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30+ QUALITY TESTS BEFORE REACHING YOU
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1. Executive Summary

In H1 2020, about 1 GW of new utility-scale solar capacity was added in India which is a 70% drop compared to H1 2019 installations. In wind, about 325 MW of new wind capacity was added in H1 2020, which is 80% lesser than the H1 2019 installations.

In terms of quarterly installation trends, in Q2 2020 (Apr- June 2020), about 135 MW of new capacity was added which is a 28% lesser than the Q1 2020 installations.

Before the COVID-19 pandemic, 2020 was anticipated to be the year of growth for both solar and wind sectors in India. Owing to the current crisis, as per our estimates for H2 2020, only about 2.2-2.5 GW of new solar projects and 800 MW of wind projects are likely to be commissioned. Thus, the split of the newly added total capacity in CY2020 would be about 3.5 GW of utility scale solar capacity and 1.2 GW of wind. With the recovery in sight and industry picking up the lost pace, the CY2021 would bounce back with expected commissioned capacity of 7.7 GW of new solar installations and 2.2 GW of new wind installations.

Rooftop solar industry is worst hit by COVID-19 pandemic. In CY2020, we estimate that about 1-1.2 GW of total rooftop solar is likely to be added.

In Q2 2020, Sungrow was the leading player in the central inverter category while Huawei continue to ship the highest number of string inverters. In terms of module shipment in this quarter in India, Adani shipped the maximum quantity of about 160 MW, while amongst chinese suppliers, Jinko Solar is the leading player. As per the data received from the market players, nearly 22% of the total shipments in India in Q2 2020 are high efficiency mono PERC modules.

In terms of tender activity, in Q2 2020, about 5.2 GW of new RE tenders were issued, and auction was completed for 4.5 GW of tenders. Amongst the auctions completed, ReNew (800 MW), EDEN (600 MW) and SB Energy (600 MW) won maximum capacity.

In this quarter, India achieved a historic low solar tariff of Rs. 2.36/ kWh for SECI’s 2 GW ISTS Tranche-IX solar tender. The low tariff is attributed to zero safeguard duty, and a pass-through from basic custom duty (BCD) under ‘change in law’ provision in this specific period.

The biggest deal in Q2 2020 was by global Investment firm KKR which acquired Shapoorji Pallonji solar power assets of 317 MW capacity of worth USD 204 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 87.7 GW as of June 30, 2020. Wind has been the major contributor with 43% share at 38 GW, followed by solar with 40% share at 35 GW.

Current pipeline of solar, wind and hybrid projects stands at 47 GW while another 24 GW of projects are under bidding phase where tenders have been issued but auctions are yet to complete.

![RE installation trends](image-url)

Note: Solar includes both utility scale solar as well as rooftop solar installations.
2.2 Yearly installation trends and projections

**Solar:** In H1 2020, about 1 GW of new utility-scale solar capacity was added in India which is 70% lesser than the installations in H1 2019. In H1 2020, Rajasthan added the maximum capacity of 525 MW, followed by Tamil Nadu with 260 MW. Together these states contributed about 76% of all utility-scale solar installations. Acme and Hero Future Energies were the lead project developers to add the maximum solar capacity in H1 2020.

**Wind:** In H1 2020, about 325 MW of new wind capacity was added, which is about 80% lesser than the H1 2019 installations. Gujarat led the installations with the commissioning of 264 MW of new wind projects. SITAC RE, ReNew Power and Adani were the frontrunners who added the maximum wind capacity.

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

**Yearly Projections**

Before COVID-19, 2020 was anticipated to be the year of growth for solar and wind sector in India. However, because of current crisis many projects got delayed and now according to our revised estimates, in CY2020, we can expect an addition of only about 3.5 GW of new utility scale solar and 1.2 GW of wind capacity. While in CY2021, about 7.7 GW of new solar capacity and 2.2 GW of new wind capacity is expected to be installed.

Rooftop solar industry has been severely hit by COVID 19 pandemic. In the current situation, Commercial & Industrial segment (which contributes more than 70% of total rooftop solar market in India) is more focussed in streamlining its core business operations rather than investing in rooftop solar. So much uncertainty would make C&I consumers skeptical about signing long term contractual agreements of 10-12 years under OPEX model.

As per our estimates, about 1.5 GW of rooftop solar is likely to be added in FY 2021 whereas CY2020 might get only 1 GW of new rooftop installations.

2.3 Quarterly Trends

In Q2 2020 (Apr- June, 2020), 304 MW capacity of solar (58% lesser than the previous quarter) and 135 MW of wind projects (28% lesser than the Q1 2020) were installed. The details of projects commissioned in Q2 2020 is given in Annexure 9.3

The installation activity is expected to pick up in Q3 2020. As per the equipment shipment data received by JMK Research, in Q2 2020, about 500+ MW of string inverters and 600 MW of central inverters have been supplied in India. Modules of more than 900 MW+ were shipped in Q2 2020. Basis this, it is estimated that in H2 2020, about 2.2-2.5 GW of new solar projects and 800 MW of wind projects are likely to be commissioned.

Figure 2.3 Quarter-wise utility scale solar and wind installations

Yearly Projections

Before COVID-19, 2020 was anticipated to be the year of growth for solar and wind sector in India. However, because of current crisis many projects got delayed and now according to our revised estimates, in CY2020, we can expect an addition of only about 3.5 GW of new utility scale solar and 1.2 GW of wind capacity. While in CY2021, about 7.7 GW of new solar capacity and 2.2 GW of new wind capacity is expected to be installed.
2.4 State-wise Installations

Tamil Nadu (128 MW) and Gujarat (65 MW) saw maximum solar installations in Q2 2020 while Gujarat (132 MW) had most of the wind installations.

2.5 Cumulative solar and wind installations in India

As of June 30 2020, the states of Karnataka, Rajasthan and Tamil Nadu contributed 49% of all utility scale solar installations in India. In wind, most of the projects were installed in Tamil Nadu, Gujarat and Maharashtra. Together, these states shared 58% of the total wind capacity installed in India.
3. Market shares

3.1 Inverter suppliers

For Q2 2020, we have received about 1 GW of shipment data from 14 players providing both central and string inverters in India. In Q2 2020, Sungrow was the leading player in the central inverter category while Huawei continue to ship the highest number of string inverters.

Figure 3.1- Leading central inverter suppliers in solar sector in India in Q2 2020

Figure 3.2- Leading string inverter suppliers in solar sector in India in Q2 2020

3.2 Module Suppliers

For Q2 2020, we have received about 960 MW of module shipment data from 14 leading suppliers. In Q2 2020, Adani has shipped the maximum quantity of about 160 MW, while amongst chinese suppliers, Jinko Solar is the leading player. As per the data received from the market players, nearly 22% of the total shipments in India in Q2 2020 are of Mono PERC modules.

Figure 3.3- Leading module suppliers in solar segment in India in Q2 2020

3.3 Project Developers

In Q2 2020, Aditya Birla Group and Adani installed maximum solar capacity, while Continuum Wind commissioned biggest wind solar hybrid project of 55 MW.

Figure 3.4- Leading project developers in Q2 2020
In terms of cumulative installations, across the utility-scale solar and the wind segment, as of June 30, 2020, Adani is the leading player with about 2.6 GW of operation portfolio and another 11 GW of projects in pipeline.

4. Tenders

In Q2 2020, 27 new tenders aggregating to a total capacity of 5.23 GW were issued across solar and hybrid segments. Central agencies like SECI, BHEL, NTPC, NHPC issued 90% of these tenders across utility solar, rooftop solar and floating solar segments. Private player - Tata Power issued one hybrid tender of 225 MW capacity.

4.1 New Tenders

In terms of cumulative installations, across the utility-scale solar and the wind segment, as of June 30, 2020, Adani is the leading player with about 2.6 GW of operation portfolio and another 11 GW of projects in pipeline.

Figure 3.5: Top 10 project developers, as of June 30, 2020

In terms of cumulative installations, across the utility-scale solar and the wind segment, as of June 30, 2020, Adani is the leading player with about 2.6 GW of operation portfolio and another 11 GW of projects in pipeline.

Figure 3.5: Top 10 project developers, as of June 30, 2020

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In the rooftop solar segment, 8 new tenders of 79 MW were issued. Majority of the rooftop tenders are issued in Madhya Pradesh (45 MW) and in Haryana (30 MW).

The Government is targeting new projects of large capacity across pan India through interstate Transmission Network (ISTS) network. About 2.5 GW is planned in Ultra Mega Renewable Energy Power Park (UMREPP) in Koppal in Karnataka.

Fig 4.3 Rooftop solar tenders issued in Q2 2020

Fig 4.4 State wise details of tenders issued in Q2 2020

In Q2 2020, about 5.23 GW of new RE tenders were issued. 4.49 GW of tenders’ auction was completed out of which about 4.48 GW was allocated. In Q2 2020, tender issuance capacity reduced by 67% as compared to previous quarter (Q1 2020-16 GW) because of COVID-19 lockdown.

Fig 4.5 Quarter-wise solar, wind and hybrid tender issuance and allocations

4.2 Successful Auctions

In Q2 2020, about 4.495 MW capacity was auctioned out of which 4.489 MW has been allocated. Out of the auctioned capacity, 4,400 MW are of utility scale solar tenders while 95 MW are rooftop solar tenders. Utility scale tenders were fully subscribed while rooftop tenders were subscribed by nearly 91%.
Amongst the auction completed, maximum solar capacity is won by ReNew power (800 MW), EDEN (600 MW) and SB Energy (600 MW). Players like Solarpack, IB Vogt and ENEL who do not have significant solar project pipeline in India have also won significant capacities in these tenders. O2 Power has also won its first major project of 400 MW under NHPC 2 GW solar tender.

Fig 4.7 Developer wise project won in Q2 2020

4.3 Tariff Trends

In this quarter, India achieved historic low solar tariff of Rs. 2.36/kWh for SECI’s 2 GW ISTS tranche-IX tender. The low tariff is attributed to zero safeguard duty, and a pass-through from basic custom duty under ‘change in law’ provision in this specific period.

Fig 4.8 Tariff trend in auctioned solar tenders

5. Equipment Procurement

In Q3 2020 and Q4 2020, for about 8 GW of solar projects, developers are expected to start modules and inverter procurement. The scheduled commissioning of these projects is from Jan 2021-June 2021. This includes 820 MW of wind solar hybrid projects by Adani and SB Energy as well.

Fig 5.1 Top developers likely to procure inverters and modules in Q3 2020 and Q4 2020
6. Investments

The investment flow in RE sector in Q2 2020 (USD 397 million) was about 79% lower than the investments in previous quarter i.e. Q1 2020 (USD 1,870 million). Key investments in Q2 2020 were:

- Global Investment firm KKR acquired 100% stake in Shapoorji Pallonji Infra-structure Capital’s solar power assets of 317 MW capacity of worth USD 204 million. The portfolio comprises 169 MW capacity assets in Maharashtra and 148 MW in Tamil Nadu.

- Rooftop Solar Energy platform Mysun raised USD 4.26 million from its existing investors. The company will use the funds to enhance its technological infrastructure and boosts its service offerings.

7. Price trends

In the overseas market, from Jan 2020 till Jul 2020, the price of solar cells fell by about 18.7% while that of multi-crystalline solar modules reduced by 15%.

In the Indian market, the landed price for Chinese module suppliers (excluding GST and safeguard duty), was about 18 -18.5 US cents/ Wp in Q2 2020. This is about 21% yoy decline from Q2 2019 prices. In comparison of mono PERC Vs. multi-crystalline module prices, there is difference of about 1-1.5 cents only.

Note: Other includes IPO, JV, grant, debt and mezzanine funding

<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>Stake Acquired</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apr-20</td>
<td>Shapoorji Pallonji</td>
<td>M&amp;A</td>
<td>Solar</td>
<td>KKR</td>
<td>204</td>
<td>100.00%</td>
</tr>
<tr>
<td>Apr-20</td>
<td>MYSUN</td>
<td>Equity</td>
<td>Rooftop solar</td>
<td>Existing Investors</td>
<td>4.26</td>
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<tr>
<td>Apr-20</td>
<td>Amplus</td>
<td>Debt</td>
<td>Solar</td>
<td>Standard Chartered Bank</td>
<td>189</td>
<td></td>
</tr>
<tr>
<td>May-20</td>
<td>Inox Wind (Sri Pavan Energy)</td>
<td>Equity</td>
<td>Wind</td>
<td>Sri KPR Infra &amp; Projects</td>
<td>51.00%</td>
<td></td>
</tr>
</tbody>
</table>

Note: These prices are excluding safeguard duty and GST

Table 6.1 Summary of key financial deals in Q2 2020 in RE sector

Fig 6.1 Quarter-wise investment flow in Indian RE sector, USD million

Fig 6.1 Quarterly investment flow in Indian RE sector, USD million

Fig 7.1 Global price trends of solar cells and modules

Fig 7.2 India price trends of solar modules

Source: JMK Research

Source: JMK Research
8. Quarterly Import-Export Statistics

In Q2 2020, imports of solar modules decreased by 52% and exports have increased by 27.5% compared to Q1 2020 trade figures. Going forward, to incentivize domestic manufacturing, Indian Government has proposed to impose basic custom duty (BCD) of 20-25% on import of modules and 15% on import of solar cells which is likely to negatively impact the import trends.

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

9. Annexure

Table 9.1: Details of tenders auctioned in Q2 2020

<table>
<thead>
<tr>
<th>Tender Name</th>
<th>Status</th>
<th>Tendered Capacity (MW)</th>
<th>Capacity Allotted (MW)</th>
<th>Bidders / Winners Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>NHPC, 2,000 MW, ISTS-I, Solar PV Project</td>
<td>Results Announced</td>
<td>2,000</td>
<td>2,000</td>
<td>SoftBank: 600 MW (INR 2.55/kWh)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>O2: 380 MW (INR 2.55/kWh)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Eden: 300 MW (INR 2.55/kWh)</td>
</tr>
<tr>
<td>NHPC, Rooftop Solar, ISTS-IX, Dadra &amp; Nagar Haveli</td>
<td>Results Announced</td>
<td>400</td>
<td>400</td>
<td>Renew Power: 400 MW (INR 2.69/kWh)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(Escalation of 3% for 15 years, effective tariff: INR 3.60/kWh)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Solar Pack: 300 MW (INR 2.36/kWh), ENEL: 300 MW (INR 2.37/kWh), EDEN: 300 MW (INR 2.37/kWh), IB Vogt: 300 MW (INR 2.37/kWh), Amp Energy: 100 MW (INR 2.37/kWh), Ayana: 300 MW (INR 2.38/kWh), ReNew Power: 400 MW (2.38/kWh)</td>
</tr>
</tbody>
</table>

Source: JMK Research
### Table 9.2: List of key tenders issued in Q2 2020 (Apr-June 2020)

<table>
<thead>
<tr>
<th>Tender Name</th>
<th>Date of Issue</th>
<th>Tendered Capacity (MW)</th>
<th>State</th>
<th>Technology</th>
<th>Tender Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td>SECI, 2500 MW, Solar, ISTS-X, Karnataka, April 2020</td>
<td>Apr-20</td>
<td>2500</td>
<td>Karnataka</td>
<td>Solar</td>
<td>Project Development</td>
</tr>
<tr>
<td>RITES, 1000 MW, Solar, Zonal Railways Across India, April 2020</td>
<td>Apr-20</td>
<td>1000</td>
<td>Pan India</td>
<td>Solar</td>
<td>EPC</td>
</tr>
<tr>
<td>SECI, 15 MW, Floating Solar, SCCL, Telangana, April 2020</td>
<td>Apr-20</td>
<td>15</td>
<td>Telangana</td>
<td>Floating Solar</td>
<td>EPC</td>
</tr>
<tr>
<td>BHEL, 100 MW, BOS, Telangana, April 2020</td>
<td>Apr-20</td>
<td>100</td>
<td>Telangana</td>
<td>BOS</td>
<td>Balance of System</td>
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<tr>
<td>MMRK/KVCL, 45 MW, Solar, Residential Consumers, Madhya Pradesh, April 2020</td>
<td>Apr-20</td>
<td>45</td>
<td>Madhya Pradesh</td>
<td>Rooftop Solar</td>
<td>Project Development</td>
</tr>
<tr>
<td>Power &amp; Electricity Department, 10 MW, Solar, Mizoram, April 2020</td>
<td>Apr-20</td>
<td>10</td>
<td>Mizoram</td>
<td>Solar</td>
<td>Rooftop Solar</td>
</tr>
<tr>
<td>NTPC, Pan India, 600 MW, Solar EPC package with land May 2020</td>
<td>May-20</td>
<td>600</td>
<td>Pan India</td>
<td>Solar</td>
<td>EPC</td>
</tr>
<tr>
<td>Cochin Port Trust, 1.5 MW, Floating solar, May 2020</td>
<td>May-20</td>
<td>1.5</td>
<td>Kerala</td>
<td>Floating Solar</td>
<td>Project Development</td>
</tr>
<tr>
<td>New Town Kolkata Development Authority, Kolkata, 1 MW, Solar, West Bengal, May 2020</td>
<td>May-20</td>
<td>1</td>
<td>West Bengal</td>
<td>Solar</td>
<td>Project Development</td>
</tr>
<tr>
<td>Tata Power, 225 MW, Wind-Solar Hybrid, June 2020</td>
<td>Jun-20</td>
<td>225</td>
<td>Pan India</td>
<td>Hybrid</td>
<td>Project Development</td>
</tr>
<tr>
<td>WBSEDCL, 20 MW, PV Solar, (EPC), West Bengal, June 2020</td>
<td>Jun-20</td>
<td>20</td>
<td>West Bengal</td>
<td>Solar</td>
<td>EPC</td>
</tr>
<tr>
<td>NHPC, 50 MW, Floating solar (EPC), Kerala, June 2020</td>
<td>Jun-20</td>
<td>50</td>
<td>Kerala</td>
<td>Floating Solar</td>
<td>EPC</td>
</tr>
<tr>
<td>HAREDA, 30 MW, Rooftop Solar, Haryana, June 2020</td>
<td>Jun-20</td>
<td>30</td>
<td>Haryana</td>
<td>Rooftop Solar</td>
<td></td>
</tr>
<tr>
<td>SECI, 10 MW, Solar PV Project, Rajasthan, June 2020</td>
<td>Jun-20</td>
<td>10</td>
<td>Rajasthan</td>
<td>Solar</td>
<td>Project Development</td>
</tr>
</tbody>
</table>

Source: JMK Research

### Table 9.3: List of key projects commissioned in Q2 2020

<table>
<thead>
<tr>
<th>Project Developer Name</th>
<th>Technology</th>
<th>Capacity (MW)</th>
<th>State</th>
<th>Date of Commissioning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adani Solar</td>
<td>Solar</td>
<td>50</td>
<td>Rajasthan</td>
<td>Apr-20</td>
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<tr>
<td>Gajavelli Spinning Mills Pvt Ltd</td>
<td>Wind</td>
<td>2</td>
<td>Andhra Pradesh</td>
<td>Apr-20</td>
</tr>
<tr>
<td>Chitturi Projects Pvt Ltd</td>
<td>Solar</td>
<td>1</td>
<td>Andhra Pradesh</td>
<td>Apr-20</td>
</tr>
<tr>
<td>Aditya Birla</td>
<td>Solar</td>
<td>65</td>
<td>Gujarat</td>
<td>Apr-20</td>
</tr>
<tr>
<td>Continuum Wind</td>
<td>Hybrid</td>
<td>55</td>
<td>Tamil Nadu</td>
<td>Jun-20</td>
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<tr>
<td>Singareni Collieries</td>
<td>Solar</td>
<td>32</td>
<td>Telangana</td>
<td>Jun-20</td>
</tr>
<tr>
<td>Cleantech Solar</td>
<td>Solar</td>
<td>23</td>
<td>Tamil Nadu</td>
<td>Jun-20</td>
</tr>
</tbody>
</table>

Source: JMK Research