

# India Solar Market – September 2017

## *Market Drivers and Challenges*

Research provided by

**MERCOM**  
communications india

Lead Partners



# Index

Key Takeaways.....	3
Executive Summary.....	7
Current Solar Market – Installations, Pipeline.....	11
Policy Drivers.....	13
Updated Improved Bidding Guidelines.....	16
Rising Chinese Module Prices – A Significant Short-Term Threat.....	18
Mercom Market Leaderboard.....	22
Solar Imports, Exports and Anti-Dumping.....	25
Share of Renewables Rising.....	28
Financing and Consolidation Activity.....	31
Project Development by States.....	34
Outlook - Forecast.....	38

# Key Takeaways

---

# Key Takeaways

- ❑ Mercom forecasts solar installations to reach approximately 10 GW in calendar year (CY) 2017
- ❑ Cumulative solar installations topped 15 GW in August 2017
- ❑ Total solar installations in CY 2017 reached 5.5 GW in August
- ❑ Cumulative solar rooftop installations in India have now surpassed 1 GW. Mercom expects to see about approximately 855 MW in rooftop installations during CY 2017
- ❑ The current pipeline for utility-scale projects in various stages of construction is 13.3 GW, with 5.8 GW of tenders pending auction
- ❑ So far this year, 6.6 GW have been tendered, 4.4 GW have been auctioned, and around 1.8 GW have been cancelled
- ❑ Solar tariffs breached ₹2.50 (~\$0.038)/kWh for the first time during Q2 2017, making solar cheaper than thermal power in some cases
- ❑ Solar power accounted for 13.5 billion units of total electricity produced in India during the financial year (FY) 2016-17, up from 7.4 billion units in FY2015-16
- ❑ Renewables comprise 18 percent of India's total installed capacity, with solar accounting for nearly 4.5 percent. Among renewables, solar accounts for almost 25 percent of installed capacity
- ❑ The Office of the Directorate General of Anti-dumping & Allied Duties (DGAD) India has initiated an investigation into imported solar cells originating in or exported from China, Taiwan, and Malaysia. Initial recommendations from DGAD is expected towards the end of September
- ❑ After falling by approximately 5 percent in the second quarter of 2017, for the first time in years, the average selling price (ASP) for Chinese modules had increased quarter-over-quarter by almost 12 percent as of August 2017 compared to Q2 2017
- ❑ The Ministry of New and Renewable Energy (MNRE) has proposed the development of 7.5 GW of solar using domestic content under the CPSU Phase 2 program
- ❑ MNRE issued final guidelines for solar auctions that included some important changes to attract low bids from developers
- ❑ Significant challenges facing the industry include the GST, a pending anti-dumping decision, and DISCOMs stalling auctions to get lower rates
- ❑ Considering the current challenges, Mercom is forecasting that installations could drop in 2018 by more than 20 percent

# GOLD PARTNER



011 49598000



[solarrooftop@herofutureenergies.com](mailto:solarrooftop@herofutureenergies.com)  
[info@herofutureenergies.com](mailto:info@herofutureenergies.com)

Hero Future Energies is one of India's top five Independent Power Producers (IPP) in renewable energy. Its core business includes adding capacities through successfully executing utility-scale wind, solar, and rooftop solar projects in India. The Hero group legacy confirms the company's ability to professionally develop long-term projects nationally and globally. Hero is one of the few Indian companies with significant strategic sponsorships. Its experienced multi-disciplinary team is well-equipped to develop customized RE solutions. Hero is optimistic that it will be able to build a robust portfolio of ~ 3 GW by FY2020.

RE Technologies	Business Strategy	Sale of Power
<b>Wind</b> <b>Solar PV</b> <b>New/Hybrid/Energy Storage Solutions</b>	Organic growth Inorganic growth Partnerships	PPA with Central Agency/State Discoms Captive/Group Captive Customers PPA with Third Party/Power Exchange
<b>Rooftop Solar</b>	Capex/Opex model	Industries/Commercial Units/Government/Institutions/Warehouses

# GOLD PARTNER



+912065279957



[india.info@sgurrenergy.com](mailto:india.info@sgurrenergy.com)

SgurrEnergy India Pvt. Ltd. is a leading solar engineering consultant operating in India since 2007. With over 75 highly-qualified engineering and solar experts on staff for a combined 350 years of experience, SgurrEnergy India has the largest solar-focused consulting team in India, providing feasibility studies, design and development, detailed engineering, construction management, O&M, performance assessment, and due diligence services for solar developers, EPCs, and banks & lenders. With over 450 solar PV projects, an impressive 98 percent repeat customer rate, and over 9 GW of solar projects commissioned or under implementation, SgurrEnergy India's customer base comprises some of the solar industry's foremost leaders including: Adani Power, ReNew Power, Suzlon, First Solar, Madhav Group, Atha Group, GMR Energy, and IFC. The company is rapidly expanding into other markets in the Far East, Africa, Middle East, Sri Lanka, and Bangladesh. SgurrEnergy India is an Arif Aga-promoted company that is jointly owned by Wood Group.

# Executive Summary

---

# Executive Summary

- India has installed over 5.5 GW of solar year-to-date, with total cumulative installations crossing 15 GW in August 2017. Mercom expects about 10 GW of solar will be installed in calendar year 2017 and roughly 8 GW more will be installed in 2018. The solar project pipeline in India is now approximately 13 GW, according to *Mercom's India Solar Project Tracker*. Currently, about 6 GW of tendered projects are awaiting auction.
- An anti-dumping petition filed by domestic solar manufacturers against solar imports from China, Taiwan, and Malaysia with the Directorate General of Anti-Dumping (DGAD) has been accepted. DGAD, a unit of the Ministry of Commerce, has officially initiated the investigation and preliminary findings could be announced as early September 22<sup>nd</sup>. In general, DGAD rarely accepts a petition unless it is sure about the validity of the case. This means there is a strong possibility that DGAD will recommend an anti-dumping duty on solar imports. The more important question is whether the Ministry of Finance will accept anti-dumping duties if they are recommended by the Ministry of Commerce. In a previous 2014 instance, the Ministry of Finance refused to impose anti-dumping duties recommended by the Ministry of Trade. However, DGAD so far has received no objections or petitions by developers and manufacturers, and are strongly pushing to get anti-dumping tariff imposed.
- After falling by approximately 5 percent in the second quarter of 2017, for the first time in years the average selling price (ASP) for Chinese modules is increasing in India. Chinese module ASPs had risen by almost 12 percent as of August 2017 compared to Q2 2017. By comparison, module ASPs dropped by 12 percent from Q2 2016 to Q3 2016. According to Mercom India's channel checks, module prices quoted by Chinese companies ranged from \$0.32/W to \$0.37/W (~₹20.5/W to ₹23.6/W) in Q3 2017. In 2017, Chinese solar installations could rise to nearly 45 GW aided by the 5.5 GW Top Runner Program, which has a deadline of September 30, 2017, the Poverty Alleviation Program, and strong distributed generation project installations. These programs have spurred increased module demand. The wild card right now is the question of how the Suniva anti-dumping case against China underway in the U.S. is resolved. Whichever way the decision goes, it will immediately remove the overhang created by uncertainty surrounding the case, which may start putting downward pressure on module prices that would benefit Indian developers.
- Solar tariffs breached ₹2.50 (~\$0.038)/kWh for the first time during Q2 2017, making solar cheaper than coal in some cases. In the 500 MW Bhadla Phase-III Solar Park auction, a tariff of ₹2.44 (~\$0.037)/kWh won the high-bid to develop 200 MW of solar. Now, every DISCOM wants this rate and it has caused auction activity to come to a standstill as DISCOMs try to negotiate better deals against a backdrop of rising module prices. Without regulatory clarity, the industry finds itself mired in confusion and lacks a cohesive strategy to tackle its challenges.



# Executive Summary

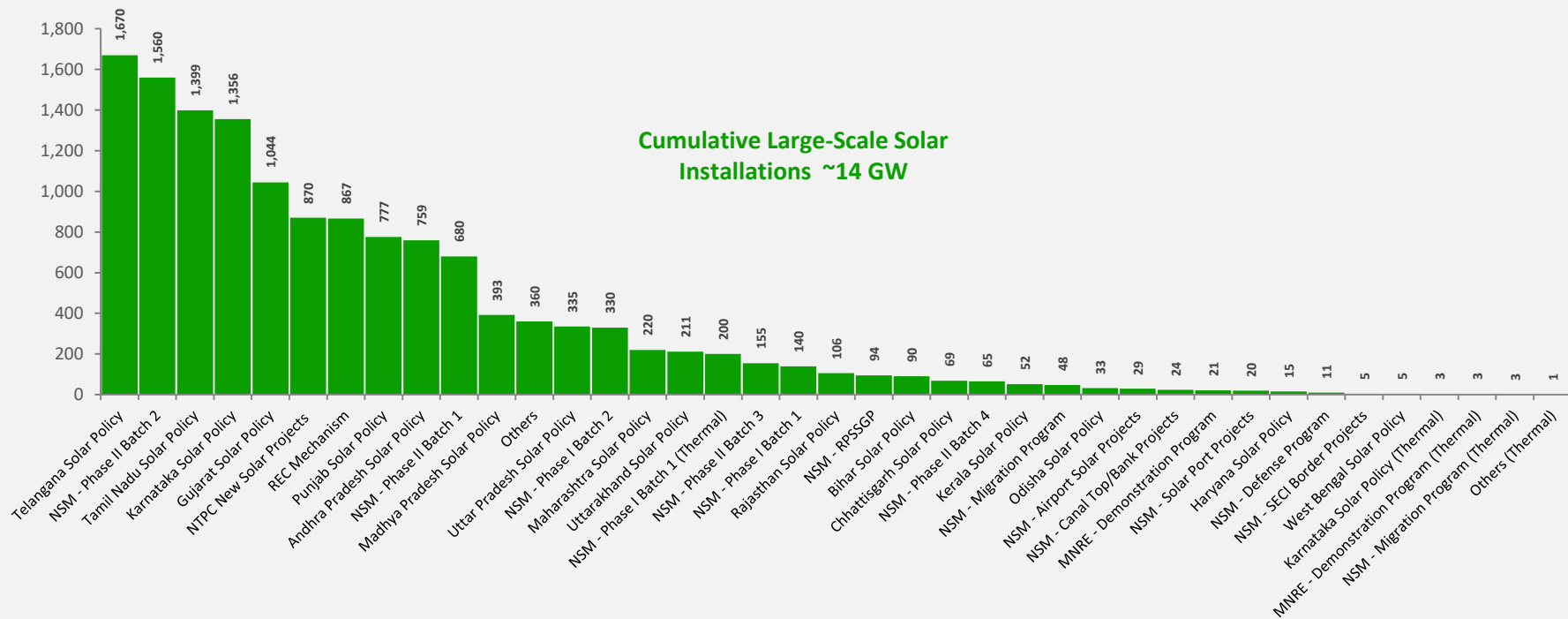
- ❑ Solar auctions fell precipitously in India during August 2017. Compared to the robust auction activity seen in June, August solar auction activity in terms of MWs fell by 95 percent to just 76 MW. Meanwhile, solar tender announcements in India increased by 15 percent in August 2017, compared to July 2017, with 633 MW of solar tendered.
- ❑ The United States and India have agreed that December 14, 2017, will be the last day for the domestic content requirement (DCR) category. The Ministry of New & Renewable Energy (MNRE) has proposed the development of 7.5 GW of solar using domestically manufactured solar cells and modules during the second phase of its CPSU program. The program is designed to help revive the domestic solar manufacturing industry, which is facing intense competition from Chinese module manufacturers.
- ❑ The Ministry of Power has issued important final guidelines for the tariff-based competitive bidding process for solar projects. The guidelines apply to large-scale projects with a capacity of 5 MW or more. The guidelines aim to address some of the challenges large-scale project developers are facing in India and to replicate the success of the REWA auction. They will include payment guarantees, longer construction timelines for large projects, and deemed generation benefits. The guidelines also include a provision for an intermediary procurer and offer some clarity on the change in law clause.
- ❑ Currently, the Indian solar sector is going through a challenging phase. It is important to thoroughly understand the landscape, which is shifting on a daily basis before making important strategic decisions.

# Current Solar Market – Installations, Pipeline

---

# All India Cumulative Solar Installations By Policy Type (MW)

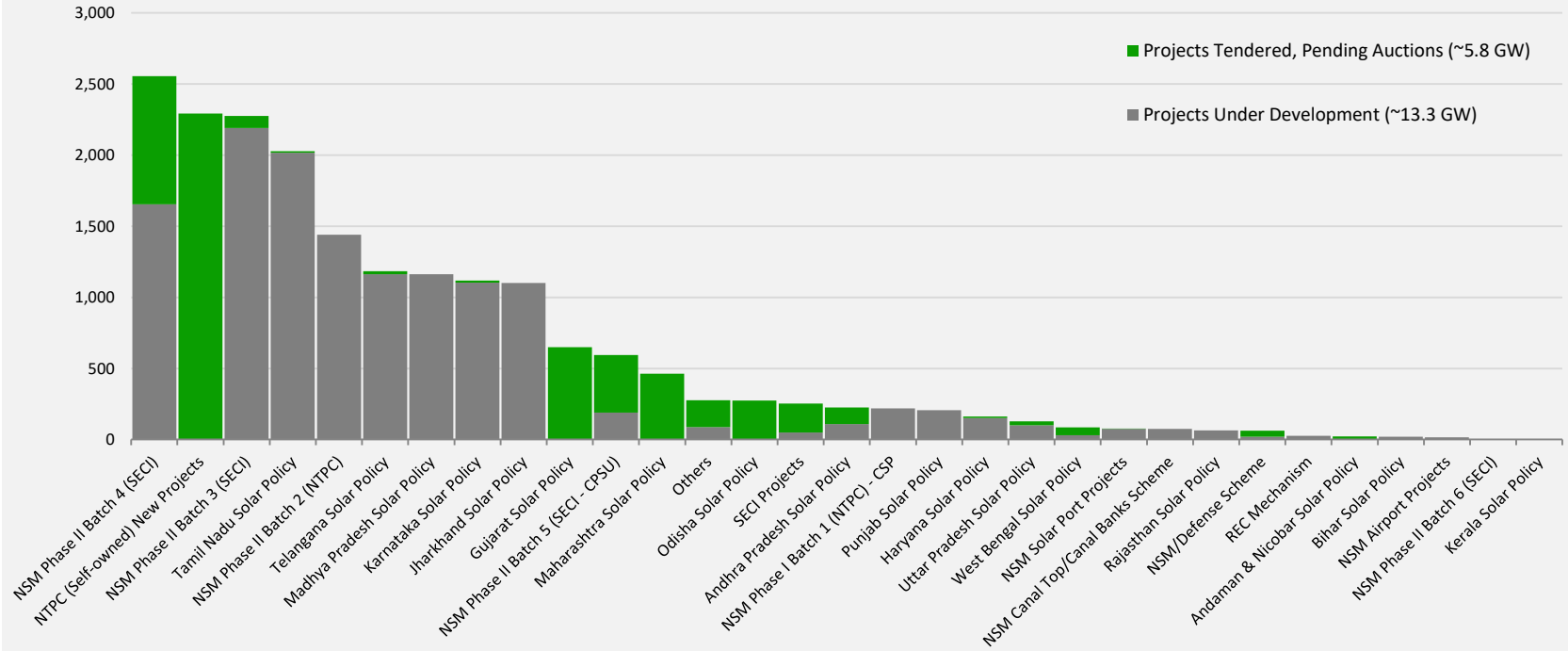
## All India Cumulative Utility-Scale Solar Installations By Policy Type (MW)



Source: Mercom India Research (Aug 2017)

# India Solar Project Pipeline By Policy (MW)

## India Utility-Scale Solar Project Pipeline (MW)



Source: Mercom India Research (Aug 2017)

# Policy Drivers

---

# Important Solar Policy Updates

**MNRE Proposes 7.5 GW of Solar Projects Under the Second Phase of the CPSU Program:** The Ministry of New and Renewable Energy (MNRE) has proposed developing 7.5 GW of solar by 2022 using domestically manufactured solar cells and modules during the second phase of its Central Public-Sector Unit (CPSU) program – which is an extension of an earlier JNNSM program. The proposal comes amid the agreement to end the DCR category by December 14, 2017, following the WTO ruling against India.

**MNRE Amends Guidelines for Disbursement of NCEF Grants:** The Ministry of New and Renewable Energy (MNRE) amended the guidelines for the disbursement of the National Clean Energy Fund (NCEF) grant for the development of intra-state transmission systems under the green energy corridor project in the states of Andhra Pradesh, Himachal Pradesh, Gujarat, Karnataka, Madhya Pradesh, Rajasthan, Maharashtra, and Tamil Nadu.

**State DISCOMs to Buy a Minimum of 20 Percent of Power Generated by Solar Parks:** The Ministry of New and Renewable Energy (MNRE) has issued a new order stating, “The state government in which the solar park is being developed must agree to buy a minimum 20 percent of power produced in the park through its DISCOMs. If the state has agreed to buy more than 20 percent of power from one or more solar parks in the state, then the purchase of lower capacity from other solar parks in the state is allowed so that the state ends up purchasing a minimum 20 percent of aggregate power produced in all solar parks in that state.” This provides clarity to park developers and project developers as the prior order did not address states with multiple parks.

**MNRE Issues Advisory to States that Calls for Using Spare Space Near Substations to Develop Solar Projects:** The Ministry of New and Renewable Energy (MNRE) has issued an advisory asking state governments to utilize the available spare space near substations and prioritize the construction of solar projects based on the availability of land near substations or the transmission system.

**End of DCR Category in India:** The United States and India have agreed that December 14, 2017, will be the last day for the domestic content requirement (DCR) category. The end of DCR is the primary driver for the latest anti-dumping case as domestic manufacturers feel they have no other way to compete with Chinese manufacturers.

# Important Solar Policy Updates

**Ministry of Power Extends Waiver Period for ISTS Charges and Losses of Solar Projects:** The waiver period for inter-state transmission (ISTS) charges and losses for solar projects has been extended to December 31, 2019. This waiver applies to solar projects commissioned on or before December 31, 2019. The waiver will apply for a period of 25 years from the date of commissioning. Due to uneven project concentration, project developers have had to pay interstate transmission charges. The waiver of interstate transmission charges will lessen overall project costs and attract more players to the renewable energy sector. Due to the waiver, the solar power tariff could come down by approximately 10 percent in some cases.

The benefits of the policy apply only if the generated power is sold through ISTS. Power sold to local state power distribution companies (DISCOMs) will not be included in the program, according to the Ministry of Power. Some of the power produced by the renewable energy projects is currently not being purchased by the DISCOMs due to their poor financial conditions and the high price of renewable energy. With this policy, projects now have the option of selling power to the national grid without incurring transmission charges and losses.

---

## SILVER PARTNER

---



### Jakson Group

 [info@jakson.com](mailto:info@jakson.com)

Jakson is a leading energy and engineering solutions company offering a range of products and services that help customers effectively meet their diverse needs in a safe and sustainable manner. The company is driven by its core values of building enduring relationships and its vision to be a trendsetter in energy solutions. Jakson's core businesses include Powergen & Distribution, Solar, EPC, and Defense. Established in 1947, the company has an extensive presence in India with 2,000 employees, 4 manufacturing plants, 1 Global Training Centre, 22 Offices, 2 Service centers and a wide network of channel partners and dealers. It also has business operations in Bangladesh, Nepal, Singapore, and Dubai.

# Updated Improved Bidding Guidelines

---



# Ministry of Power Updates Competitive Bidding Guidelines

The Ministry of Power has issued final guidelines for the tariff-based competitive bidding process for solar projects. The guidelines apply to large-scale projects with a capacity of 5 MW or more.

These guidelines aim to address some of the challenges being faced by large-scale project developers in India and to replicate the success of the REWA auction. They include payment guarantees, longer construction timelines for large projects, and deemed generation benefits. The guidelines also include a provision for an intermediary procurer and offer some clarity on the change in the law clause.

## Some of the important new provisions include:

- ❑ **Intermediary Procurer** – In the guidelines, the Ministry of Power included a new provision that enables the intermediary procurer to enter into a power purchase agreement (PPA) with the solar power generator and sign a power sale agreement (PSA) with the end procurer. This is a good move - it aims to bring in a more bankable government agency that can alleviate the risks of signing PPAs with struggling DISCOMs.
- ❑ **Change in law clause** – Another important clarification in the guidelines is the change in law clause, which has become a big deal after the recently announced GST rates (rates are still up in the air). The guidelines stipulate that when a change in law results in an adverse financial loss to a solar power generator or procurer, then the solar power generator will be entitled to compensation from the other party.
- ❑ **Generation Compensation** – This is another sticking point in the industry. The document addresses it in three parts.
  - a) According to the guidelines, if a project is operational on the scheduled commissioning date but the power evacuation or transmission infrastructure is not ready due to no fault of the developer, a generation compensation will be provided.
  - b) Generation Compensation in Offtake Constraints Due to Grid Unavailability – If there are instances where bottlenecks make transmission unavailable after the project is operational, then generation compensation will be provided based on the number of hours that the grid is unavailable.
  - c) Offtake Constraints Caused by Procurer Backdown – If the power procurer flouts the 'must-run' status given to solar, then the power producer will receive a minimum generation compensation equivalent to 50 percent of the average generation per hour multiplied by the number of backdown hours, which is then multiplied by the tariff rate. Though this is better than nothing, it is unlikely to stop the backdown of solar as it would still be cheaper to flout the must-run status than it would be to pay the full tariff. **Click [here](#) for complete analysis.**

# Rising Chinese Module Prices – A Significant Short-Term Threat

---

# Rising Chinese Module Prices Pose A Significant Short-Term Challenge

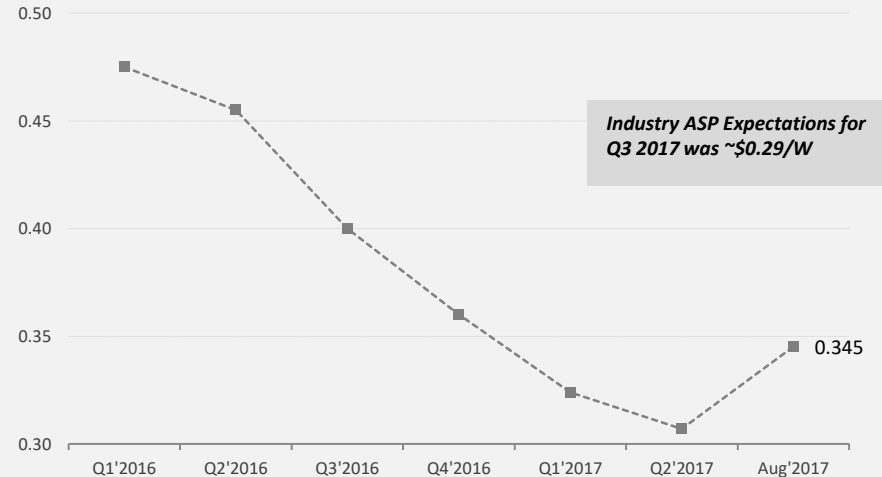
After falling by approximately 5 percent in the second quarter of 2017, for the first time in years, the average selling price (ASP) for Chinese modules is increasing quarter-over-quarter in India. Chinese module ASPs had risen by almost 12 percent as of August 2017 compared to Q2 2017. By comparison, module ASPs dropped by 12 percent from Q2 2016 to Q3 2016.

This is the worst-case scenario that Mercom has been warning the market about. For the past two years, we have stressed that “aggressive bidding in an effort to capture market share with the assumption that component costs will continue to fall no matter what is a risky strategy.” Developers not just in India, but across the world, have been modelling their auction bidding strategies based on the assumed perpetual decline of Chinese module prices. Developers have become too ‘comfortable’ with this strategy because it worked most of the time. This has resulted in aggressive bidding reaching new heights in India, with government agencies cheering low bids as an incredible achievement.

Short-term fluctuations don't usually make a huge difference, but if module prices continue rising or even stay flat for a couple of quarters, it will start hurting the developers who cannot wait indefinitely to procure the lowest priced panels.

The price drop was steeper than expected in Q2 2017, even though high Chinese demand generally helps module prices to go up in June before the feed-in tariff deadline at the end of the month.

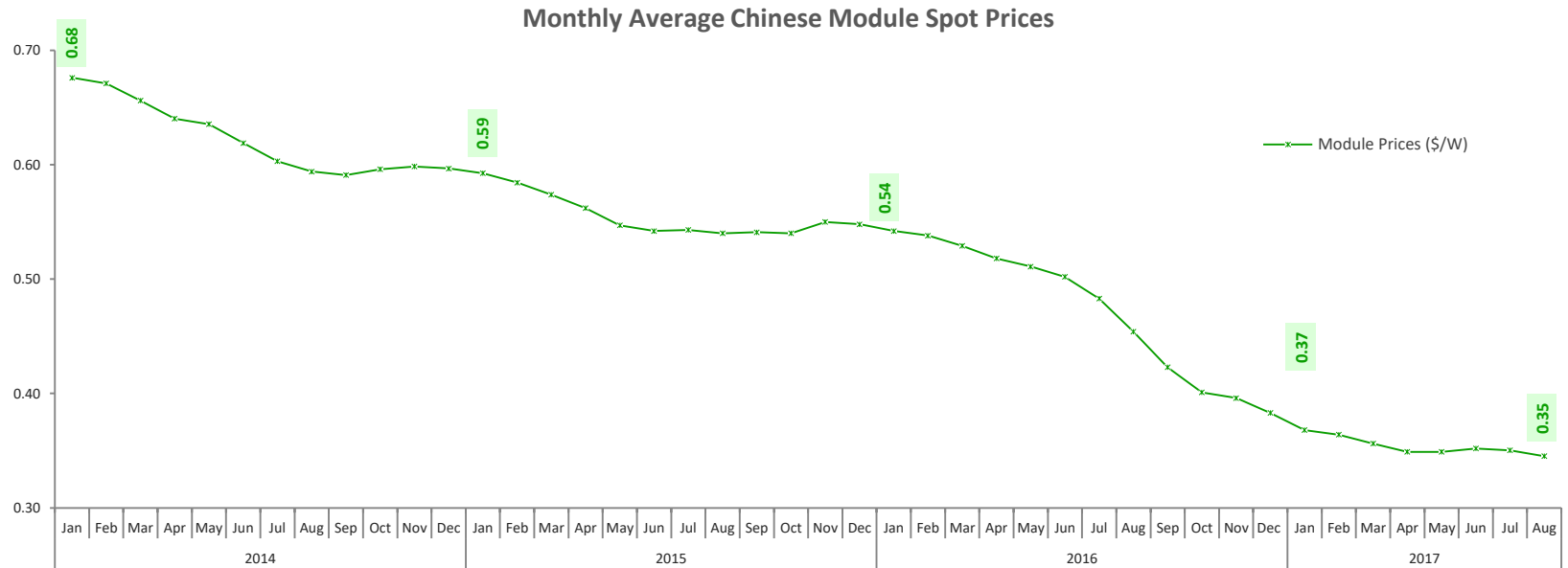
Chinese Module Average Selling Prices in India



Source: Mercom India Research

# Monthly Average Chinese Module Spot Prices

Chinese spot module prices have held steady due to increased demand from China and the United States. While China is expected to install a record 45 GW of solar in 2017, demand from the U.S. has increased ahead of the anti-dumping ruling due on September 22<sup>nd</sup>.



Source: Mercom India Research



# Mercom Market Leaderboard

---

# Mercom Developers and EPC Provider Rankings

## Top 5 Solar Project Developers in India by Installed Capacity\*

1	TATA POWER
2	ADANI
3	NTPC
4	GREENKO
5	RENEW POWER

Source: Mercom India Research (Aug 2017)

\*Cumulative

## Top 5 Solar Project Developers in India by Pipeline\*

1	ADANI
2	ACME
3	RENEW POWER
4	NLC INDIA
5	GREENKO

Source: Mercom India Research (Aug 2017)

\*Cumulative

## Top 5 Solar Third Party EPC Players in India\*

1	STERLING & WILSON
2	MAHINDRA SUSTEN
3	L&T SOLAR
4	HARTEK SOLAR
5	VIKRAM SOLAR

Source: Mercom India Research (Jun 2017)

\*Cumulative

# Mercom Solar Module Manufacturers, Module and Inverter Supplier Rankings

## Top 5 Solar Module Manufacturers in India\*

1	ADANI
2	VIKRAM SOLAR
3	EMMVEE
3	WAAREE ENERGIES
4	TATA POWER

Source: Mercom India Research (Jun 2017)

\*Cumulative

## Top 5 Solar Module Suppliers in India by Shipments\*

1	TRINA SOLAR
2	CANADIAN SOLAR
3	FIRST SOLAR
4	HANWHA SOLAR
5	JA SOLAR

Source: Mercom India Research (Jun 2017)

\*Cumulative

## Top 5 Solar Inverter Suppliers in India\*

1	ABB
2	SMA SOLAR
3	TMEIC
4	CHINT/ASTROENERGY
5	SCHNEIDER & HITACHI

Source: Mercom India Research (Jun 2017)

\*Cumulative

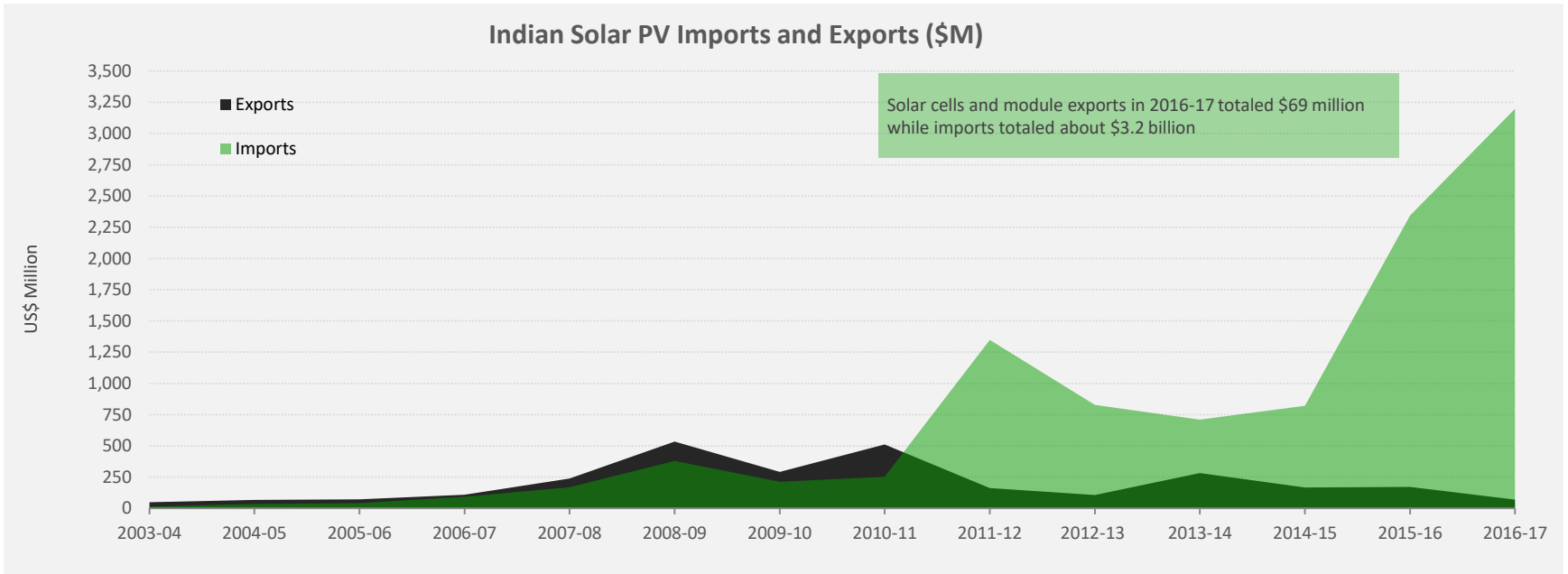


# Solar Imports, Exports and Anti-Dumping

---

# India Solar PV Imports on the Rise

With over 4.3 GW of solar installed in CY 2016 and another 10 GW forecast for 2017, it's no surprise that module imports are rising. Indian domestic modules tend to be 10 percent to 20 percent more expensive than Chinese modules and in today's highly competitive environment – where reverse auctions bids are extremely low – developers are buying the cheapest modules available to make the economics of their projects work. In FY 2016-17, import and export activity totalling \$3.27 billion (~₹218.8 billion) was registered. Compared to the previous financial year, solar imports grew by 36 percent and exports declined by 60 percent.



Data: Department of Commerce

Mercom India Research

# Anti-Dumping Investigation Underway

The office of the Directorate General of Anti-Dumping & Allied Duties (DGAD) India has started its investigation into the anti-dumping petition filed by the Indian Solar Manufacturers Association (ISMA) against solar imports from China, Taiwan, and Malaysia.

The case has created a lot of uncertainty in the sector as upstream and downstream players figure out a strategy based on either scenario.

Record low bids in reverse auctions in India is heavily dependent on cheaper Chinese modules and DISCOMs have been extremely pleased to procure power at these tariff levels. If a tariff is imposed, it is unclear if DISCOMs would be willing to pay more or if they will go back to procuring from other sources until they can afford solar.

The final ruling will be a tough balancing act between creating a market for domestic manufacturers without killing demand for solar power.

Any delay in the anti-dumping case ruling would create further uncertainty in the sector. Anti-dumping recommendations were initially expected to be announced around September 22<sup>nd</sup>, but delays in the submission of required data means that those recommendations could be delayed.

Meanwhile, India has also imposed an anti-dumping duty on tempered solar glass and wind turbine castings imported from China.

## Timeline: Anti-Dumping Case

- \*Late Sept** ● *DGAD Expected to Provide Recommendations/Preliminary Findings*
- 31-Aug-17** ● *Extensions Given to Solar Module Exporters*
- 17-Aug-17** ● *Request of Data from Solar Module Exporters from DGAD*
- 21-Jul-17** ● *DGAD Initiates Anti-dumping Investigation*
- 17-Jul-17** ● *DGAD Notifies Chinese Embassy in India about Anti-dumping Petition*
- 05-Jun-17** ● *ISMA Files Anti-dumping Petition*

*\*Note: According to the documents, DGAD is expected to provide preliminary findings and recommendations*

Source: Mercom India Research

# Share of Renewables Rising

---

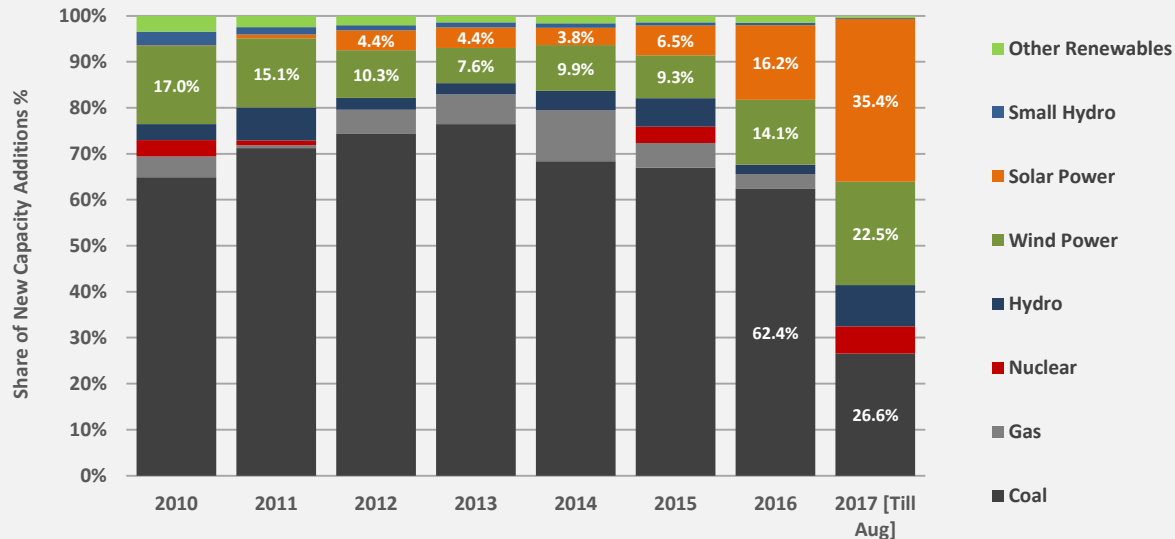
# Solar Accounts for Over 35 Percent of New Power Capacity Additions in 2017 YTD

This chart demonstrates the energy transformation taking place in India. Solar was the leading new power generation source for the first time in the first half of 2017. For an emerging market like India, this is a very big deal. Solar was beginning to get cheaper than coal in certain regions and this transition will only speed up with the cancellation of 14 GW of coal projects due to cost overruns. Financially challenged utilities (DISCOMs) were reluctant to buy solar power due to its higher costs, but now the same utilities are looking to cancel expensive coal projects in favour of cheaper solar.

All of the above points will be upended depending on whether DGAD recommends antidumping tariffs or not.

## Share of New Power Generating Capacity Additions in India (2010-Aug 2017)

Solar and Wind account for over 50% of New Power Capacity Additions in 2017 YTD



MNRE's revised cumulative Bio-Power figures not included

Data from CEA, MNRE

Source: Mercom India Research

# Solar Now Accounts for Nearly 4.5 Percent of India's Total Installed Capacity

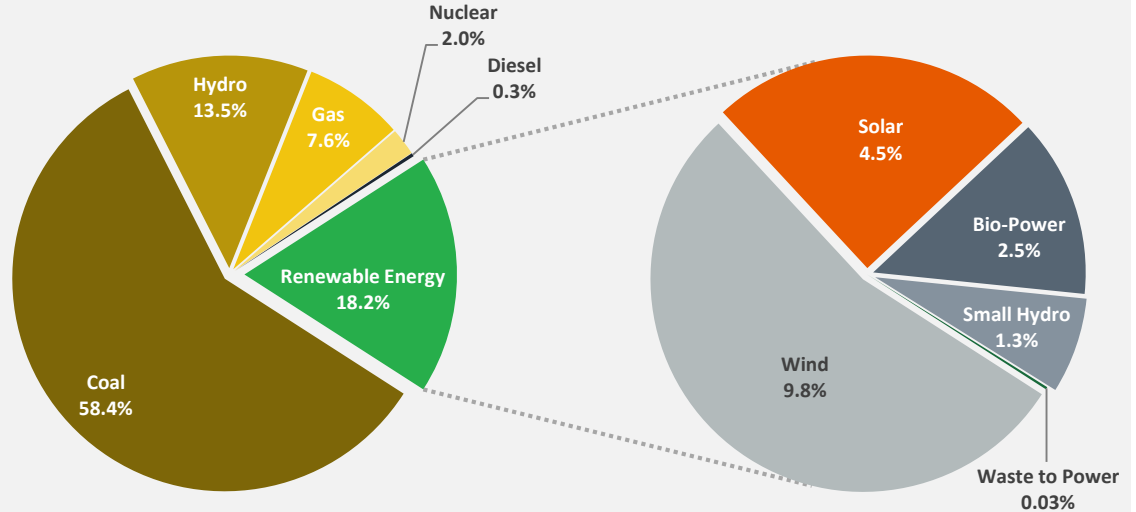
Renewable energy now accounts for over 18 percent of the total installed capacity in India, with solar comprising nearly 4.5 percent. Within renewables, solar accounts for almost a quarter of the total installed capacity.

According to figures from Central Electricity Authority (CEA), solar power in India accounted for 13.5 billion units (BUs) of electricity produced in the country during the financial year (FY) 2016-17, up from 7.4 BUs in FY2015-16.

Even with impressive YoY growth and all of the hype surrounding the impact of solar installations and their disruption on the Indian power markets, solar accounted for only 1.09 percent of the total power generated in the country and still has a long way to go. Solar's share of the electricity generated by renewable energy sources came to 16.5 percent.

## India - Installed Power Capacity Mix (%)

Renewables comprise 18% of India's total installed capacity, with solar accounting for 4.5%. Among renewables, solar accounts for almost 25% of installed capacity



Source: CEA, MNRE (Installed Capacity as on Aug 2017)

Mercom India Research

# Financing and Consolidation Activity

---

# Funding and Merger & Acquisition (M&A) Activity: 1H 2017

In 1H 2017, the Indian solar sector saw \$2 billion (₹130 billion) in announced corporate, project funding and M&A deals, according to the recently released Solar Funding and M&A Report by Mercom Capital Group. By comparison, \$1.9 billion (₹123.5 billion) was reported in 1H 2016.

## VC Funding

In the first half of 2017, some notable deals included the \$200 million (₹13 billion) raised by ReNew Power Ventures, followed by the \$155 million (₹10.1 billion) raised by Greenko Energy Holdings, and \$125 million (₹8.1 billion) secured by Hero Future Energies.

## Debt Financing

Tata Power Renewable Energy (TPREL), a wholly-owned subsidiary of Tata Power, raised \$86 million (~₹5.6 billion) through the issuance of non-convertible debentures (NCDs) on a private placement basis.

## Announced Project Funding

In 1H 2017, six disclosed deals raised approximately \$719 million (₹46.8 billion) in project funding. This is less than the \$435 million (₹28.1 billion) announced in project funding in 1H 2016.

Azure Power Thirty-Seven Private, a wholly-owned subsidiary of Azure Power, secured \$76.6 million (₹5 billion) from Hareon Photovoltaic, a vertically integrated solar PV manufacturer, in exchange for a 45 percent stake. The companies also signed a contract to supply Hareon solar modules for a 118 MW project totalling \$40 million (₹2.6 billion).

Solarpack, a Spanish solar project developer, raised \$69 million (~₹4.5 billion) from an Indian financial entity.



# Funding and Merger & Acquisition (M&A) Activity: 1H 2017

## **Project Acquisition**

Amaranto Solar Power India, an investment vehicle formed by Amaranto Group, an Italian renewable energy firm dedicated to acquiring PV projects in India, secured exclusive rights to purchase a 110 MW solar project for close to \$80 million (~₹5.8 billion).

## **IPO Activity**

To boost financing in the sector, the Indian government gave a nod to Indian Renewable Energy Development Agency (IREDA) to launch its initial public offering (IPO). The IREDA will issue 139 million equity shares priced at ₹10 (~\$0.16) each as part of its IPO.

The Indian Energy Exchange (IEX), India's power trading platform, is expected to launch an IPO soon. The IEX will sell a total of 6,065,009 equity shares in the IPO.

## **Solar Funds**

The Asian Development Bank (ADB) approved a \$100 million (~₹6.5 billion) loan to the Punjab National Bank (PNB) to finance large solar rooftop systems across India.

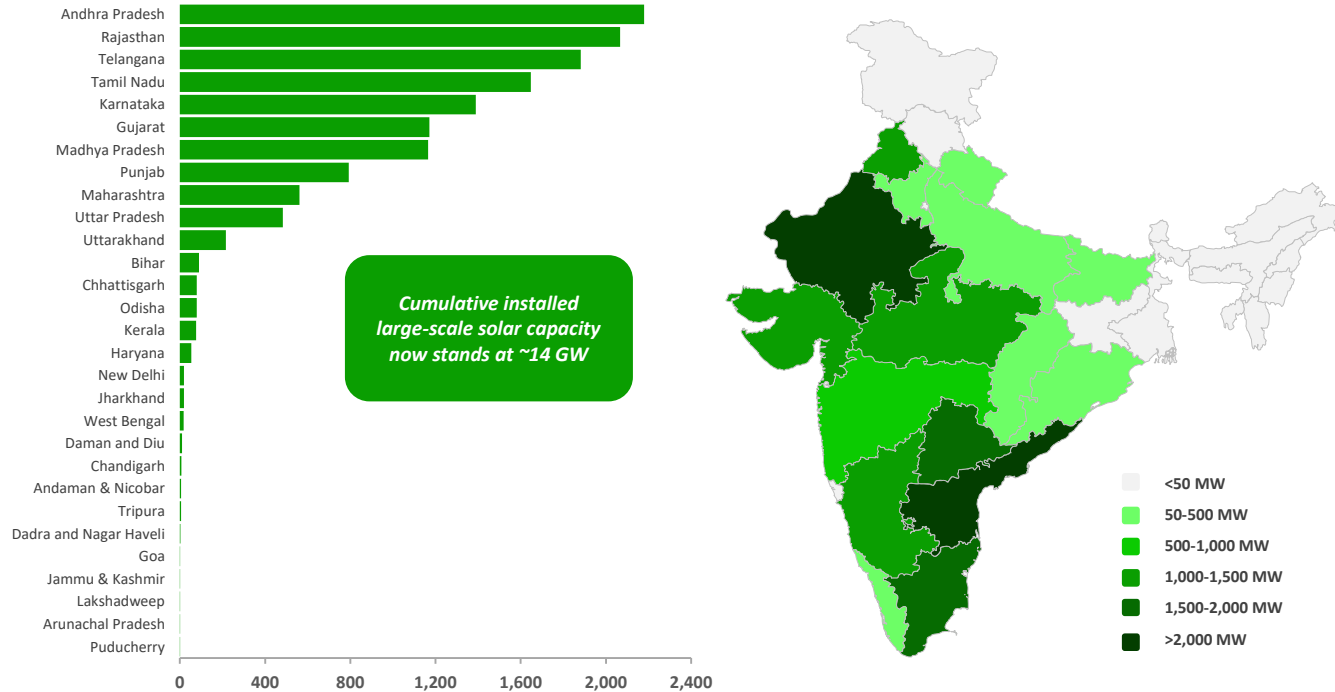
The ADB raised \$217 million (~₹14.1 billion) by issuing offshore, Indian rupee-linked five-year bonds. Proceeds from the bonds will be mobilized to support ADB's lending in India.

# Project Development by State

---

# India Solar Cumulative Installations By State (MW)

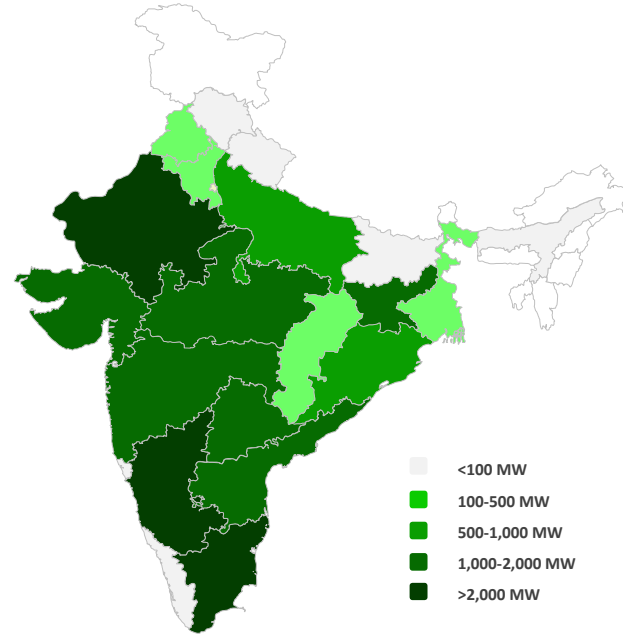
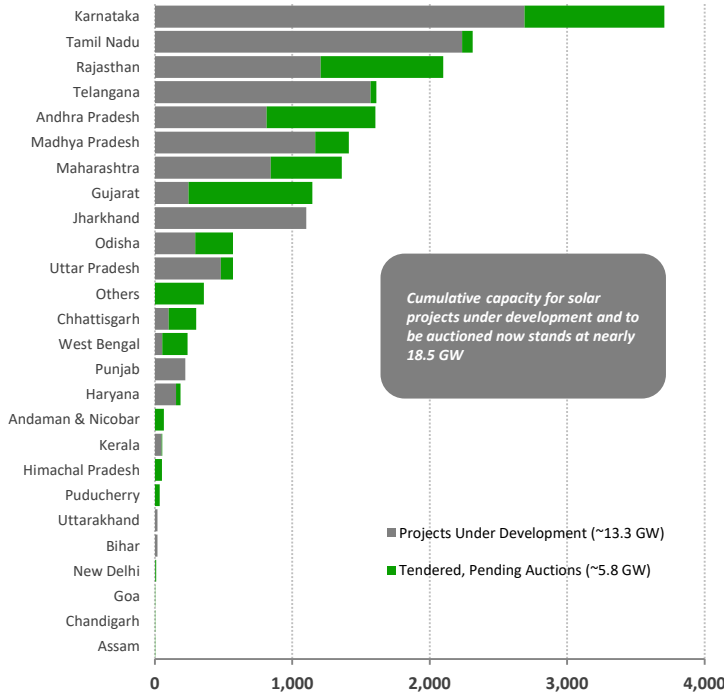
India Utility-scale Cumulative Solar Installations by States (MW)



Source: Mercom India Research (Aug 2017)

# Solar Project Development Pipeline By State (MW)

Solar Project Development Pipeline by State (MW)



Source: Mercom India Research (Aug 2017)

# Top 10 Solar States Based on Utility-Scale Project Installations

14.1 GW  
Cumulative Solar Capacity

4.8 GW  
Solar Installations 2017 YTD

State Ranking Based on Total Installed Utility-scale Solar as of Aug 2017

*Top Four states which now have over 1.5 GW of installed solar capacity represent approximately over 50 percent of the total installed capacity in the country*

1 Andhra Pradesh



Total Installations - 2,180 MW

2 Rajasthan



Total Installations - 2,067 MW

3 Telangana



Total Installations - 1,882 MW

4 Tamil Nadu



Total Installations - 1,648 MW

5 Karnataka



Total Installations - 1,389 MW

6 Gujarat



Total Installations - 1,171 MW

7 Madhya Pradesh



Total Installations - 1,165 MW

8 Punjab



Total Installations - 792 MW

9 Maharashtra



Total Installations - 561 MW

10 Uttar Pradesh



Total Installations - 484 MW

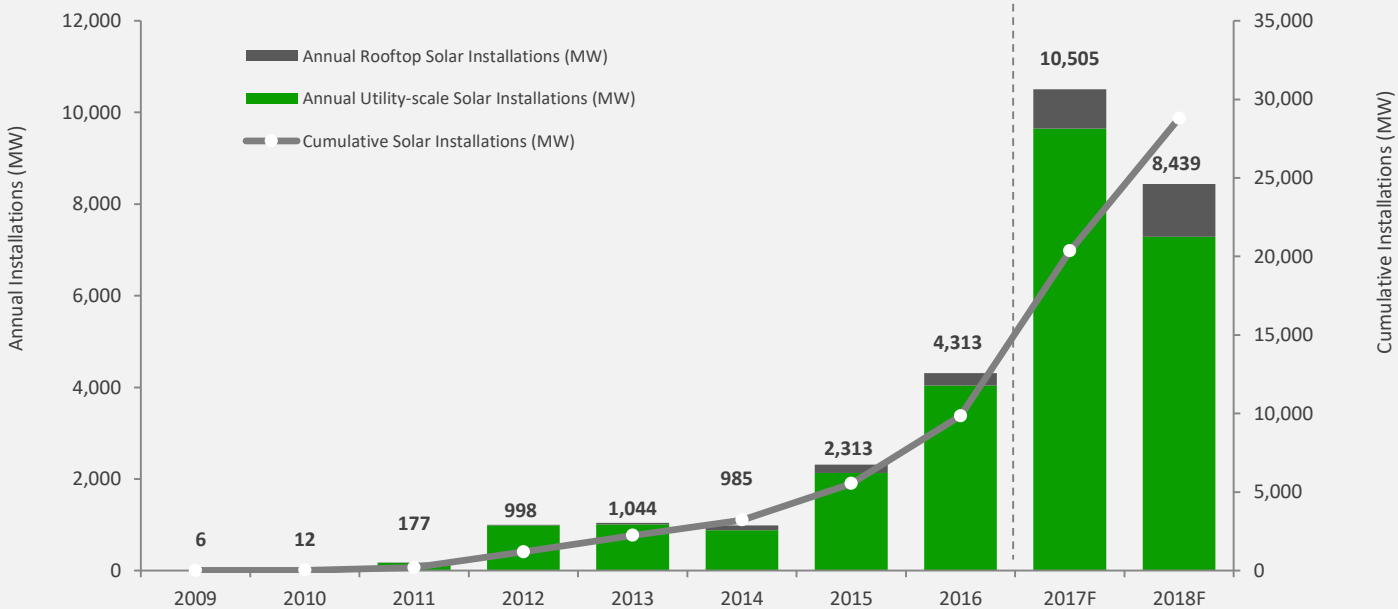
# Outlook - Forecast

---

# India's Solar Installation Outlook Based on Current Market Conditions

## India Solar Demand Forecast (MW)

Solar Installations for 2017 are forecast over 10 GW, of which 5.5 GW is already commissioned



Source: Mercom India Research (Aug 2017)

# Mercom India Products and Services

## **INDIA DIGITAL CLEANTECH WEEKLY MARKET INTELLIGENCE REPORT – *An industry essential***

Mercom's India Cleantech Market Intelligence Report is a one-stop resource, delivering timely industry happenings and ahead-of-the-curve analysis. The report is utilized to develop strategy, perform research, influence decisions, identify funding opportunities, monitor deal flow and keep up-to-date on regulatory matters and market events.

## **INDIA DIGITAL SOLAR QUARTERLY REPORT– *Highly influential market update***

Mercom's India Solar Quarterly Report is a highly influential market update read by the industry's most powerful players. This is a unique opportunity to associate your brand with a top tier renewable energy research firm and raise your company's profile not only in India, but globally.

## **INDIA WEEKLY NEWSLETTER – *Snapshot of the most important news while on-the-go***

The India Weekly Newsletter is perfect for the professional on-the-go. It gives the audience a quick snapshot of the most important news, policies, announcements, and events happening in India's renewable energy market for the week.



# Mercom India Products and Services

## **INDIA SOLAR PROJECT TRACKER** – *A fixed gaze that tracks Indian solar projects and tilts the odds to subscribers*

Mercom's proprietary India Solar Project Tracker is the most comprehensive database of large-scale solar projects covering commissioned and under-development projects since the beginning of India's National Solar Mission. This sortable project tracker includes: project developer, size, region, PPA details, commissioning dates, tariffs, offtakers, and more

## **CUSTOM RESEARCH & ADVISORY** – *Much needed research and advice delivers results*

If you need industry knowledge that isn't currently covered by any of Mercom's popular reports, our custom research services may be a critical addition to your business plan. We provide data and analysis that helps companies understand information specific to their particular market segments to make sound strategic decisions on new market entry and product introductions, or even to simply help them understand how they or their customers are positioned within the market.

# About Mercom India

Mercom Communications India (Mercom India) is the preeminent source for comprehensive insight and unique access to India's cleantech industry. A subsidiary of U.S.-based Mercom Capital Group – a globally respected clean energy communications and consulting firm – Mercom India is widely recognized for its leadership and influence in helping to shape India's rapidly growing clean energy sector. For clean energy organizations looking to expand market influence or eyeing initial entry into India's renewable energy industry, Mercom India provides invaluable research, news, consultation, and communications services.

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

[info@MercomIndia.com](mailto:info@MercomIndia.com)

[@MercomIndia](https://www.instagram.com/MercomIndia)