses could not be put on a higher pedestal than the provisions of IBC. Aggrieved by the judgment of NCLT, GUVNL approached the Supreme Court on two grounds:

- NCLT and NCLAT do not have the jurisdiction to adjudicate a contractual dispute
- The termination of the PPA was valid under the provisions of the PPA

Court's Analysis

The Supreme Court noted that NCLT had the power of addressing cases arising solely from or those relating to





the corporate debtor's insolvency. It said that there was no other ground to terminate the PPA signed between the parties.

The court said that the Electricity Act empowered the Gujarat Electricity Regulatory Commission (GERC) to adjudicate the dispute between the generator and the DISCOM. However, NCLT had the power to adjudicate the present dispute because the sole default attributed by GUVNL to the corporate debtor was that it was undergoing an insolvency resolution process.

"In the present case, the PPA was terminated solely on the ground of insolvency, since the event of default contemplated under Article 9.2.1(e) was the commencement of insolvency proceedings against the corporate debtor. In the absence of the corporate debtor's insolvency, there would be no ground to terminate the PPA. The termination is not on a ground independent of the insolvency. The present dispute solely arises out of and relates to the insolvency of the corporate debtor," the court noted.

The apex court observed that NCLT

was empowered to restrain GUVNL from terminating the PPA and clarified that the decision was based on the fact that PPA was central in the present case for the success of the corporate insolvency resolution process (CIRP). It was the sole contract for the sale of electricity which was entered into by the generator.

GUVNL argued that tribunals lack jurisdiction to adjudicate contractual disputes

"Since we have set aside the termination of the PPA based on the reasons discussed above, the appellant is liable to pay for the electricity procured after June 07, 2019. Consequently, the appellant's claim in respect of compensation for

the termination of the PPA in terms of Article 9.3.1 of the PPA does not arise because it is restrained from terminating the PPA," the court said.

Speaking to Mercom on the Supreme Court order, attorney Aditya K. Singh said, "If electricity regulatory commissions had adjudicated this dispute, they would not have any option except to recognize the right given under the PPA, and it would have disastrous consequences and would defeat the objectives of the IBC. However, the court has also rightly cautioned the NCLT and NCLAT to ensure that they do not usurp the legitimate jurisdiction of other courts and tribunals when the dispute does not arise solely from or relate to the insolvency of the corporate debtor."

Previously, Mercom reported that the Supreme Court had ordered the quashing of a circular issued by the Reserve Bank of India (RBI) on non-performing assets. The RBI had issued a circular saying that the lenders have to provide for a resolution plan within 180 days in case of a large account of ₹20 billion (-\$288 million) and above. 📌

Corporate Funding for Solar Rises to \$8.1 Billion in Q1 2021

Buoyed by growing demand for solar assets and higher debt financing activity in Q1 2021, global corporate funding increased by 21% compared to Q4 2020

By : Rakesh Ranjan Parashar



The global corporate funding for the solar sector, including venture capital (VC) funding, public market, and debt financing, totaled \$8.1 billion in 36 deals in Q1 2021, an increase of 21% compared to the \$6.7 billion raised in 43 deals in Q4 2020.

These numbers were revealed in the Mercom Capital Group's Q1 2021 Solar Funding and M&A Report, which covered nearly 340 companies and investors.

The increase in corporate funding was attributed to the higher debt financing activity in the first quarter of

2021.

Some of the top corporate-funded deals of the quarter included: \$2.2 billion raised by Shoals Technologies Group through an IPO; the \$1.1 billion raised by Enphase Energy, Loanpal's \$800 million raise; Intersect Power's \$482 million raise; Loanpal's \$390 million securitization deal, and Sunrun's \$389 million raise.

Raj Prabhu, CEO of Mercom Capital Group, said, "Financing activity in the solar sector started strong in 2021 with Q1 numbers up substantially year-over-year. Even though solar stocks lost some of their spark in the first quarter after an

unprecedented run in 2020, a big IPO and record securitization activity lifted overall fundraising totals. Solar assets continue to be in great demand with almost 15 GW of projects acquired in Q1."

The global venture capital funding for the solar sector in Q1 2021 stood at \$1 billion, an increase of 33% compared to \$773 million raised in Q4 2020.

The report stated that out of the total value of \$1 billion raised in venture capital funding in Q1 2021, 96% went to solar downstream companies with \$990 million in 10 deals. In Q4 2020, solar downstream companies had raised \$748 million in six deals. A total of 43



Solar assets continue to be in great demand with almost 15 GW of projects acquired in Q1

VC investors participated in Q1 2021 compared to 47 VC investors in Q4 2020.

The public market financing saw a slight dip with \$2.8 billion raised in eight deals in Q1 2021, a decrease of 7% compared to Q4 2020. There were only two IPOs announced during the quarter.

Debt financing showed growth and stood at \$4.3 billion in 14 deals, an increase of 48% compared to Q4, 2020.

In Q1 2021, five securitization deals worth \$1.4 billion were recorded, which marked the largest financing through securitization since 2013.

According to the report, solar mergers and acquisitions (M&A) transactions also showed growth in Q1 2021, with 20 transactions taking place in the first quarter of 2021 compared to 12 deals in Q1 2020. There were 82 large-scale solar project acquisitions (nine disclosed for \$854 million) in Q1 2021, compared to 83 transactions in Q4 2020.

A total of nearly 15 GW of projects were acquired in Q1 2021.

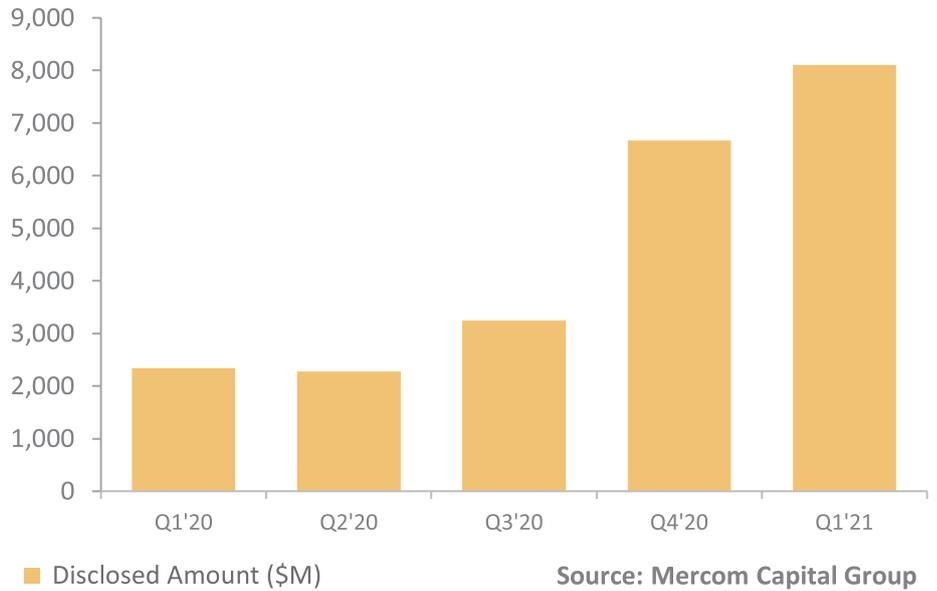
The project M&A activities were led by project developers and independent power producers, who acquired 5.2 GW of projects, followed by investment firms and funds, which acquired 4.2 GW of projects.

In Q1 2021, solar project acquisitions were spread across 26 countries. Spain led the way in terms with 5.5 GW, followed by the United States with 4.8 GW and Greece with 1.6 GW of acquisitions.

The global corporate funding into the solar sector - including venture capital, private equity, debt financing, and public market financing - had increased by 24% to \$14.5 billion in 2020 from \$11.7 billion in 2019. ☺



Solar Corporate Funding Q1 2020-Q1 2021



Solar Top Corporate Funding Deals in Q1 2021

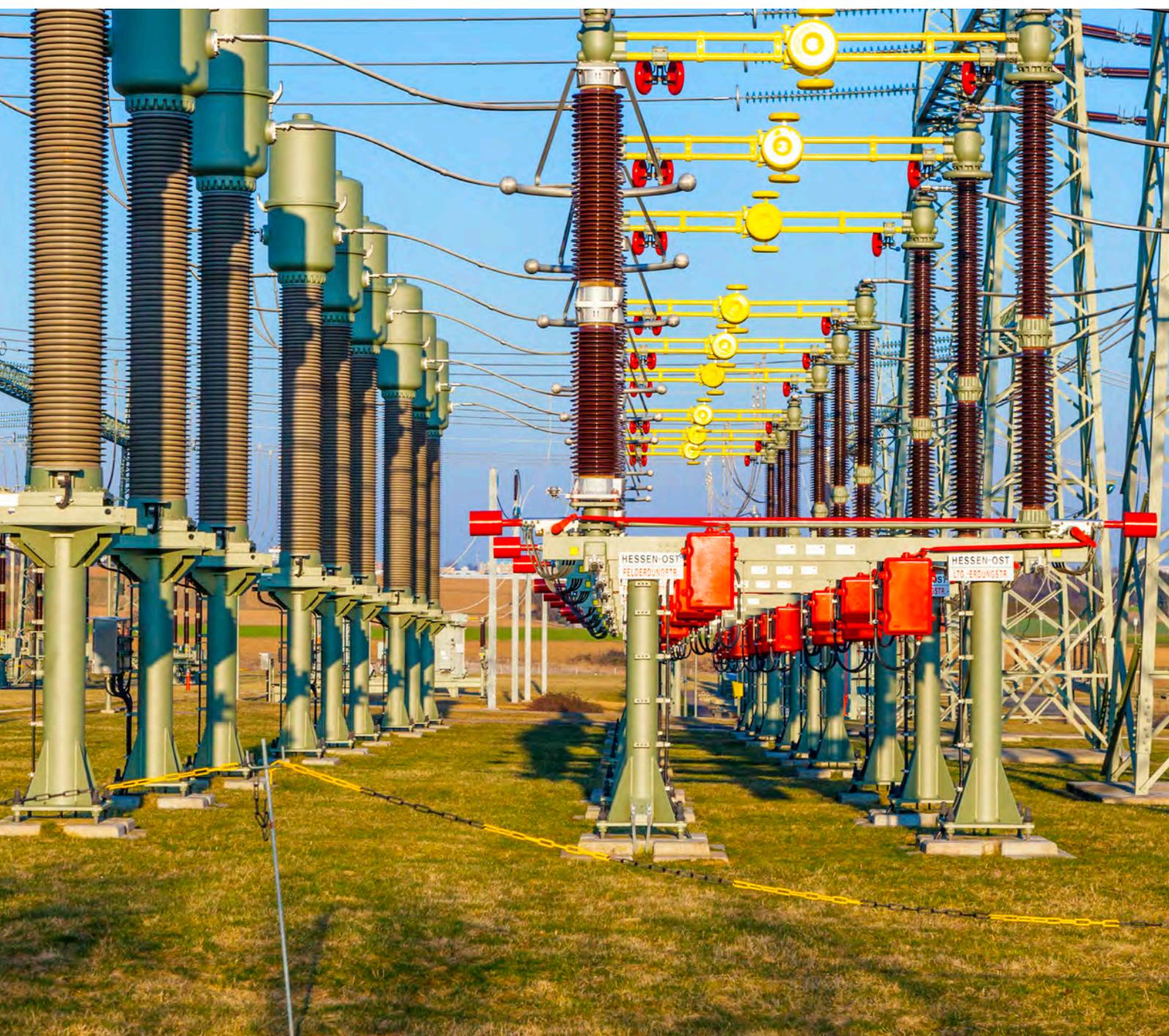
Company	Amount (\$M)	Funding Type
 shoals technologies group	2,213	IPO
 ENPHASE	1,132	Debt
 LOANPAL	800	VC/PE
 Intersect Power	482	Debt
 LOANPAL	390	Debt
 sunrun	389	Debt

Source: Mercom Capital Group

Tamil Nadu Open Access Consumers to Pay Additional Surcharge

The Tamil Nadu Generation and Distribution Corporation set the additional surcharge payable by open access consumers at ₹0.85/kWh

By : Rahul Nair





The Tamil Nadu Electricity Regulatory Commission (TNERC) has approved an additional surcharge of ₹0.70 (-\$0.0093)/kWh, payable by open access (OA) consumers.

The Tamil Nadu Generation and Distribution Corporation (TANGEDCO) had sought an additional surcharge of ₹1.23 (-\$0.016)/kWh to be levied on OA consumers.

The respondents to the petition were Tamil Nadu Spinning Mills Association, Indian Wind Power Association; Southern India Mills Association; Watsun Infrabuild Limited; and Tamil Nadu Power Producers' Association.

TANGEDCO, in its petition, requested the Commission to uphold the obligation of the state distribution licensee in terms of power purchase agreements, as it continues to be stranded. It said that there was an unavoidable obligation to bear fixed costs consequent to such

agreements.

The state distribution company had said that open access consumers were buying a considerable quantum of power considering the present power requirements and future needs.

TANGEDCO informed the Commission that power was being purchased from different sources to meet the peak load shortages and maintain grid stability. It said that the petition was to determine additional surcharge payable by open access consumers on the quantum of power purchased using the network of the distribution licensee in line with section 42 (4) of the Electricity Act 2003.

The Act states: "Where the State Commission permits a consumer or class of consumers to receive the supply of electricity from a person other than the distribution licensee of his area of supply, such consumer shall be liable to pay an additional surcharge on the charges of wheeling, as may be specified by the State Commission, to meet the fixed cost of such distribution licensee arising out of his obligation to supply."

TANGEDCO said that it was making continuous efforts towards strengthening the distribution networks to reduce the Aggregate Technical & Commercial losses in the system to a target level of below 15% in the ensuing

TNERC ruled that fixed costs due to stranded capacity must be recovered from OA consumers



year by implementing various reform programs.

At present, around 3,178 long-term, short-term, and medium-term open access users are availing open access power in Tamil Nadu. During the financial year 2019-20, more than 3,000 open access applications were received and approved.

Though TANGEDCO has incurred the transmission charges for its entire contracted transmission capacity, including stranded capacity, the same had not been considered for calculating fixed capacity charges for six months.

The Commission ruled that unless fixed costs due to stranded capacity were recovered from OA consumers, this burden would be unjustly passed on to other consumers of the distribution licensee. It would be unfair and unwarranted to pass the burden of fixed cost recovery of such stranded cost to other consumers through a tariff hike.

TANGEDCO arrived at an additional surcharge of ₹1.23 (-\$0.016)/kWh, while the Commission calculated it at ₹0.85 (-\$0.011)/kWh.

The Commission observed that the levy of cross-subsidy surcharge and additional surcharge on the OA consumer should not eliminate the electricity price competitiveness available to the consumer.

The additional surcharge applies to consumers who purchase the power through third parties and power exchanges.

The Commission stated that if the additional surcharge is set at ₹0.85 (-\$0.011)/kWh, the all-inclusive price of the electricity may be higher than the electricity tariff chargeable to the consumer by the distribution licensee.

The Commission, considering the interest of both the parties, decided to levy 80% of the additional surcharge, i.e., ₹0.70 (-\$0.0093)/kWh (₹0.85 x 80%

= ₹0.68 rounded off to ₹0.70).

The Commission ordered that the OA pay the additional surcharge at the rate of ₹0.70 (-\$0.0093)/kWh on the quantum of the electricity scheduled by them. TANGEDCO will collect the additional surcharge from April 16, 2021, to September 30, 2021.

Commercial and industrial entities are increasingly opting for OA renewable power to meet their clean energy needs and reduce operating expenses. The total installed capacity in the OA market as of December 2020 stood at almost 4 GW, with a project development pipeline of over 1 GW, according to Mercom India Research's updated report, Open Access Solar Market in India - Key States.

Developers in Tamil Nadu are facing hurdles in getting approvals for third-party sale projects from DISCOMS. The state saw a 57% decline in open access installations as of December 2020, from the end of 2019. 



Industry News and Policy Briefs



Tata Power Delhi Distribution, which supplies electricity to around seven million households in Delhi, launched India's first grid-connected 'Community Energy Storage System' in collaboration with Nexcharge. The 150KW/528KWH CESS installation at Ranibagh Substation is expected to improve the supply reliability at the distribution level, mainly at the load center, to mitigate peak load on distribution transformers.

Adani Green Energy announced that it had signed a share purchase agreement to acquire a 100% stake in an SPV (Special Purpose Vehicle) holding a 50 MW operating solar project of the Toronto-headquartered **SkyPower Global**.

Power Grid Corporation of India Limited, a state-owned power transmission company, **acquired the Ramgarh New Transmission Limited** under Phase II, Part-A of the 'transmission strengthening program' to evacuate 8.1 GW of power from solar energy zones in Rajasthan.

Bharti Airtel, one of India's largest telecom companies, joined hands with **Avaada Energy** and decided to buy an **additional 3.3% stake** in the special purpose vehicle **Avaada MHBuldhana** to procure 21.32 MW of solar power under the group-captive arrangement.

Tata Power Delhi Distribution took another step in facilitating the adoption of renewable energy by rolling out the first live **blockchain-based solar energy trading project** in Delhi. The project is being spearheaded by the company in collaboration with the Australian technology company **Power Ledger** and **India Smart Grid Forum**.



New Delhi-based electric vehicle (EV) maker **Euler Motors** announced that it had **raised an additional \$2.6 million in Series A funding** from **ADB Ventures** - the venture investing arm of the **Asian Development Bank** - and **Blume Ventures**.

The distributed solar company, **Fourth Partner Energy**, announced a joint venture - **Empat Mitra Indika Tenaga Surya** - with Indonesia-based energy company **Indika Energy** to speed up renewable energy transition in Indonesia.

In one of the largest transactions in the renewables space in the last year, **Edelweiss Infrastructure Yield Plus**, an alternative investment fund managed by **Edelweiss Alternative Asset Advisors Limited**, along with its investee company **Sekura Energy**, **acquired a 74% stake** in the solar portfolio of **Engie** in India.

Japan International Cooperation Agency signed a loan agreement for a maximum amount of JPY 10 billion (₹6.65 billion) with **Tata Cleantech Capital**, an Indian non-banking financial company. Based on Green Loan Principles, the loan agreement will help Tata Cleantech Capital offer loans to businesses across India that focus on renewable energy generation, electric vehicles, and energy efficiency.

The renewable energy venture of the **Hero Group**, **Hero Future Energies**, issued their first USD bond in global markets. The **green bond** was issued through **Clean Renewable Power (Mauritius)**, a wholly-owned subsidiary of **Hero Future Energies Asia**.

Euler Motors raised ₹300 million (~\$4.1 million) as a part of its **Series A funding round**. The funding was led by existing investors Inventus India, Jetty Ventures, and Sujeet Kumar, Co-founder, Udaan. New investors Srinivas Anumolu and K Ganesh from Growth Story also participated in the funding round.



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News in Brief

Germany installed 351 MW of solar capacity in February 2021, an increase of 4% compared to the same period last year, according to the data released by the Federal Network Agency **Bundesnetzagentur**.

Adani Green Energy Limited announced that it would **acquire 75 MW of operational solar assets** in Telangana from **Sterling and Wilson**, a Shapoorji Pallonji Group subsidiary, for ₹4.46 billion (-\$61.45 million).

Adani Green Energy Limited raised a \$1.35 billion (-₹97.93 billion) debt package for its under-construction renewable asset portfolio. The company signed definitive agreements with international lenders.

Policy Briefs

States



The **Andhra Pradesh Energy Department** clarified that the amendments made to policies on the wind, solar, and wind-solar hybrid projects would apply to projects commissioned after November 18, 2019. The Andhra Government had formulated renewable energy policies to promote widespread renewable energy by providing incentives to meet the twin objectives of energy security and clean energy.

The **Chhattisgarh State Electricity Regulatory Commission** issued a draft notification for the state's renewable purchase obligation and renewable energy certificates framework regulations for 2021-2026.

The **West Bengal Electricity Regulatory Commission** ruled that consumers who install solar photovoltaic systems before June 30, 2021, will be eligible for net metering facilities.

The **Rajasthan Electricity Regulatory Commission** clarified that the net metering facilities for rooftop and small grid-connected solar systems would be valid up to June 30, 2021.



Center

The **Directorate General of Trade Remedies** initiated an anti-dumping probe on 'fluoro backsheets' imported from China. Fluoro backsheets are a polymer-based component used in the manufacture of solar photovoltaic modules and protect against dirt, dust, and moisture. The investigation will cover the period from October 1, 2019, to September 30, 2020.

The **Ministry of New and Renewable Energy** clarified that the extension provided by implementing agencies on account of the Covid-19 pandemic should in no case be more than six months, including the five-month blanket extension given earlier. The Ministry said that if the implementing agencies feel the need for an extension beyond six months, they should make a reference for consideration of MNRE with due justification and supporting documents.



The **Ministry of Power** reduced the contract performance guarantee for tariff-based competitive bidding transmission projects by more than 60%. The contract performance guarantee will now be charged at the rate of ₹525,000 (-\$7,202)/km for the total line length and at the rate of ₹45,000 (-\$617.35)/MVA for substations.

The **Ministry of Power** said that as the intrastate transmission systems have a major share in the country, the adoption of tariff-based competitive bidding to develop intrastate transmission systems can effectively reduce the burden on the state governments.

Speaking in the **Lok Sabha**, the **Minister of Road Transport & Highways**, Nitin Gadkari, announced the **'Vehicle Scrapping Policy.'** The minister added that the policy aims to reduce the pollution of old and defective vehicles and reduce vehicular air pollution to fulfill India's climate goals.

The **Ministry of New and Renewable Energy** announced the basic customs duty (BCD) on imported solar cells and modules starting April 1, 2022. The BCD on solar modules with HSN Code 85414012 will be 40%, and solar cells (85414011) is 25%.



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Major Tender and Auction Announcements in March

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



Top Large-Scale Solar Tenders

Telecommunications Consultants India floated a tender to select partners for setting up grid-connected solar projects in India under the Central Public Sector Undertaking (CPSU) program. TCIL, a CPSU, intends to participate in Indian Renewable Energy Development Agency's (IREDA) tender for setting up **5 GW** of grid-connected solar power projects (Tranche III) under the CPSU program (Phase II) floated in January.

The Solar Energy Corporation of India (**SECI**) invited bids to develop **1,785 MW** of solar projects (Tranche IV) in **Rajasthan**.

Coal India invited bids for the design, engineering,

procurement, construction (EPC), testing, and commissioning of a **100 MW** grid-connected solar project in Gujarat.

NHPC invited bids for the EPC services for a **100 MW** grid-connected solar project and associated power evacuation infrastructure in the Mirzapur district of Uttar Pradesh.

The Uttar Pradesh New and Renewable Energy Development Agency (**UPNEDA**) invited bids for the setting up of **75 MW** of grid-connected solar power projects at the UP Solar Park in Uttar Pradesh. The **ceiling tariff** for the bid is **₹3 (-\$0.041)/kWh**.

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Auctions

Spring Ujjvala Energy, NTPC Renewable Energy, Coal India, and TP Saurya-a Tata Power subsidiary - were declared winners in the Gujarat Urja Vikas Nigam's auction to purchase power from **500 MW** of grid-connected solar projects (**Phase XII**).

Spring Ujjvala Energy won a capacity of 120 MW quoting

₹2.20 (-\$0.030)/kWh. Meanwhile, NTPC Renewable Energy, Coal India, and TP Saurya won 150 MW, 100 MW, and 60 MW, respectively, quoting ₹2.20 (-\$0.030)/kWh. SJVN had quoted 100 MW at ₹2.21 (-\$0.030)/kWh and won 70 MW capacity under the bucket filling method.

Rooftop Solar Tenders

UPNEDA floated tenders to **empanel** agencies for **18 MW** of captive grid-interactive rooftop solar projects to be set up at government buildings in the state. UPNEDA floated three tenders - a 5 MW tender for projects with individual capacity ranging between 100 - 500 kW, a 12 MW tender for systems of 10 kW - 100 kW, and a 1 MW tender for systems of 1 kW - 10 kW.

The **National Capital Region Transport Corporation** floated a tender for **11 MW** of rooftop solar systems at its stations, depots, and other buildings in the Delhi-Meerut Corridor.

The **Gulbarga Electricity Supply Company** invited bids for the design, supply, installation, and commissioning of **10 MW** of grid-connected rooftop solar systems under net metering on residential buildings in seven districts in Karnataka.

ITI Limited, a state-owned telecommunications

equipment manufacturer, floated a tender for **1.2 MW** of grid-connected rooftop or ground-mounted solar power projects with net metering at its Bengaluru facility. The company has also invited bids for the survey, supply, installation, and commissioning of **1.2 MW** grid-connected rooftop or ground-mounted solar power projects with net metering at its premises in Palakkad, Kerala.

The state-run **Security Printing and Minting Corporation of India** invited bids for the supply, installation, testing, and commissioning of a **1 MW** grid-connected solar power project with net metering on the land provided by the company.

The **Steel Industries of Kerala**, a Kerala government-owned company, has floated a tender for **1 MW** of on-grid building-integrated photovoltaic (**BIPV**) system on the roof of the Chandrashekharan Nair Stadium in Thiruvananthapuram, Kerala.

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Other Tenders

Bharat Heavy Electricals Limited (**BHEL**), an Indian engineering and manufacturing enterprise, has invited bids for consulting firms to prepare a detailed project report (**DPR**) on the solar photovoltaics (PV) manufacturing value chain. BHEL also invited bids to supply the balance of system (BoS) package for the **100 MW** solar power project for the Gujarat State Electricity Corporation at **Raghanesda** solar park in Gujarat.

Separately, **BHEL** invited bids for the supply of **3.12 million** monocrystalline passivated emitter and rear cell (**mono PERC**) cells of 5.38 Wp output and **16.56 million multicrystalline** solar cells of 4.67 Wp output.

NTPC Vidyut Vyapar Nigam, a wholly-owned subsidiary of NTPC, invited bids to enlist EPC service providers to develop floating and ground-mounted solar power projects below 10 MW capacity across the country. The company also invited bids from consultants

to assess the potential and feasibility of ground-mounted and rooftop solar systems at the airports under the management of the Airports Authority of India.

The **Madhya Pradesh Urja Vikas Nigam** issued a tender to connect and synchronize existing non-functional off-grid solar projects at state government institutions.

Rajasthan Electronics and Instruments Limited (REIL), a joint venture between the center and the Rajasthan government, issued **three tenders** to supply multicrystalline solar cells. The first tender is for a rate contract supply of **150,000 multicrystalline** silicon solar cells of 4.5 W output under the domestic content requirement (**DCR**) category. The second tender by REIL is for the supply of **140,000 multicrystalline** silicon solar cells of 4.67 W output under the **DCR** category. In the third tender, REIL has invited bids for **150,000** units of 4.5W **multicrystalline** silicon solar cells.

Reissued Tender

Gujarat Urja Vikas Nigam reissued tenders to purchase **800 MW** of solar power from grid-connected solar projects at the Dholera and Raghanesda Solar Parks in the state. The first tender is for 700 MW of solar projects (Phase IX-R) to be set up at the 1 GW Dholera solar park. The second tender is for developing 100 MW of solar projects (Phase X-R) at the Raghanesda Solar park.

The **Indore Smart City** Development issued a revised tender for consultants to set up 100 MW to **120 MW**

ground-mounted or floating solar power projects in the city.

SECI amended its tender for **50 MW** of solar photovoltaic projects in Tamil Nadu, asking bidders to factor in the basic customs duty on solar cells and modules before placing bids as it will not be considered under the 'change in law' clause. The tender included a 10 MW agro-PV component.

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