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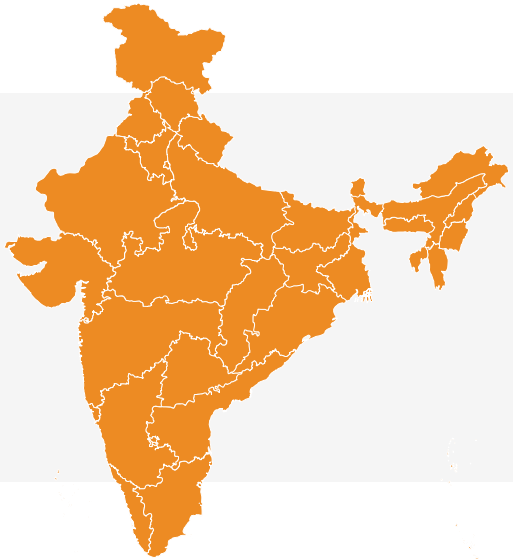

India Solar Market – Q3 2020

Market Drivers and Challenges – White Paper

Gold Partners

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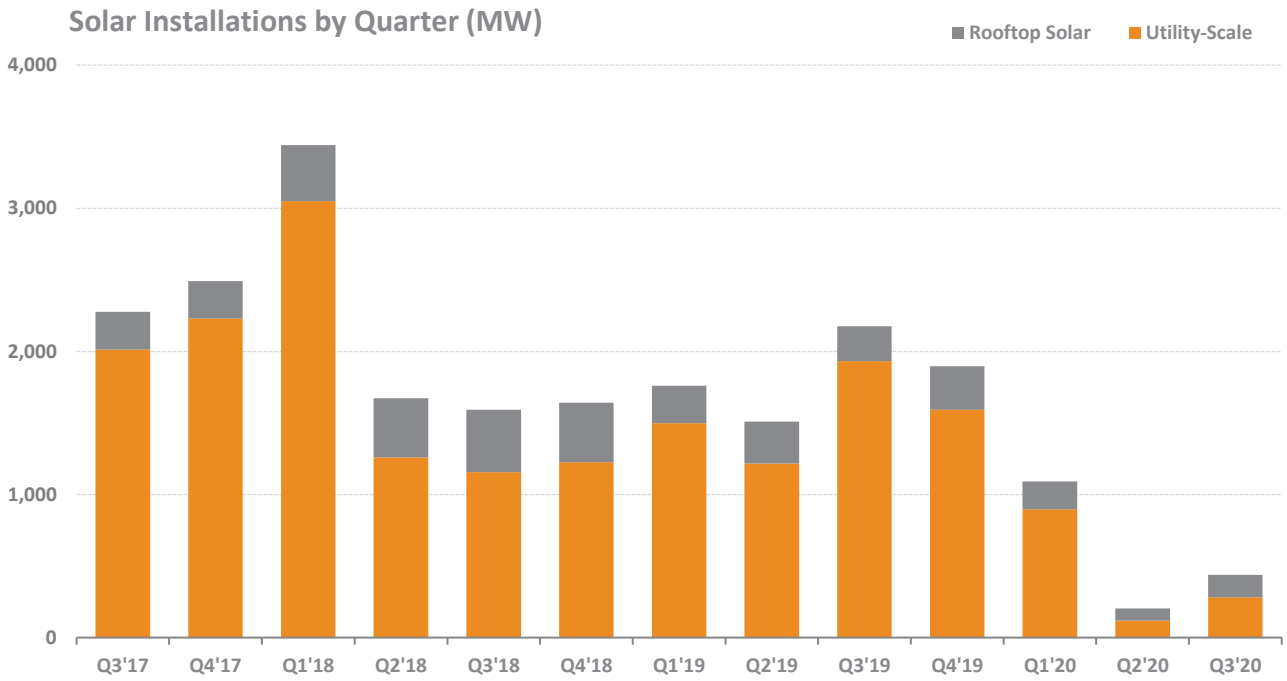
Executive Summary

Executive Summary

- Indian solar market added ~1.73 GW of solar in the first nine months (9M) of 2020, with cumulative solar installations stood at 37.4 GW at the end of Q3 2020. According to the newly released ***Q3 2020 India Solar Market Update***, Mercom India Research revised its solar forecast down to ~3.3 GW of capacity additions in CY 2020
- The large-scale solar project pipeline in India is now approximately 44.7 GW, according to ***Mercom's India Solar Project Tracker***. Currently, about 34.6 GW of tendered projects are awaiting auction as of Q3 2020
- In Q3 2020, India added a total of 438 MW of solar installations, a decline of 80% YoY compared to 2,177 MW installed in Q3 2019. Large-scale installations accounted for 65% while rooftop solar made up with 35%. India's cumulative solar installations reached 37.4 GW at the end of Q3 2020
- By the end of Q3 2020, large-scale solar projects accounted for 87% of the total solar installed capacity with ~32.6 GW and solar rooftop accounted for 13% with ~4.8 GW installed capacity
- Rooftop solar installations accounted for ~434 MW during 9M 2020, 46% decline compare to 9M 2019. The overall slowdown in the economy due to COVID-19, and many Installers stayed away from CAPEX model
- In 9M 2020, ~26 GW of solar PV projects were tendered by state and government agencies, according to ***Mercom's India Solar Tender Tracker***. Over 11.1 GW of solar PV projects were auctioned during 9M of 2020
- Renewable energy sources (including large hydro) accounted for ~36.4% of the India's power capacity mix at the end of Q3 2020
- In 9M 2020, the Indian solar sector received investments to the tune of $1.34 billion (~₹446 billion)

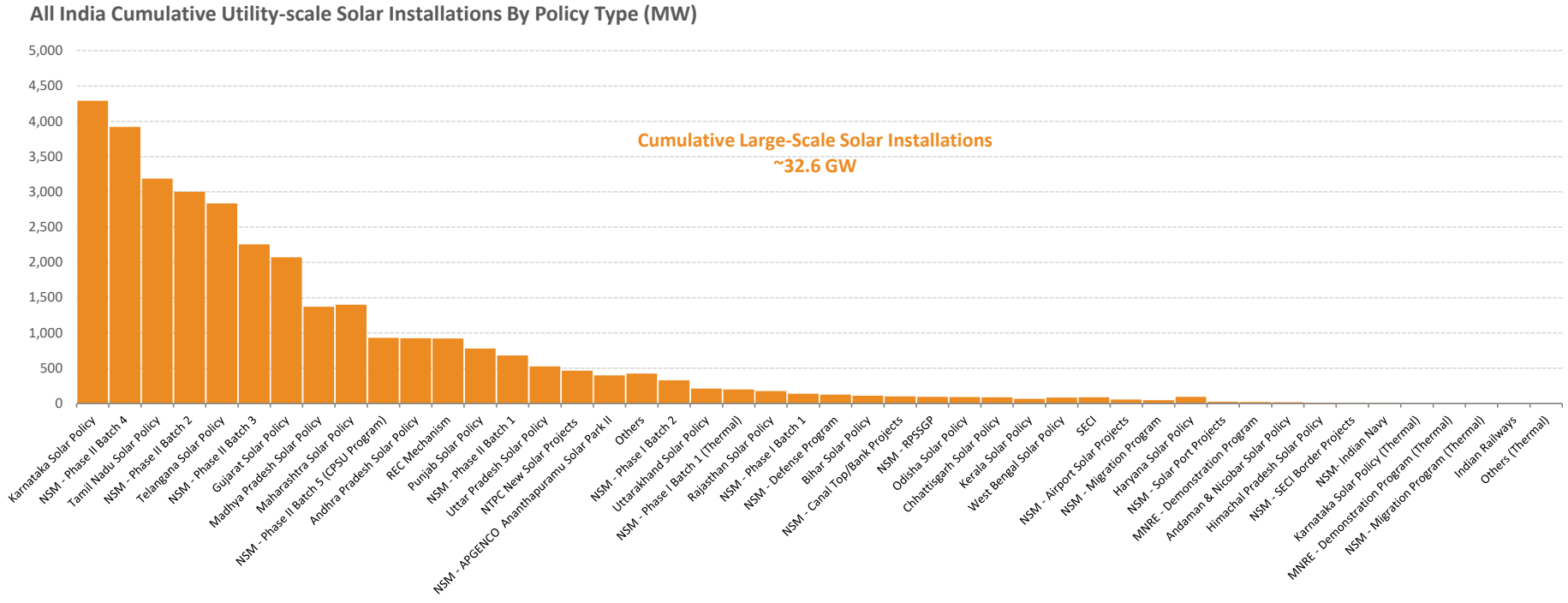
Indian Solar Market in Q3 2020



Source: Mercom India Research (Sep 2020)

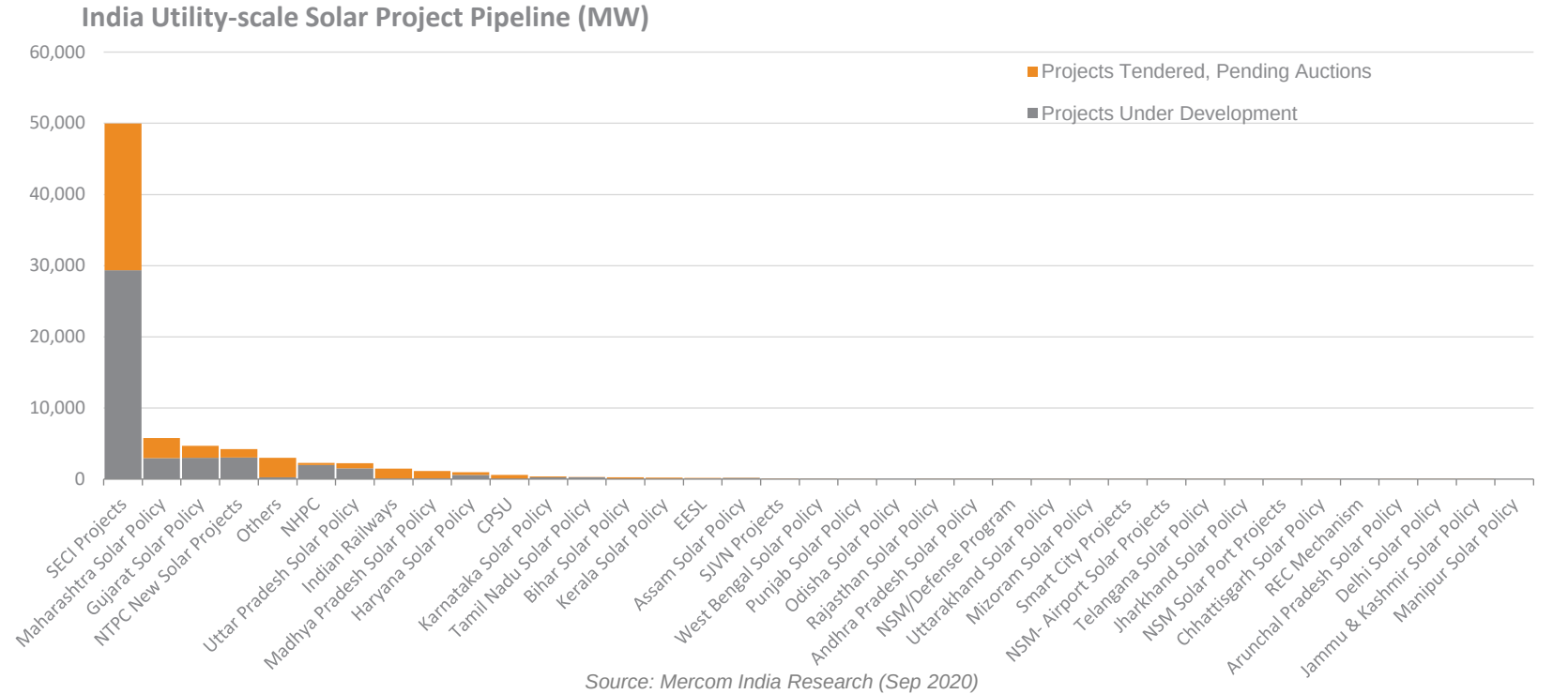
Current Solar Market – Installations, Pipeline

India Solar Cumulative Installations By Policy (MW)



Source: Mercom India Research (Sep 2020)

India Solar Cumulative Pipeline By Policy (MW)

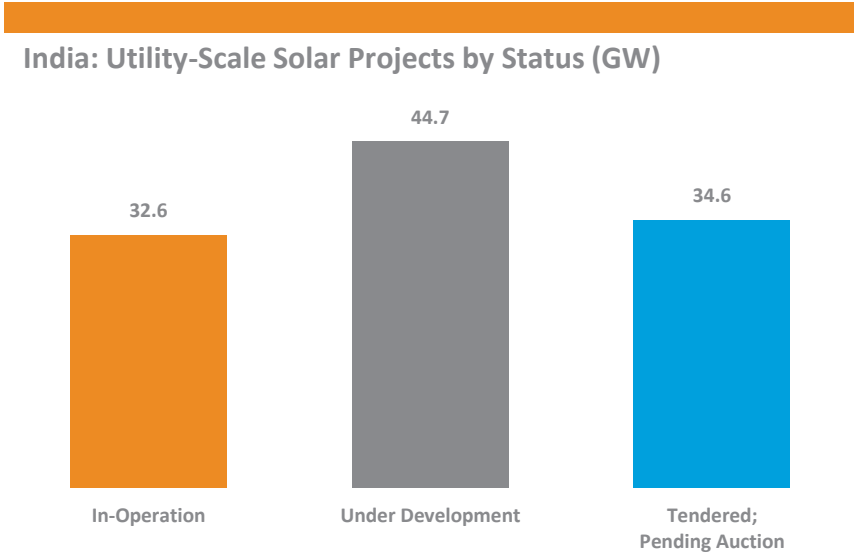


Source: Mercom India Research (Sep 2020)

Policy Drivers

Robust Project Pipeline

32.6 GW	- Currently 32.6 GW of large-scale solar projects are in-operation
44.7 GW	- About 44.7 GW of large-scale solar projects are in the development pipeline. India's project pipeline has increased by about 7% from the previous quarter
34.6 GW	- Another 34.6 GW of projects were tendered and pending auction at the end of Q3 2020



Source: Mercom India Research (Sep 2020)

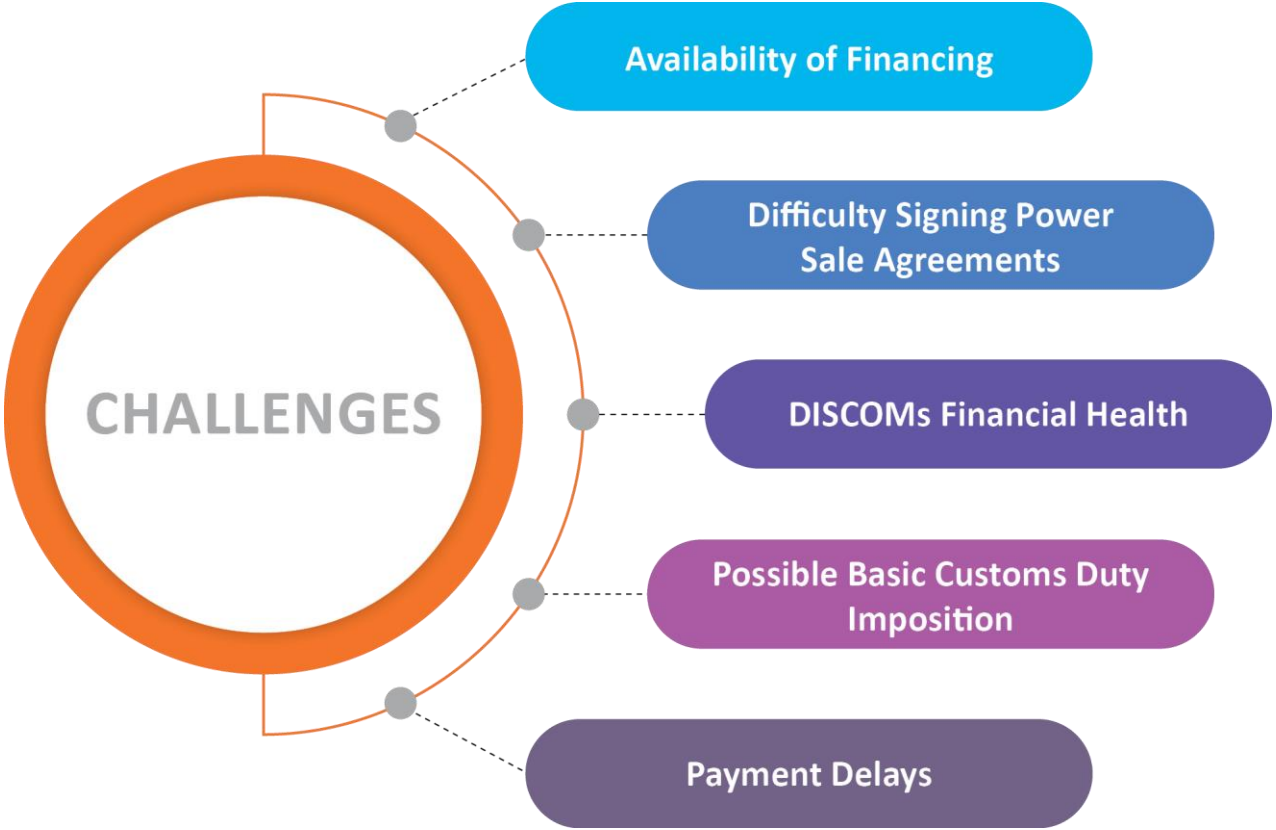
Key Regulations Affecting the Solar Industry

- **India Extends Imposition of Safeguard Duty on Solar Imports by Another Year :** The Department of Revenue under the Ministry of Finance issued a notification imposing safeguard duty on the import of solar cells and modules to India for another year starting July 30, 2020. The Ministry announced a duty of 14.90% from July 30, 2020, to January 29, 2021, and 14.50% from January 30, 2021, to July 29, 2021, for all solar cells and modules imported from the China PR, Thailand, and Vietnam. The safeguard duty will apply to solar cells whether or not assembled in modules or panels classifiable under the Tariff Headings 85414011 and/or 85414012 of Chapter 85 of Schedule-I of the Customs Tariff Act 1975
- **Plan to Boost Solar Manufacturing:** The central government has approved a 'production-linked incentive' (PLI) plan in ten critical sectors to enhance India's manufacturing capabilities and exports under the Atmanirbhar Bharat initiative. The government said in a notification that it would allocate ₹45 billion (~$605 million) for capturing the global value chains for solar PV manufacturing and boost the Atmanirbhar Bharat initiative in India. According to the government, large-scale solar PV imports pose risks to supply-chain resilience and raise strategic security challenges, considering the value chain's hackable nature. It added that a focused PLI plan for solar PV modules would incentivize domestic and global players to build large-scale solar PV capacity in India
- **No ISTS Charges on Solar and Wind Projects Commissioned Before June 30, 2023:** The Ministry of Power (MoP) has waived ISTS charges and losses on all solar and wind projects commissioned before June 30, 2023. This would apply to solar, wind, and hybrid projects with or without storage. The ISTS charges would be waived for 25 years from their date of commissioning for the transmission as well as sale to entities with Renewable purchase obligation. The waiver would apply to solar projects commissioned under the second phase of the Ministry of New and Renewable Energy's (MNRE) Central Public Sector Undertaking Program and also for solar projects commissioned under Solar Energy Corporation of India's (SECI) manufacturing-linked solar tender which was reissued in June 2019

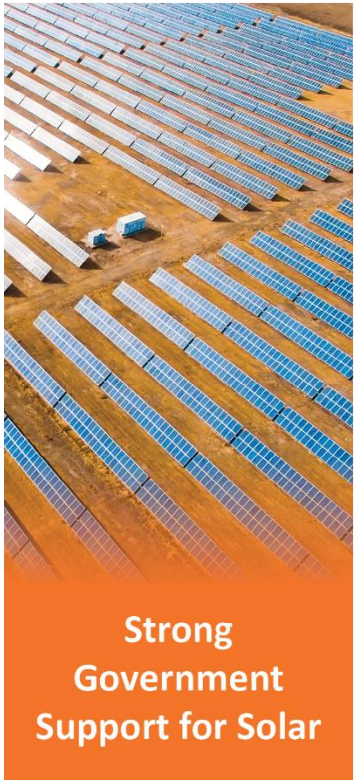
Key Regulations Affecting the Solar Industry

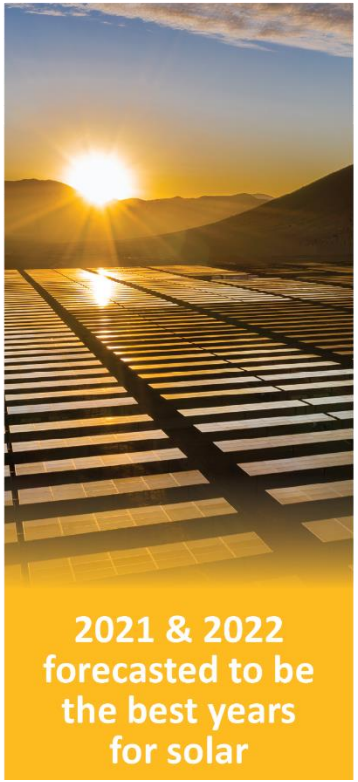
- **Floor Prices Removed for Solar and Non-Solar RECs:** The Central Electricity Regulatory Commission (CERC) has issued an order implementing revised forbearance and floor prices for solar and non-solar renewable energy certificates (RECs). In its order, the Commission implemented a forbearance (maximum) price of ₹1,000 ($13.16) for solar and non-solar RECs for 2020, down from 2017's prices of ₹2,400 ($31.59)/MWh and ₹3,000 (~$39.48) respectively. It also issued a floor price of zero for both solar and non-solar RECs from ₹1,000 ($13.16) each previously. Until March 31, 2017, the floor price for solar RECs was ₹3,500 ($46.07)/MWh. The CERC had proposed this revision in April, stating that the market for RECs has matured and that there was no longer a need for floor prices
- **Reserve Bank of India Increases Priority Sector Lending Cap to Renewables by Two-Fold:** The lending limit for the renewable sector has been increased. As per the bank's revised guidelines, the limit of bank loans has been increased to ₹300 million (~$4.09 million) to borrowers who are generators of solar, biomass, wind, and micro-hydel power Public utilities based on non-conventional power sources like street lighting systems and remote village electrification, among others, will also be eligible for priority sector classification. For individual household rooftop systems, the limit remains the same at ₹1 million (~$13,363) per borrower
- **LoU from IREDA, PFC, REC to Serve as Bank Guarantees for Solar Tenders:** The Union Ministry approved the proposal to accept letters of undertaking (LoU) from three non-banking financial institutions that can be used as bank guarantees in renewables tenders. The three lenders are the IREDA, PFC, and REC Limited (REC). MNRE had been considering an alternative to the earnest money deposits (EMDs) and performance guarantees (PBGs) submitted by developers. The 'payment on order' instrument means an undertaking by these financial institutions that they would pay in case of a default of a renewable power generator in fulfilling the tender terms or the power purchase agreement

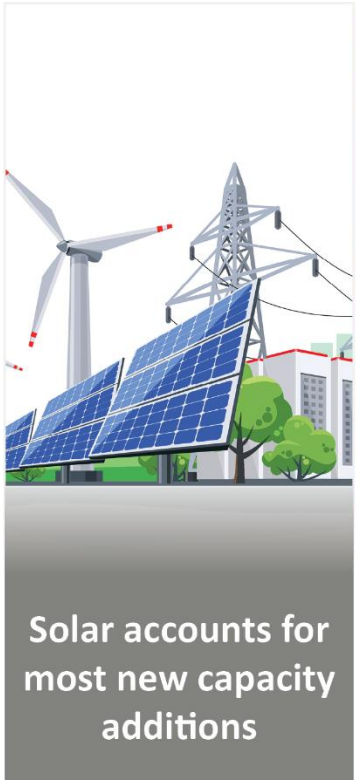
Challenges Faced By Industry

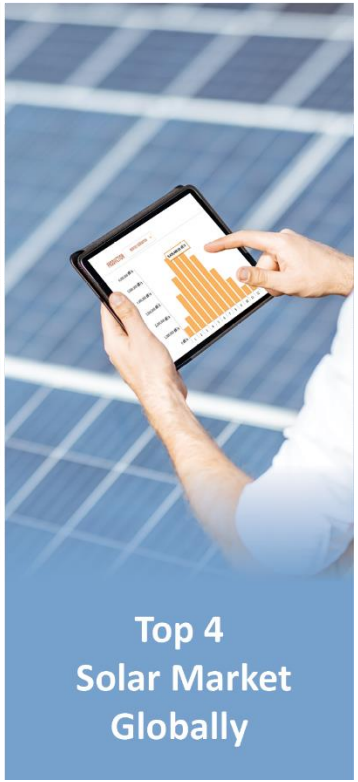


Case for Solar in India





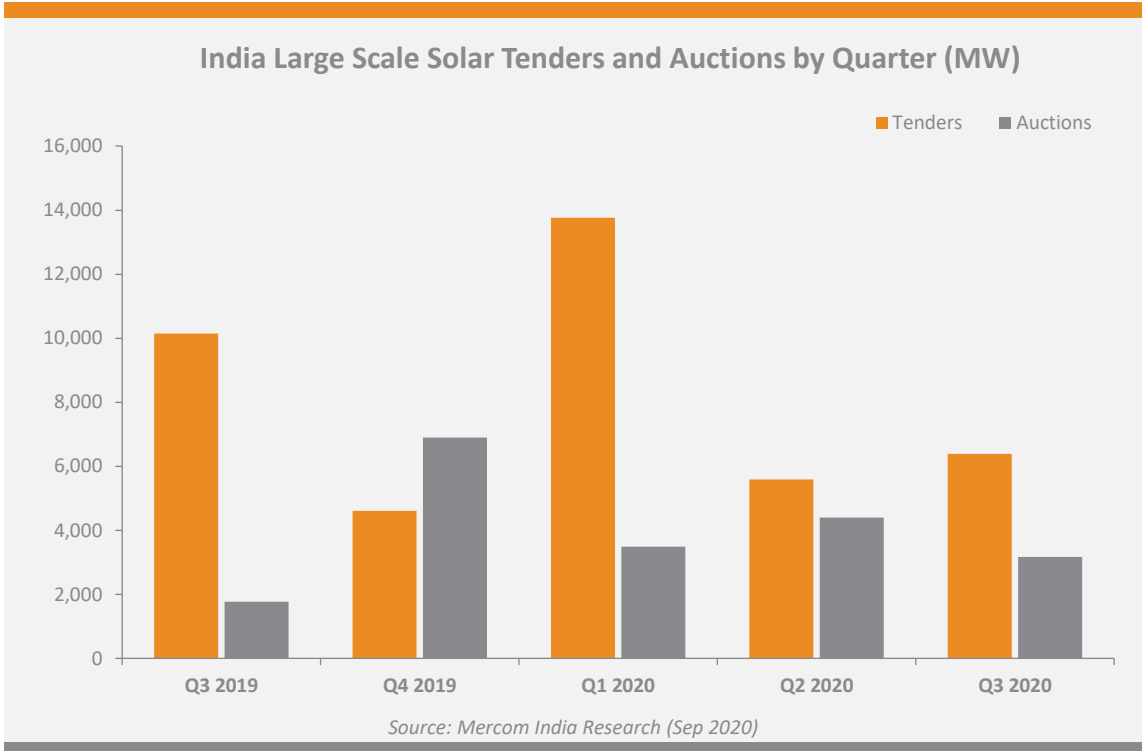




Tenders & Auctions

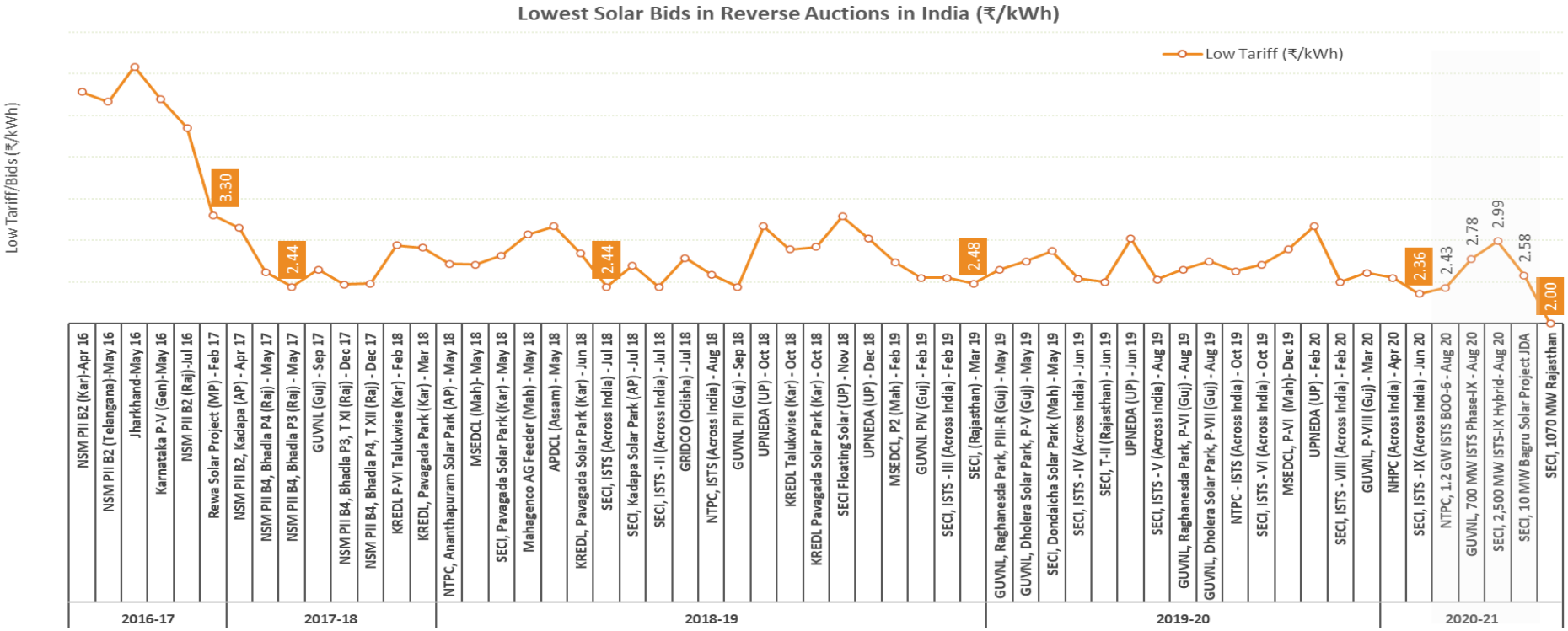
Tender and Auction Activity

- Several tenders have been delayed due to the developers' disagreement with the tender and power purchase clauses. In many instances, tenders have seen multiple retenders with amendments based on developer feedback and comments. In Q3 2020, over 900 MW of tenders were retendered
- SECI has been finding it tough to sign power sales agreements with the state DISCOMs. The pandemic has dealt a severe blow to the DISCOMs already battling with their financial health
- Developers, on the other hand, are wary of the long wait for the agreements to be signed. Lenders are willing to disburse funds only after SECI has signed the power sale agreements



Source: Mercom India Research (Sep 2020)

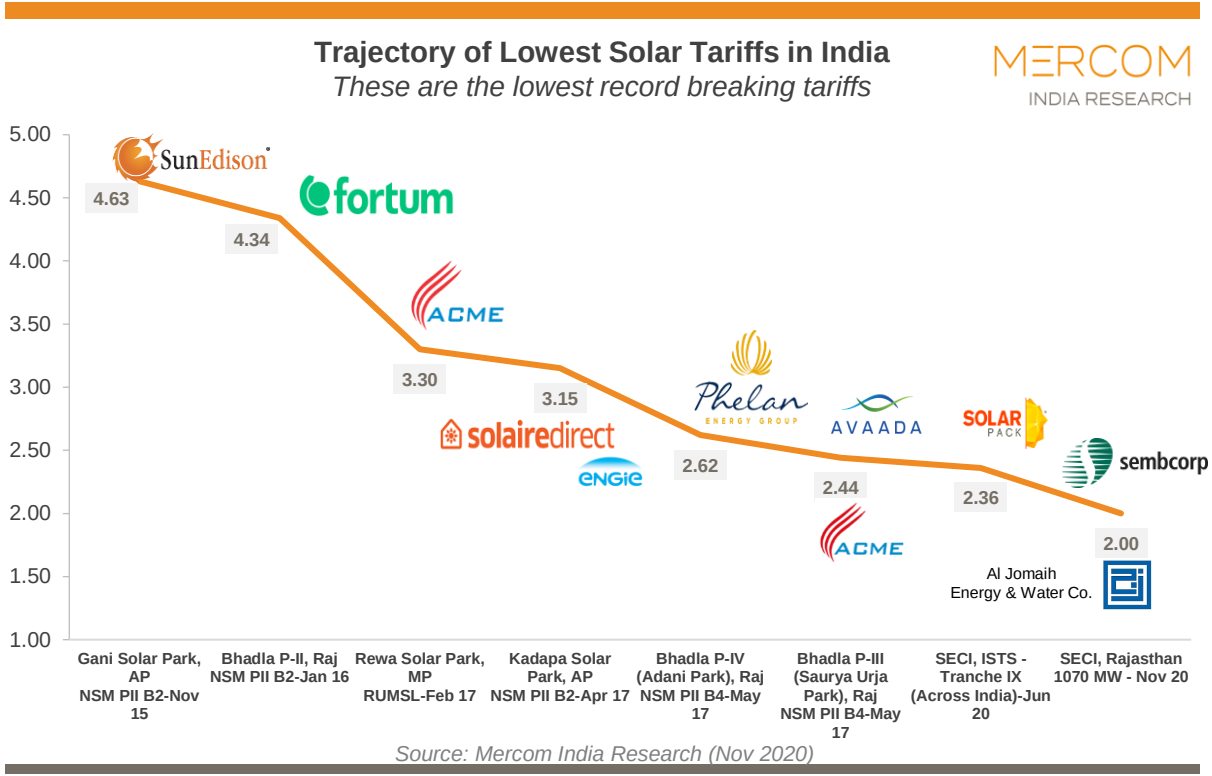
Solar Bidding Trends



Source: Mercom India Research (Nov 2020)

India's New Record for Lowest Solar Tariff is ₹2/kWh

- SECI's auction for 1,070 MW of solar projects in Rajasthan set a record-low lowest (L1) tariff of ₹2 (~$0.0270)/kWh (Tranche-III)
- This tariff is about 15.3% lower than SECI's previous record low tariff of ₹2.36 (~$0.0319)/kWh discovered in its auction for 2 GW of the interstate transmission system (ISTS) connected solar projects (Tranche IX) back in June
- The record-breaking tariff was quoted by Al Jomaiah Energy and Water Company and Green Infra Wind Energy Limited, a subsidiary of Sembcorp for 200 MW and 400 MW of solar projects, respectively. NTPC Limited quoted the second-lowest bid at ₹2.01 (~$0.0272)/kWh for 600 MW of projects but were only awarded 470 MW under the bucket-filling method



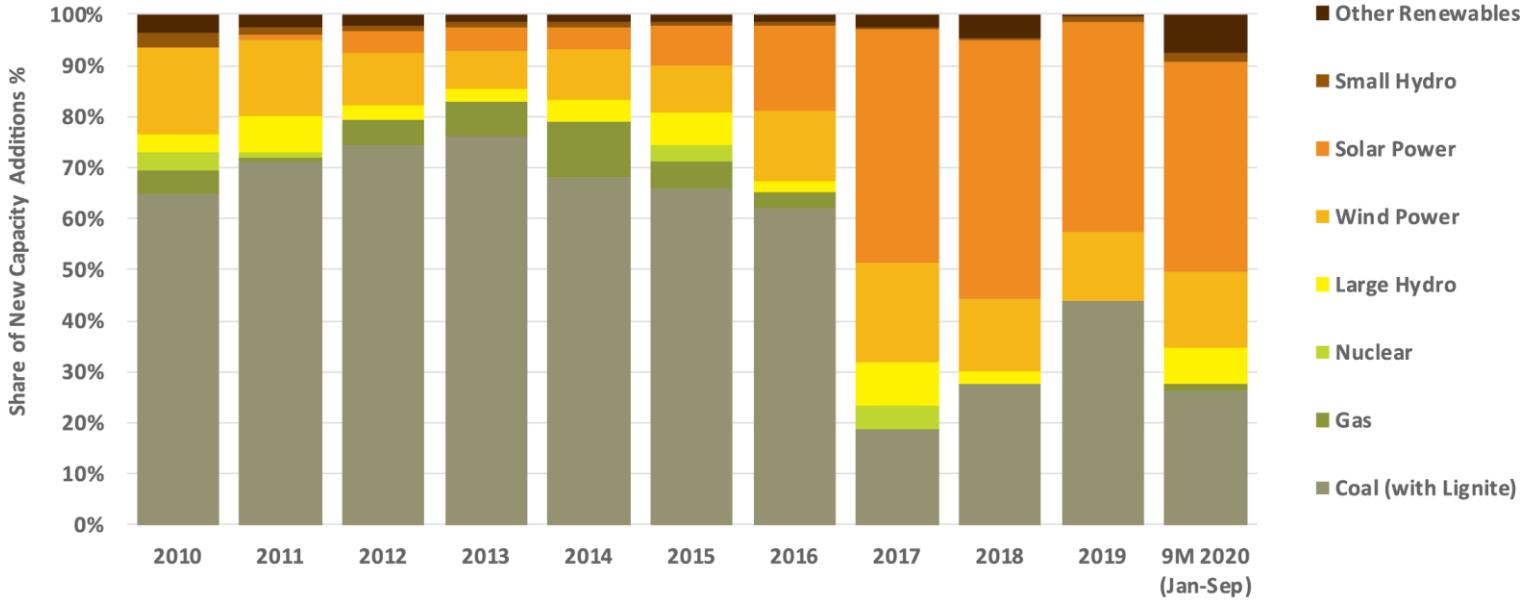
Source: Mercom India Research (Nov 2020)

Share of Solar

Solar Accounted for ~41% of New Power Capacity Additions in 9M 2020

Share of New Power Capacity Additions in India (2010-9M 2020)

Solar and Wind account for 57% of New Power Capacity Additions during 9M 2020



Data from CEA, MNRE, Mercom India Solar Project Tracker

Source: Mercom India Research (Sep 2020)

Solar makes up ~10% of India's Total Energy Capacity

- Renewable energy sources (including large hydro) accounted for ~36.4% of the India's power capacity mix at the end of Q3 2020
- Cumulative solar installations at the end of Q3 2020 reached ~37.4 GW, representing 10% of the total power capacity in India.
- Among the renewables, solar accounted for approximately 27.4% of the installed capacity
- India added a total power capacity of around 4.2 GW in the first nine months (9M) of 2020. Solar and wind accounted for 56% of the new power capacity added during the period of Jul-Sep 2020

India - Cumulative Installed Power Capacity Mix (%)

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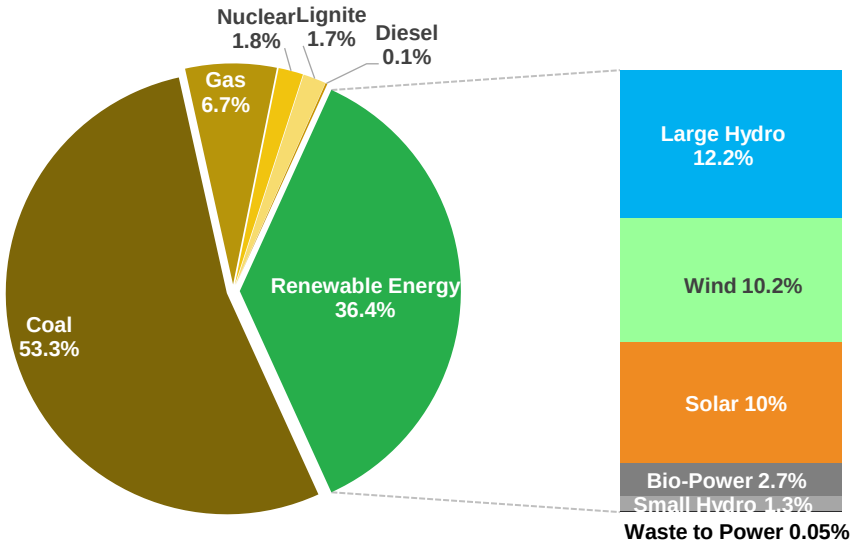
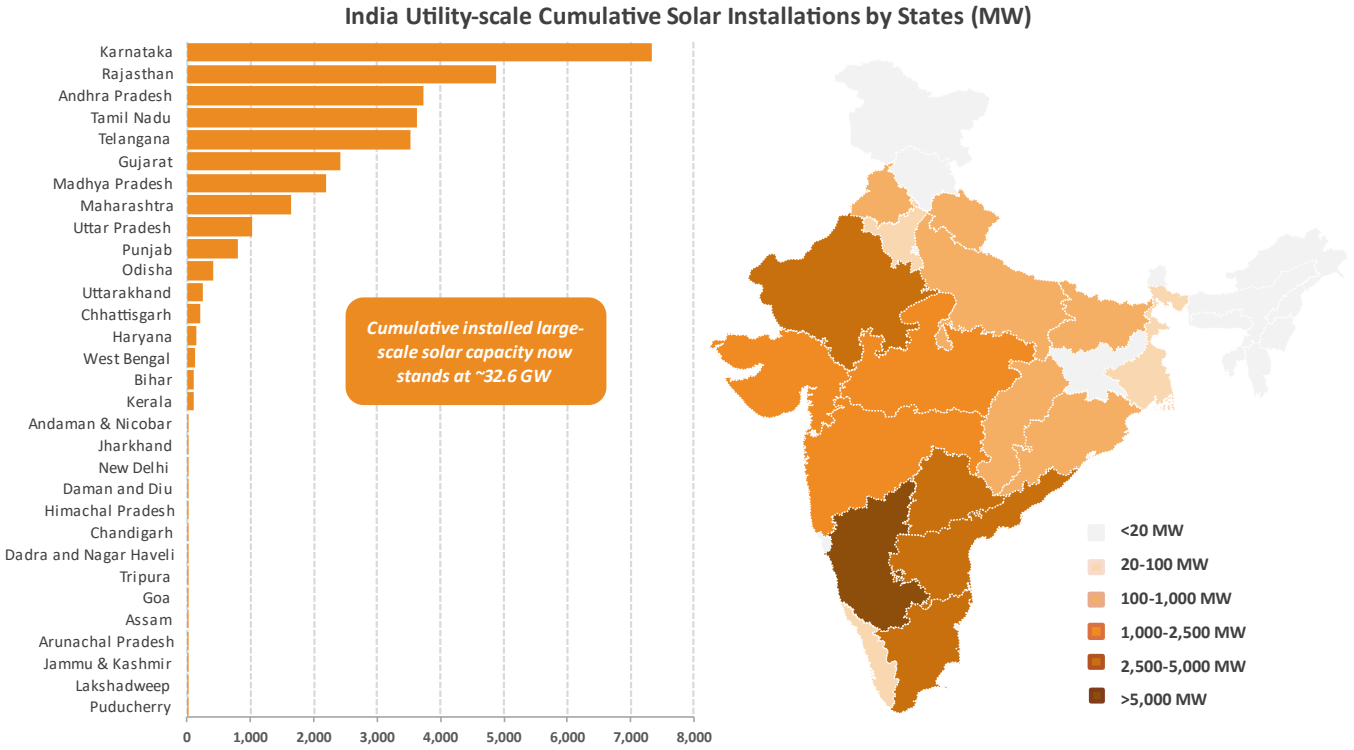


Source: Mercom India Research (Sep 2020)

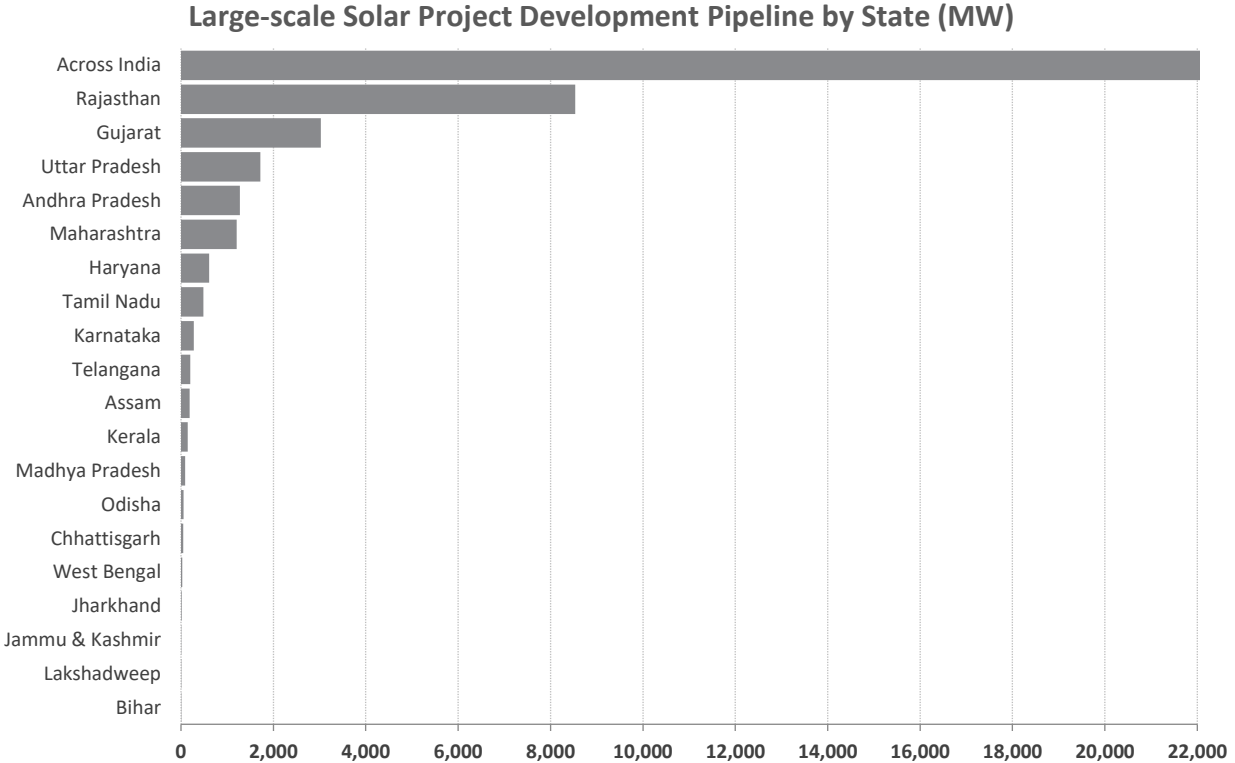
Project Development by State

India Solar Cumulative Installations By State (MW)



Source: Mercom India Research (Sep 2020)

Solar Project Development Pipeline By State (MW)

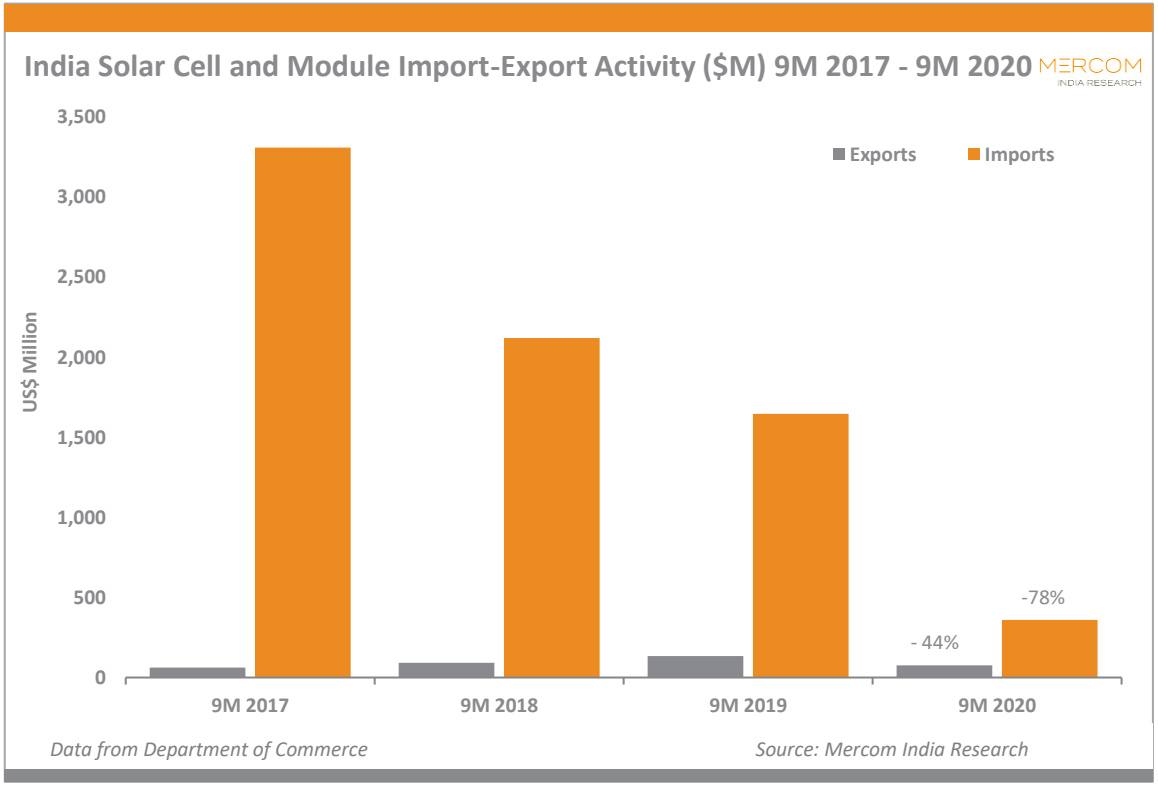


Source: Mercom India Research (Sep 2020)

Solar Trade

Import-Export Trends in the Indian Solar Market

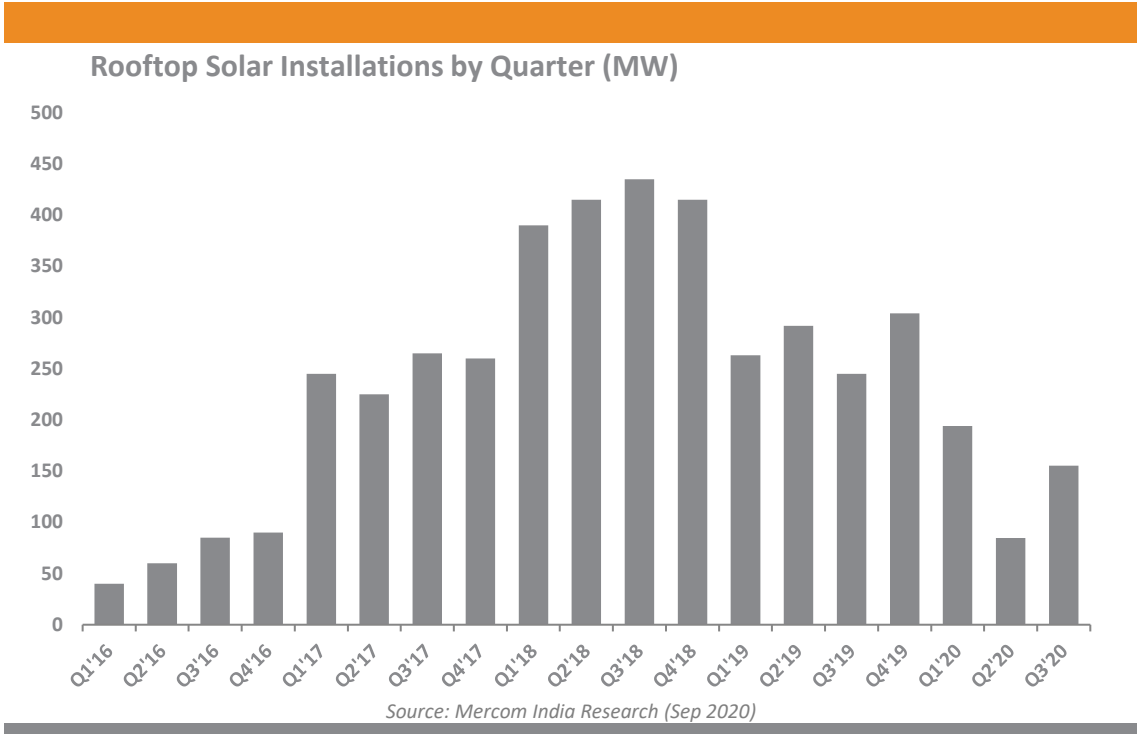
- In the 9M 2020, imports slipped 78% to $359.9 million (~₹26.5 billion) from $1.6 billion (~₹115.7 billion) during the same period last year
- Exports during 9M 2020 also fell 44% compared to the same period last year
- The country saw $76.1 million (~₹5.6 billion) of solar exports, down from $135.6 million (~₹9.5 billion) in 9M 2019
- On an annual basis, imports continued to remain low as the economy struggles to cope with the Coronavirus crisis
- China's 9M 2020 imports declined by ~75% when compared with 9M 2019. Whereas exports to U.S. in 9M 2020 declined by ~27% compared to previous year's same period



Rooftop Solar

Rooftop Solar

- Rooftop solar installations accounted for ~434 MW during 9M 2020, 46% decline compare to 9M 2019. Mercom forecasts around 604 MW of rooftop capacity to be added by the end of 2020
- The worst seems to be over for the rooftop market as installation activity has picked up after a weak Q2. Installers are reporting intense competition with multiple companies vying for the same business and pushing prices down
- Cumulative solar rooftop installations in India totaled ~4.8 GW as of Q3 2020. Rooftop installations still only make up 13% of total solar installations in the country, against the target of 40 GW by 2022



Source: Mercom India Research (Sep 2020)

Market Leaderboard

Solar Market Leaderboard 1H 2020

- Top 10 solar PV project developers in India accounted for over 94% of all utility-scale project installations. Hero Future Energies was the top developer with the most utility-scale solar installations in the first half of 2020
- Top 10 installers accounted for over 70% of the rooftop installed capacity in India. Tata Power Solar emerged as the top rooftop installer in 1H 2020
- Sterling and Wilson was the top Solar EPC company in 1H 2020
- Sungrow was the top solar central inverter supplier and Huawei was the top string inverter supplier in India in 1H 2020
- Top ten module suppliers accounted for over 74% of the market in 1H 2020. LONGi Solar was the top solar modules supplier to India in 1H 2020
- Around 15 solar robotic cleaning suppliers were active in the Indian solar market in 1H 2020 with Solabot Technologies emerging as the top supplier
- Mahindra Susten emerged as the top solar mounting company. There are over 60 suppliers of solar mounting structures active in the Indian market.

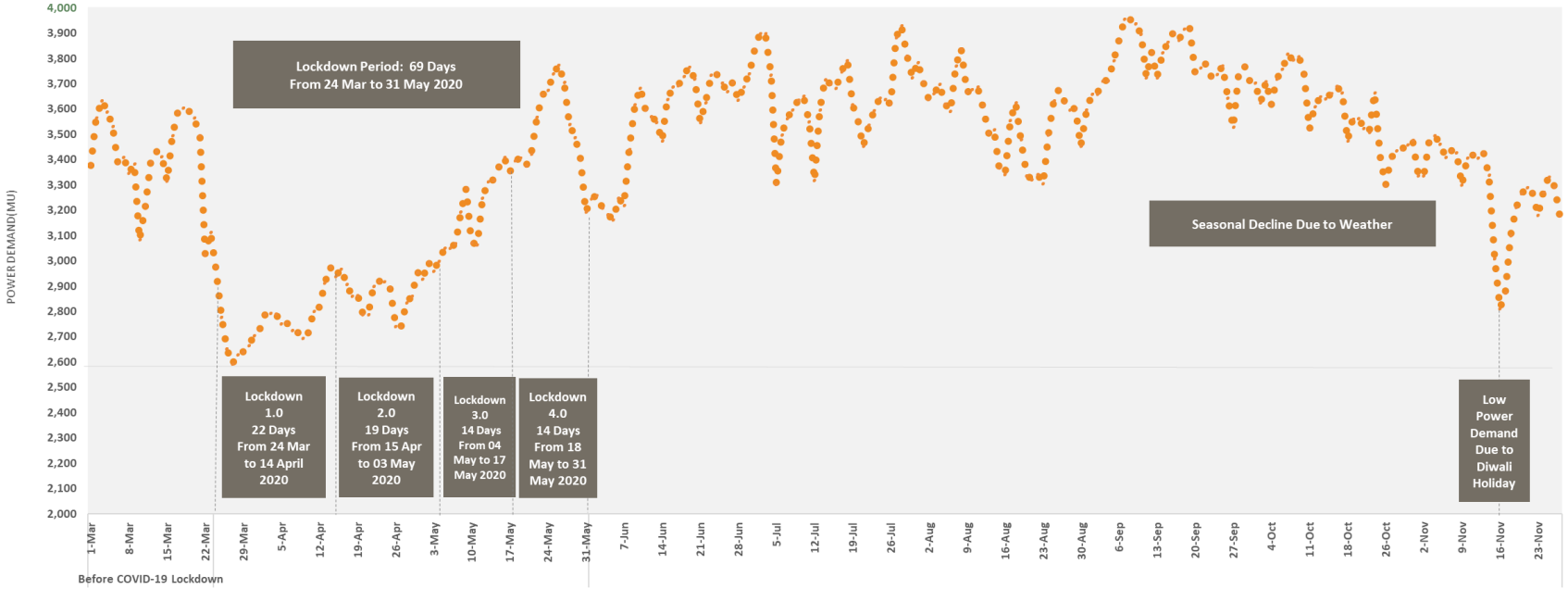
Click here to get the full report

Solar Market Outlook

Power Demand is Almost Back to Pre-COVID Levels

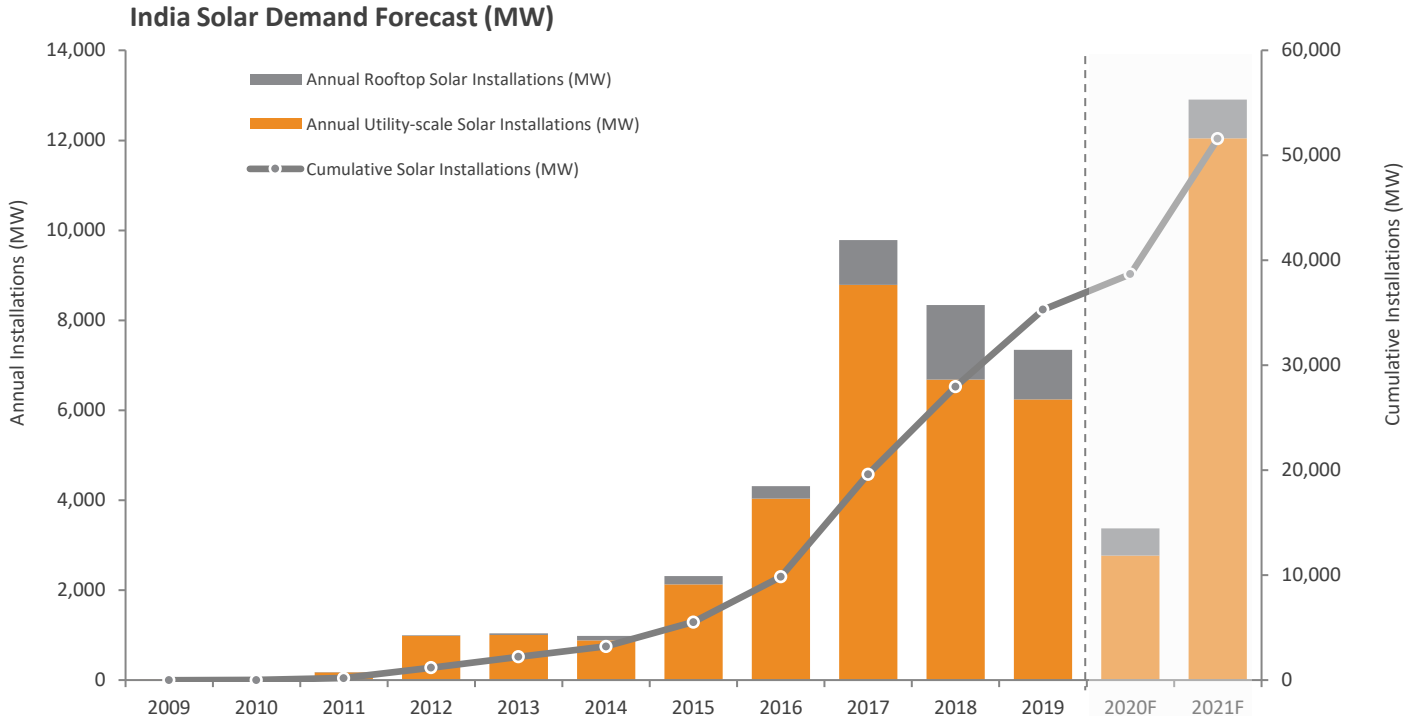
- Data from POSOCO, the National Load Despatch Centre, has shown that power demand in the country rose after it dipped during the COVID-19-induced nationwide lockdown
- The data showed that after the lockdown was lifted, the average daily power demand stood at 3,595 million units (MU) for the period between June 1, 2020, and August 27, 2020
- During the 69-day lockdown period between March 24, 2020, to May 31, 2020, demand averaged 3,037 MU
- Before the lockdown, the average daily power demand in the country stood at 3,416 MU in the period between March 1, 2020, and March 23, 2020, according to POSOCO's data
- The Central Energy Authority's latest Load Generation Balance Report also showed that India would have an energy surplus of 2.7% and a peak surplus of 9.1% for the year 2020-21
- It noted that the electricity demand fell amid the COVID-19 crisis in April and May 2020. CEA said that it expects power demand to meet its trajectory as lockdown restrictions ease, and the economy starts to recover

Daily Power Demand (MU) 2020



Source: National Load Dispatch Center

India’s Solar Installation Outlook



Source: Mercom India Research (Sep 2020)

2020 Solar Installation Outlook

Forecast	Mercom India Research forecasts about 3.3 GW of solar installations in 2020. The market is almost fully functional but most of the projects from 2020 have been postponed to 1H of 2021
Demand	Power demand is almost back up to pre-COVID levels, and interest rates for solar projects have come down by nearly a percentage point.
Outlook	The mood is upbeat as the industry heads into one of the best years forecasted. Mercom estimates significant solar additions in 2021, barring an unforeseen COVID related disaster.

Mercom's Research Products

India Solar Project Tracker	India Solar Tender Tracker & Alerts
India Solar Market Share Leaderboard Report and Tracker	India Solar Quarterly Market Report
India Solar Regulatory Updates and Alerts	India Solar Import/Export Tracker
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