Q3 2020 RE UPDATE

July-Sept

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Office: 1604, Regus, 16th Floor, Tower -B, World Trade Tower, Sector -16, Noida - 201301, UP (INDIA)
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1. Executive Summary

In Q3 2020 (Jul-Sep 2020), the renewable energy market started showing signs of improvement and subsequently picked up the pace. This is evident from the fact that the third quarter had 80% higher solar installations than Q2. Whereas wind clocked double the capacity compared to the previous quarter. The total installed capacity in Q3 2020 stood at 545 MW for solar and 295 MW for wind.

Further, according to the equipment shipment data received by JMK Research, about 3 GW of central and string inverters and over 2.7 GW of modules were shipped in Q3 2020, in India. On this basis, we estimate that in next two quarters i.e. Q4 2020 and Q1 2021, about 4 GW of solar and 1.8 GW of wind along with 790 MW of hybrid wind solar projects are likely to be commissioned.

Before COVID-19, 2020 was anticipated to be the year of growth for solar and wind installations in India and we projected addition of 8 GW of new solar capacity. However, according to our revised estimates for the calendar year 2020, the total capacity addition of new utility scale solar and wind is likely to be about 2.8 GW and 1.2 GW respectively. While in 2021, we can expect installation of about 8.8 GW of new solar capacity and 2.3 GW of new wind capacity.

Despite COVID-19, the rooftop solar could make some strides and added substantial capacity of 883 MW in first nine months of 2020. We are expecting that the capacity addition in rooftop solar in 2020 will be about 1.2 GW.

In Q3 2020, Sungrow led the central as well as string inverter category with over 1 GW of shipments. In the module category, Longi contributed to 30% share of total shipments. As per the data received from the market players, nearly 50% of the module shipments in India in Q3 2020 are high efficiency mono PERC modules. Key factors contributing to this significant market shift from multi to mono are narrowing price difference between the two, higher efficiency of mono modules and complete shift to mono production by leading Chinese suppliers.

In terms of tender activity, in Q3 2020, 32 new tenders aggregating to a total capacity of 7.2 GW were issued across solar and wind segment. This is about 36% higher compared to the tenders (5.12 GW) issued in Q2. Amongst, the auctions completed in Q3 2020, the maximum solar capacity is won by JSW Energy (810 MW), Tata Power (470 MW) and O2 Power (400 MW).

The biggest deal of Q3 2020 was by Actis Lifelong infrastructure Fund (ALLIF) acquiring 100% stake in ACME solar assets of 400 MW at USD 334 million.

The report also analyses module price trends in India, equipment procurement timeline for next 6 months as well as import export trends of solar modules, details of which are elaborated in further sections.
2. Installation trends

2.1 Cumulative installation trends

India’s renewable capacity installation reached 89.3 GW as of September 30, 2020. Wind is the major contributor with 43% share in total renewable mix, followed by solar with 40% share.

As of September 30, 2020, about 36 GW of solar and 38 GW of wind capacity is installed in India. Current pipeline of solar, wind and hybrid projects stands at 49 GW which is likely to be commissioned in the next three years. Another 18 GW of projects are under bidding phase i.e. where tenders are issued but auctions are not completed.

Figure 2.1: RE installation trends, as of September 30, 2020
2.2 Yearly installation trends and projections

**Solar**: From Jan-Sep 2020, about 1.4 GW of new utility-scale solar capacity was added in India. Compared to Jan-Sep 2019 period of previous year, installations are 70% lesser. Rajasthan, Tamil Nadu, and Maharashtra were the leading States with most of the large-scale solar installations during this period.

On the rooftop solar side, despite lockdown and COVID-19, about 883 MW of new capacity was added. Gujarat ranks first with 380 MW capacity addition, contributing nearly 43% of the total rooftop installations in the first nine months of 2020, followed by Rajasthan (150 MW). After Gujarat, Rajasthan (150 MW) and Tamil Nadu (92 MW) were the leading states who added the highest rooftop solar capacity.

**Wind**: From Jan-Sep 2020, about 619 MW of new wind capacity was added. In the wind segment, only three states have added fresh capacities in 2020. Gujarat holds the first place with total installation of 486 MW followed by Tamil Nadu (92 MW) and Karnataka (41 MW).

Figure 2.2 Year-wise solar and wind installation trends in India
2.2 Yearly Projections

Before COVID-19, 2020 was anticipated to be the year of growth for solar and wind installations in India and we projected to add 8 GW of new solar capacity in 2020. However, according to our revised estimates now, in 2020, only about 2.8 GW of new utility scale solar capacity and 1.2 GW of wind is expected to be added. While in 2021, about 8.8 GW of new solar capacity and 2.3 GW of new wind capacity is expected to be installed.

Despite COVID-19, rooftop solar is able to still make some strides and added substantial capacity (883 MW) in first nine months of 2020. We are estimating that the capacity addition in rooftop solar in 2020 will be about 1.2 GW.

2.3 Quarterly Trends

In Q3 2020 (Jul-Sep 2020), 545 MW of solar capacity was installed. This is about 80% higher than the previous quarter installations. In wind, about 295 MW were added, which is double the Q2 2020 installations. Market has started showing signs of improvement post COVID-19 and the pace is likely to pick up substantially in first half of 2021. Most of the new capacity added in Q3 2020 is under open access route across Tamil Nadu, Rajasthan and Gujarat.

As per our estimates, in Q4 2020 installation activity is likely to further pick up with an estimate of 1.2 GW of new solar capacity and 600 MW of new wind capacity addition. As per the equipment shipment data received by JMK Research for Q3 2020, 1.5 GW of string inverters and 1.5 GW of central inverters are supplied in India. Lot of utility scale projects are also shifting towards string inverters now. Huawei and Sungrow are leading players supplying string inverters to utility scale solar projects. Modules of more than 2.7 GW were shipped in Q3 2020. These shipment numbers are almost double than the previous quarter (Q2 2020) data that we had received. Basis this, we estimate that in Q4 2020, about 1.2 GW and in Q1 2021, nearly 2.5-3 GW of new solar capacity is likely to be added.
2.4 State-wise Installations

Tamil Nadu (214 MW) and Telangana (130 MW) saw maximum solar installations in Q3 2020 while maximum wind installations in this quarter were in Gujarat (222 MW) and Tamil Nadu (73 MW) only. Most of the solar and wind projects commissioned in Tamil Nadu are open access projects catering to commercial & industrial consumers.
In terms of cumulative utility scale solar installations, as of September 30, 2020, Karnataka, Rajasthan and Tamil Nadu contribute 47% of the total capacity in India. In wind, maximum projects are installed in Tamil Nadu, Gujarat and Maharashtra. Together, these states contribute 58% of the total wind capacity installed in India.
3. Market shares

3.1 Inverter suppliers

For Q3 2020, we have received more than 3 GW of shipment data from 15 players providing both central and string inverters in India. Sungrow was the leading supplier with more than 1 GW shipment across central and string inverter category.

Figure 3.1- Leading central inverter suppliers in solar sector in India in Q3 2020

Sungrow led the Q3 2020 installations with 400 MW+ shipments

Figure 3.2- Leading string inverter suppliers in solar sector in India in Q3 2020

Note: Leading players are listed based on their shipment numbers in Q3 2020 (Jul-Sep) in India. SMA, Hitachi Hirel has not shared their quarterly data, hence not included.
3.2 Module Suppliers

For Q3 2020, we received about 2.7 GW of module shipment data from 16 leading suppliers. Longi emerged as the leading supplier contributing 30% share of total shipments.

As per the data received from the market players, nearly 50% of the module shipments in India in Q3 2020 are high efficiency mono PERC modules. Key factors contributing to this significant market shift from multi to mono are narrowing price difference between the two, higher efficiency of mono modules and complete shift to mono production by leading Chinese suppliers.

Figure 3.3: Leading module suppliers in solar segment in India in Q3 2020

Note: Leading players are listed based on their shipment numbers in Q3 2020 in India. Suntech, JA Solar, PV Powertech, Saatvik have not shared their quarterly data, hence not included.
3.3 Project Developers

In terms of cumulative installations, across the utility-scale solar and the wind segment, as of Sep 30, 2020, Adani is the leading player with about 2.8 GW of operating portfolio and another 11 GW of projects in pipeline.

Figure 3.4 - Top 10 project developers, as of September 30, 2020

Source: JMK Research
4. Tenders

4.1 New Tenders

In Q3 2020, 32 new tenders aggregating to a total capacity of 7.2 GW were issued across solar and wind segment. Compared to Q2 2020 tender issuance of 5.3 GW, this is about 36% higher.

SECI has issued tenders of 1185 MW capacity in this period. This includes a plain vanilla solar tender of 1070 MW in Rajasthan, a 100 MW solar with 50 MWh battery energy storage tender in Chhattisgarh and another small 15 MW floating solar project tender in Himachal Pradesh. Another significant solar tender of 500 MW (Tranche IX) was issued by GUVNL.

Fig 4.1 New RE tender issuance in Q3 2020

Source: JMK Research
In Q3 2020, 7 new project development tenders of 1.7 GW were issued.

In the rooftop solar segment, 10 new tenders of 40.25 MW were issued. The rooftop solar tender issuance activity saw a decline of 49% compared to the previous quarter i.e. Q2 (78.8 MW).
In Q3 2020, about 7.17 GW of new RE tenders were issued, 4.74 GW of tenders’ auction was completed; out of which about 3.18 GW was allocated. Even though tender issuance as well as auctions are going on progressively, SECI is facing challenges in signing Power Sale Agreement (PSA) of certain high tariff tenders earlier allocated including SECI’s manufacturing linked project tender. Therefore, in order to attract the DISCOMS through attractive tariff rates SECI has decided to pool high discovered tariffs with other low tariffs in subsequent auctions.

4.2 Successful Auctions

In Q3 2020, about 4737 MW capacity was auctioned out of which 3177 MW has been allocated. Out of the auctioned capacity, 1980 MW are of utility scale solar tenders while 1195 MW are wind-solar hybrid tenders. All tenders were nearly fully subscribed except 2500 MW wind solar hybrid tender which was undersubscribed by 56%. This was earlier a plain vanilla wind tender issued by SECI but because of poor response from developers it was later converted into a blended/ hybrid tender with 80% wind component and 20% solar component. Because of the lack of availability of good windy sites and land acquisition issues, developers response has been poor for most wind tenders in the past as well.
Amongst the auction completed in Q3 2020, maximum solar capacity is won by JSW Energy (810 MW), O2 Power (600 MW) and Tata Power (470 MW). JSW Energy is the new entrant that has marked its foray in the RE sector with its first win of 810 MW project under SECI, 2.5 GW, wind-solar blended tender (Tranche IX). Currently, JSW Energy has a power generation portfolio of 4,559 MW comprising 3,158 MW thermal, 1,391 MW hydel and 10 MW of solar power plants. The company aims to reach 10,000 MW capacity in the next few years, which is likely to be added mainly through renewables.
4.3 Tariff Trends

In Q3 2020, India has achieved the second lowest solar tariff of Rs. 2.43/kWh till date. In the previous quarter i.e. Q2 2020, India has witnessed the historic lowest tariff of Rs 2.36/kWh for 2 GW of ISTS solar tender by SECI. These lowest solar tariffs is attributed to zero safeguard duty, and a pass-through from basic custom duty under ‘change in law’ provision in this specific period.

In the wind segment, auction was conducted after six months for SECI 2.5 GW Tranche IX “wind blended with solar” tender with the lowest winning tariff of Rs 2.99/kWh and highest winning tariff of Rs 3/kWh.

Fig 4.8 Tariff trend in auctioned solar tenders

Source: JMK Research
5. Equipment Procurement

In Q4 2020 and Q1 2021, for about 8.5 GW of solar projects, developers are expected to start modules and inverter procurement. The scheduled commissioning of these projects is from April 2021-Sep 2021. This includes 1560 MW of Wind solar hybrid projects by Adani, SB Energy and ReNew Power as well.

Fig 5.1 Top developers likely to procure inverters and modules in Q4 2020 and Q1 2021
6. Investments

The investment flow in RE sector in Q3 2020 (USD 409 million) which is marginally higher than the investments in Q2 2020 (USD 397 million). In total in first nine months of 2020, there is investment flow of more than USD 2676 million in India.

Key investment deals in Q3 2020 were:

- Actis Lifelong infrastructure Fund (ALLIF) acquired 100% stake in ACME solar assets of 400 MW of worth USD 334 million. The portfolio comprises of 150 MW capacity (consists of 50 MW each) assets in Andhra Pradesh and 250 MW capacity assets in Madhya Pradesh.

- Global infrastructure partners completed acquisition of 306 MW solar assets of RattanIndia for USD 227 million

- Amplus acquired 100 MW of solar assets from Acme for USD 109 million.

Note: Other includes IPO, JV, grant, debt and mezzanine funding.
Table 6.1 Summary of key financial deals in Q3 2020 in RE sector

<table>
<thead>
<tr>
<th>Date</th>
<th>Company Name</th>
<th>Deal Type</th>
<th>Sector</th>
<th>Investor</th>
<th>Deal Value (USD Mn)</th>
<th>Capacity Acquired</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-Jul</td>
<td>IBC Solar</td>
<td>Acquisition</td>
<td>Solar</td>
<td>Next Energy Capital</td>
<td>Value is not disclosed</td>
<td>274 MW</td>
</tr>
<tr>
<td>20-Jul</td>
<td>Fourth Partner Energy</td>
<td>Debt Funding</td>
<td>Solar</td>
<td>ResponseAbility Zurich based asset management firm</td>
<td>14.6</td>
<td></td>
</tr>
<tr>
<td>20-Aug</td>
<td>Acme Solar Holdings Ltd.</td>
<td>Acquisition</td>
<td>Solar</td>
<td>Actis</td>
<td>312</td>
<td>400 MW</td>
</tr>
<tr>
<td>20-Aug</td>
<td>First Solar</td>
<td>Acquisition</td>
<td>Solar</td>
<td>Ayana Renewable Power</td>
<td></td>
<td>40 MW</td>
</tr>
<tr>
<td>20-Sep</td>
<td>RattanIndia</td>
<td>Acquisition</td>
<td>Solar</td>
<td>Global Infrastructure Partners</td>
<td>227</td>
<td>306 MW</td>
</tr>
<tr>
<td>20-Sep</td>
<td>Acme Solar</td>
<td>Acquisition</td>
<td>Solar</td>
<td>Amplus Energy Solutions</td>
<td>109</td>
<td>100 MW</td>
</tr>
<tr>
<td>20-Sep</td>
<td>Avaada Energy Private Ltd.</td>
<td>Equity</td>
<td>Solar</td>
<td>Asian Development Bank</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>20-Sep</td>
<td>Fourth Partner Energy</td>
<td>Mezzanine funding</td>
<td>Solar</td>
<td>Sri KPR Infra &amp; Projects</td>
<td>16</td>
<td></td>
</tr>
</tbody>
</table>

Source: JMK Research
7. Price trends

In the overseas market, from Jan 2020 till Sept 2020, the price of solar cells fell by about 6% while that of multi-crystalline and mono-crystalline solar modules reduced by 14% and 13% respectively.

In the Indian market, the price for Chinese multi crystalline modules (excluding GST and safeguard duty), was about 17.5 -18.2 US cents/ Wp in Q3 2020. This is about 13% decline from Q3 2019 prices. Prices for mono modules is about 20-21 US cents/ Wp in Q3 2020.

*Note: These prices are excluding safeguard duty and GST*
8. Quarterly Import-Export Statistics

In Q3 2020, imports have increased by 87% compared to Q2 2020 while exports have fallen by nearly 31% compared to previous quarter’s trade figures. Total imports from Jan-Sep 2020 period have fallen by about 78% compared to same period last year (Jan-Sep 2019).

Fig 8.1 Quarterly import/ export trends of solar modules in India

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Exports</th>
<th>Imports</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1 2018</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q2 2018</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q3 2018</td>
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<td></td>
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<tr>
<td>Q4 2018</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q1 2019</td>
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<td>Q2 2019</td>
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<td>Q3 2019</td>
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<td>Q4 2019</td>
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<td>Q1 2020</td>
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<tr>
<td>Q2 2020</td>
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</tr>
<tr>
<td>Q3 2020</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Table 9.1: Details of key tenders issued in Q3 2020

<table>
<thead>
<tr>
<th>Tender Name</th>
<th>Date of Issue</th>
<th>Tendered Capacity</th>
<th>State</th>
<th>Technology</th>
<th>Tender Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>SECI, 1070 MW, Solar, (Tranche III), Rajasthan, July 2020</td>
<td>Jul 2020</td>
<td>1070</td>
<td>Rajasthan</td>
<td>Solar</td>
<td>Project Development</td>
</tr>
<tr>
<td>REMCL, 1GW, Solar (EPC), Pan India, July 2020</td>
<td>Jul 2020</td>
<td>1000</td>
<td>Pan India</td>
<td>Solar</td>
<td>EPC</td>
</tr>
<tr>
<td>NTPC, 1GW, Pan India, July 2020</td>
<td>Jul 2020</td>
<td>1000</td>
<td>Pan India</td>
<td>Solar</td>
<td>Solar Project Acquisition</td>
</tr>
<tr>
<td>SJVN Ltd., 100 MW Solar power, (EPC) Dholera Solar Park (Phase IX), Gujarat, July 2020</td>
<td>Jul 2020</td>
<td>100</td>
<td>Gujarat</td>
<td>Solar</td>
<td>EPC</td>
</tr>
<tr>
<td>NHPC, 50 MW, Floating Solar, Kerala, July 2020</td>
<td>Jul 2020</td>
<td>50</td>
<td>Kerala</td>
<td>Floating Solar</td>
<td>Project Development</td>
</tr>
<tr>
<td>NTPC, 1070 MW, Solar (EPC), Rajasthan, Aug-20</td>
<td>Aug 2020</td>
<td>1070</td>
<td>Rajasthan</td>
<td>Solar</td>
<td>EPC</td>
</tr>
<tr>
<td>GUJVNL, 500 MW, Solar, Gujarat, Phase IX, Sept 20</td>
<td>Sep 2020</td>
<td>500</td>
<td>Gujarat</td>
<td>Solar</td>
<td>Project Development</td>
</tr>
<tr>
<td>GSECL, 210 MW, Solar, Gujarat, Sept 20</td>
<td>Sep 2020</td>
<td>210</td>
<td>Gujarat</td>
<td>Solar</td>
<td>EPC</td>
</tr>
<tr>
<td>SECI, 100 MW, Solar, Chhattisgarh, 50 MWh BESS, Sept 20</td>
<td>Sep 2020</td>
<td>100</td>
<td>Chhattisgarh</td>
<td>Solar • Battery Storage</td>
<td>Project Development</td>
</tr>
</tbody>
</table>

Source: JMK Research
Table 9.2: Details of auctions completed in Q3 2020 (July-Sept 2020)

<table>
<thead>
<tr>
<th>Tender Name</th>
<th>Status</th>
<th>Tendered Capacity (MW)</th>
<th>Capacity allotted / Bids submitted (MW)</th>
<th>Bidders / Winners Details</th>
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<tbody>
<tr>
<td>Tata Power, 225 MW, Wind-Solar Hybrid, June 2020</td>
<td>Results announced</td>
<td>225</td>
<td>225</td>
<td>• Tata Power Green Energy Ltd.</td>
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<tr>
<td>SECI, 1.95 MW, (1.95MW +2.15 MWh battery energy storage) Solar, Lakshadweep, September 2019</td>
<td>Results announced</td>
<td>1.95</td>
<td>1.95</td>
<td>• Sunsource Energy</td>
</tr>
<tr>
<td>NTPC, 1,200 MW, Solar PAN India Feb-20</td>
<td>Results announced</td>
<td>1200</td>
<td>1170</td>
<td>• O2 Power (400 MW, INR 2.43/kWh),</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Tata Power (370 MW, INR 2.43/kWh),</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Azure Power (300 MW, INR 2.43/kWh),</td>
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<td></td>
<td>• Amp Energy Green (100 MW, INR 2.44/kWh),</td>
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<td></td>
<td>• SJVN Ltd. (INR 2.73/kWh)</td>
</tr>
<tr>
<td>GUVNL, 700 MW, Solar, March 2020</td>
<td>Results announced</td>
<td>700</td>
<td>700</td>
<td>• Vena Energy Renewables (100 MW, INR 2.78/kWh),</td>
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<td></td>
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<td></td>
<td>• Tata Power (100 MW, INR 2.78/kWh),</td>
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<td></td>
<td></td>
<td></td>
<td>• Renew Solar (200 MW, INR 2.79/kWh),</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>• SJVN Ltd. (100 MW, INR 2.80/kWh),</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>• O2 Power (200 MW, INR 2.81/kWh)</td>
</tr>
<tr>
<td>SECI, 2,500 MW, Blended Wind Solar, Tranche-IX</td>
<td>Results announced</td>
<td>2500</td>
<td>970</td>
<td>• Vena Energy Renewables (160 MW, INR 2.99/kWh),</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>• JSW Solar (810 MW, INR 3.00/kWh)</td>
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<tr>
<td>SECI, 10 MW, Solar, Rajasthan, June 2020</td>
<td>Results announced</td>
<td>10</td>
<td>10</td>
<td>• REC Power Distribution Company Ltd (INR 2.58/kWh)</td>
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</table>

Source: JMK Research