

## India Quarterly Solar Update Q2 2022

### India Added 3.6 GW of Solar PV Installation in Quarter Second of CY 2022

(By EQ iSearch)

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## Abbreviation

ALMM	Approved List of Models and Module manufacturers
ASP	Average Selling Price
BCD	Basic Custom Duty
BOM	Balance of Material
BU	Billion Unit
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
CFA	Central Finance Assistance
cKM	Circuit kilometre
CPSU	Central Public Sector Unit
CY	Calendar Year
DISCOM	Distribution Company
EV	Electric Vehicle
GW	Gigawatt
GWh	Gigawatt Hour
IREDA	Indian Renewable Energy Development Agency
ISTS	Inter-State Transmission System
JNNSM	Jawaharlal Nehru National Solar Mission
KV	Kilo volt
kW	Kilowatt
kWh	Kilowatt Hour
LC	Letter of Credit
M&A	Merger and Acquisition
MNRE	Ministry of New and Renewable Energy
MoU	Memorandum of Understanding
MSME	Ministry of Micro, Small and Medium Enterprise
MU	Million Unit
MVA	Mega Volt Amp
MW	Megawatt
PM-KUSUM	Pradhan Mantri Kisan Urja Suraksha evem Utthan Mahabhiyan
PPA	Power Purchase Agreement
PV	Photovoltaic
RE	Renewable Energy
REC	Renewable Energy Certificate
RPO	Renewable Purchase Obligation
RTS	Rooftop Solar System
T&D	Transmission and Distribution

## Introduction

India's quarterly Solar capacity additions declined by 22 percent in Q2 2022 over the previous quarter with around 3.56 GW installed in the second quarter of 2022 (utility & rooftop), a decent

decrease compared to around 4.5 GW installed in Q1 2022. Installations were up by 78 percent year over year compared to Q2 2021.

In Q2 2022, large-scale installations totaled around 3.13 GW compared to around 4.16 GW installed in the previous quarter. Y-o-Y, large-scale installations increased by over 96 percent compared to 1.59 GW installed in Q2 2021. The large-scale Solar PV project installation figures were slow due to BCD (basic customs duty) on Solar PV modules & cells which resumed from April 2022. In the first half of CY 2022, more than 8.1 GW of Solar PV projects got commissioned (utility & rooftop).

Even the installations might be more in the third quarter of the calendar year 2022 as this is the last year for the JNNSM target of 100 GW Solar by December 2022, but there was a supply chain disruption in China due to which the prices in the domestic country in China were itself high, it's a wait and watch the situation as to how developers are reacting in the Q3 2022 and commissioned the projects to get the benefit of the extra cost of duty on modules if they would have procured the panels on/before 31<sup>st</sup> March 2022.

Rooftop Solar installations accounted for around 438 MW installed in Q2 2022, an increase of 13 percent compared to 388 MW installed in Q1 2022. In a Y-o-Y comparison, rooftop Solar installations increased by just 7 percent, with around 408 MW added in Q2 2021.

The market has substantially improved since 2020 due to which the Solar PV installations crossed 3 GW in the second quarter of 2022 but were lower than the first quarter. The government had set a target for setting up 100 GW of Solar power capacity by December 2022 in the country. Against this, a total of around 57.7 GW (utility, rooftop, off-grid) of Solar power capacity has been installed, as of 30<sup>th</sup> June 2022, 60.66 GW capacity is at various stages of implementation and 23.14 GW capacity is under bidding stage as per the Lok Sabha update.

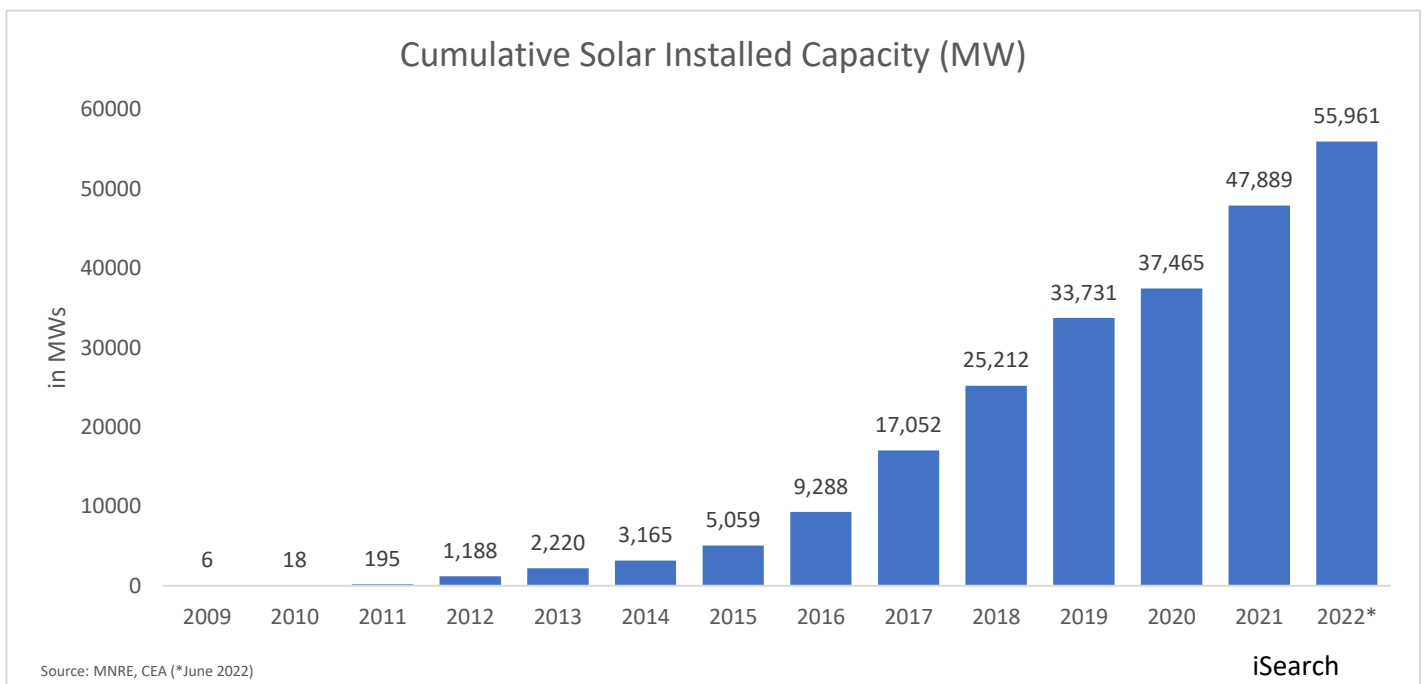
The market has recovered from a pandemic, and projects are getting commissioned which were stuck in 2021 but one issue of rising in the Solar PV modules pulling back the Indian Solar industry, along with BCD on Solar Cells & Module, and the upcoming ALMM.

India installed Solar PV capacity has crossed the 57 GW line with the installed capacity of 55.9 GW (utility & rooftop) as of 30<sup>th</sup> June 2022. Of the total Solar PV installed capacity, most of the installation comes from utility-scale projects of more than 48.9 GW, while the rest comes from rooftop Solar. In Q2 2022, the pace of Solar rooftop installations was normal and increased by 13 percent but the installations on a utility-scale have decreased by 25 percent over the previous quarter of 2022. Many of the industrial and commercial customers are coming forward to go for Solar installations which were not available a few months back, especially in the second wave restriction. The year has started on a good note for the Indian Solar industry and will end with maximum installations, as 2022 is the last year for the JNNSM target of 100 GW Solar by December 2022.

The share of utility-scale in the total Solar PV installations as of June 2022 was around 87 percent, while in CY Q2 2022, it exponentially increased to 88 percent. While the share of rooftop Solar as of June 2022 was around 13 percent of the country's total Solar PV installations, it has gained a 6.63 percent share in the second quarter of CY 2022 over the previous quarter's cumulative capacity. The share of the rooftop especially in the commercial and industrial space will grow substantially as the net-metering policy which was pending been approved by the Ministry of Power where the new amendment allows the net metering users to go for loads up to 500 kW or up to the sanctioned load, whichever is lower.

In Q2 2022, the PV supply chain saw substantial price fluctuations. Polysilicon shortages affect production output across the supply chain, whilst energy intensity and consumption control, and power rationing imposed in China since September 2021 affected overall raw material supply. Also, there is an outbreak of COVID-19 in the country again in 2022 which are affecting transport, as there is a lockdown in a few of the important province of the country, due to which there is a halt in the movement of goods inside the country, which create shortage from the bubble demand of Solar PV modules and the price of the panels got an increase.

In overseas markets, Polysilicon prices and shipping costs remained high and volatile during the quarter. Epidemic prevention and containment policies in China since March 2022 have resulted in logistics congestion and sharp reductions in transport capacity, which further increased cost pressures. To overcome these difficulties, the industry has taken early action to ensure ample reserves of raw materials as well as close cooperation and coordination of production, supply chain, and sales to meet production and delivery timelines



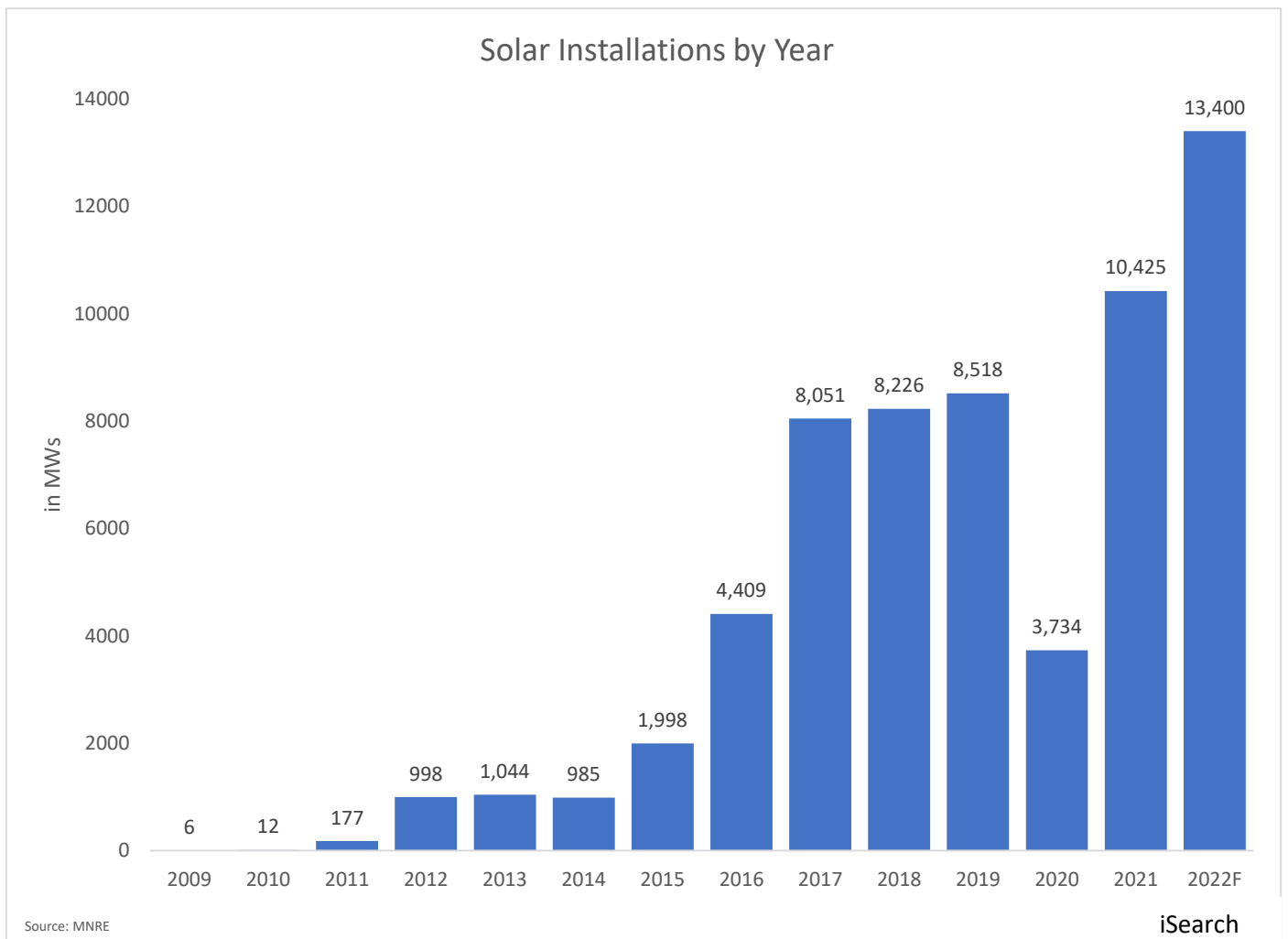
### Solar Installations in India by Year

The growth rate of Solar PV installations in the second quarter of 2022 had slowed down, as India's capacity addition in the quarter was around 3.56 GW (utility & rooftop) compared to the installations in Q1 2022 were 4.54 GW.

There was tremendous growth in the Indian Solar PV installations from 2016 to 2019, but due to COVID-19, the installations have slowed down. In CY 2021, the installations have taken a U-turn and shown a growth of 279 percent over 2020, but India needs more projects to be commissioned in the coming quarters as the target is huge, and left with only two quarters where the country has to achieve 100 GW of Solar PV installations by December 2022. Utility-scale installations were on track and left with just 11 GW to achieve the 60 GW of JNNSM target for ground-mount Solar PV installations.

After the Paris agreement, there is a positive growth in Solar PV installations in the country, and India became one of the top Solar markets globally after China & the USA. The total renewable energy capacity (excluding Hydro Power) already crossed the 114 GW mark in June 2022. The 175 GW installed RE capacity by 2022 announced in 2015 by the Hon'ble Prime Minister of India surpassed the 114 GW milestone (excluding large hydro) in 2022. India has only tapped a fraction of the vast potential for renewable energy and, therefore, India has raised the target to 450 GW RE installed capacity by 2030 with 280 GW of Solar.

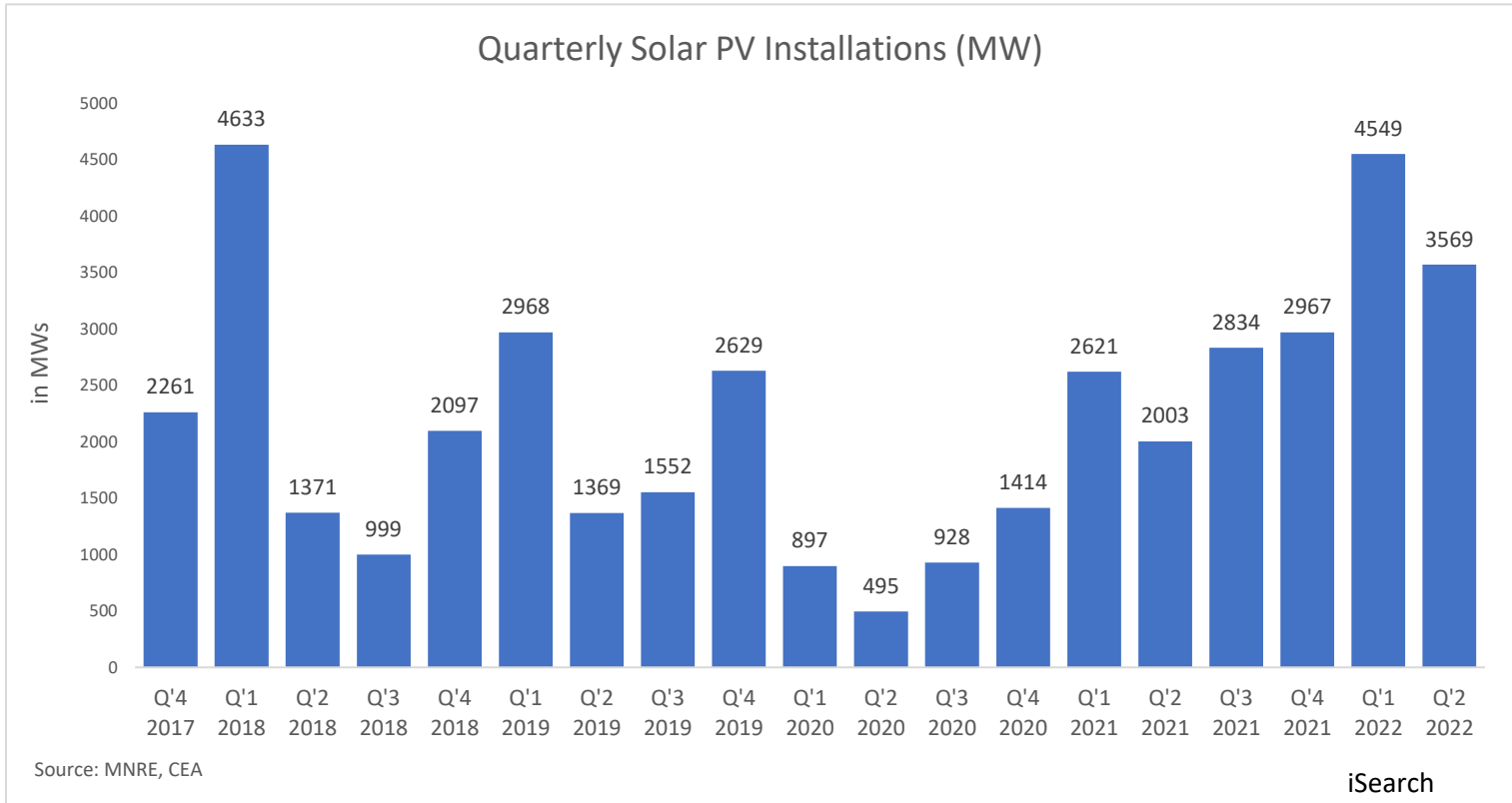
India will install the maximum capacity of yearly Solar PV installation in the Calendar year 2022, which already started with more than 8.1 GW of installations in the first half of CY 2022, the developers have procured the modules before the imposition of BCD, and commissioned the projects with the duty-free module in the second quarter except rooftop installers who might have paid duty for the import of foreign modules. India has tier-1 panel manufacturers who can provide quality panels at an affordable rate, also many huge announcements from top domestic manufacturers are announcing an expansion, and trying to match the capacity of Chinese module manufacturers so that they can get the benefit of economies of scale and supply the modules at a competitive rate.



Installations in Indian Solar Industry might be slow in the coming quarter due to BCD on modules and cells, in the second quarter of 2022 installations were down compared with the previous quarter due to the imposition of BCD.

The raw materials price is high due to supply disruptions in China, also the new COVID outbreak is going to further affect the prices of the module.

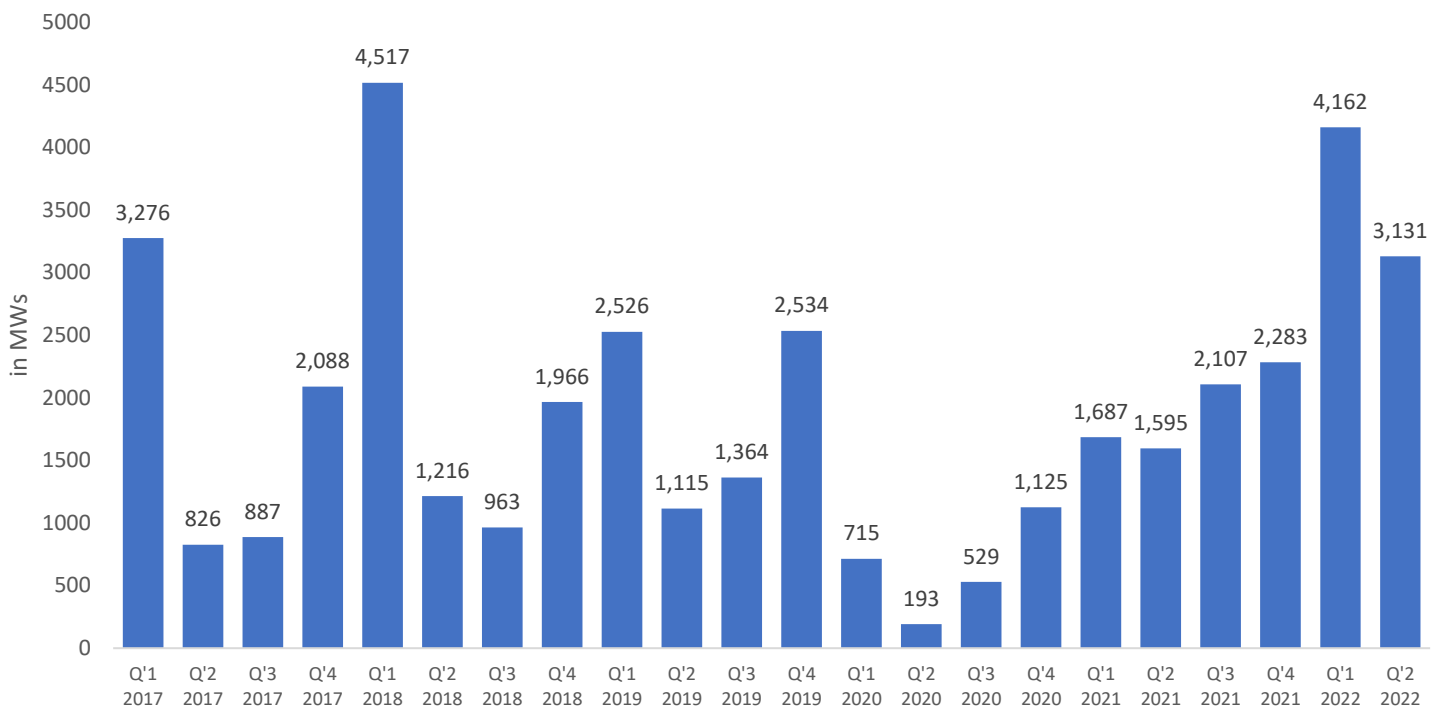
India's renewable capacity (excluding Hydro Power) has crossed the 114 GW mark, of which Wind and Solar Power contribute most of the installation with a market share of 35.8 percent and 50.6 percent as per June 2022 CEA (Central Electricity Authority) updates.



### Utility-scale Solar Installations

In CY Q2 2022, around 3.13 GW of Solar PV has been installed in the country under utility-scale installations. This quarter's installations have reduced compared to Q1 2022 with 4.16 GW. The developers commissioned the maximum projects in March 2022 before the implementation of BCD on the Solar PV module & cell.

### Quarterly Utility Scale Solar Installations in India 2017-2021

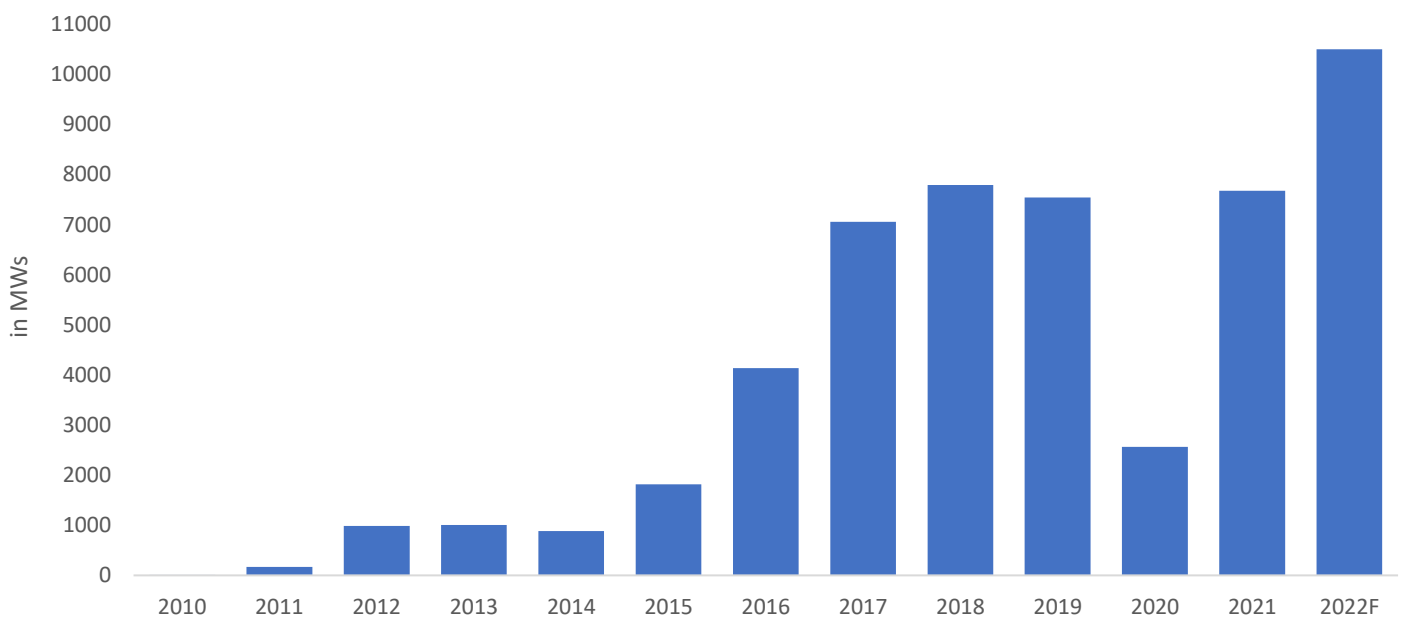


Source: MNRE, CEA

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In Q2 2022, utility-scale projects accounted for 88 percent of the total Solar PV installed capacity, which was down by 25 percent over Q1 2022, where the installations were around 4.16 GW. The installations in CY Q2 2022 would have been more but due to an increase in the raw materials, the

### Annual Solar Utility Scale Installations in India 2010-2022



Source: MNRE

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price of the modules has increased many folds, also the availability of modules in the short-term is difficult due to global demand. Many Chinese suppliers were not able to supply the panels due to a shortage of raw materials in China. Even Q3 2022 is going to be a difficult quarter due to the recent outbreak of COVID-19, there was a fresh lockdown in a few of the major provinces due to which many containers were floating idle in the coastal region. This will result in inflation in the Solar PV upstream segment. Also, there is a BCD on Solar Cells & Modules which will indirectly increase the project cost.

## **Market Scenario**

The installations for Solar PV in the second quarter of 2022 were around 3.56 GW (utility-scale & rooftop), there was a decline of 22 percent compared to the previous quarter's installations, due to the increase in the module price as BCD has been implemented from the start of a quarter second, it becomes a difficult task for the developers to execute the projects at the pre-determined price. Lots of negotiations are happening between the project developers and module suppliers.

India bought into the “Atma Nirbhar” narrative and announced across the board tariff walls on Solar cells and modules. Simultaneously a Production linked incentive scheme was announced for manufacturers. The Covid has driven supply chain disruption increased module prices and combined with the steep hike in duties which push the modules prices to another level. The new Capacity addition has all but paused. Meanwhile, domestic production is struggling to catch up and it will take new capacities at least 2-3 years to come on flow (if they do). Unless the government act soon, this has the potential to set us back by 2-3 years.

India should roll back the duty hikes for at least 2 years, press on with incentives and grants to Indian manufacturers, and hold the non-tariff barriers (like the ALMM) for an equal period of 2 years to put the country's Solar target on a path which has diverted a lot.

The record of steep tariffs incentivizing domestic manufacturing in solar has been very patchy. The recent experiences of the US and Europe manifest this. Be that as it may, a fragment of a tariff barrier would be needed to reduce dependency and foster energy security. But if India does not want the sacrifice and pauses the energy transition goals, it pays to be realistic, and roll back activities that take further steps to hamper the momentum of our energy transition. There is a slowdown in the import of BCD cells & modules, as suppliers and developers are still negotiating it find out the ways of this extra burden duty which is shattering the margin of the solar PV project. The rise in solar module prices is an aberration, and long-term average prices should revert to sub-\$0.20/Wp (before duties and taxes) levels from the current \$0.28/Wp in June 2022.

Ever since tariff barriers went up on solar cells (25%) and modules (40%) starting in April 2022, Indian Solar manufacturers and developers have been exploring various ways of bypassing these tariff barriers. One such avenue is the use of the Free Trade Agreement (FTA) that India has with ASEAN countries (Vietnam, Singapore, Thailand, Malaysia, Cambodia among others).

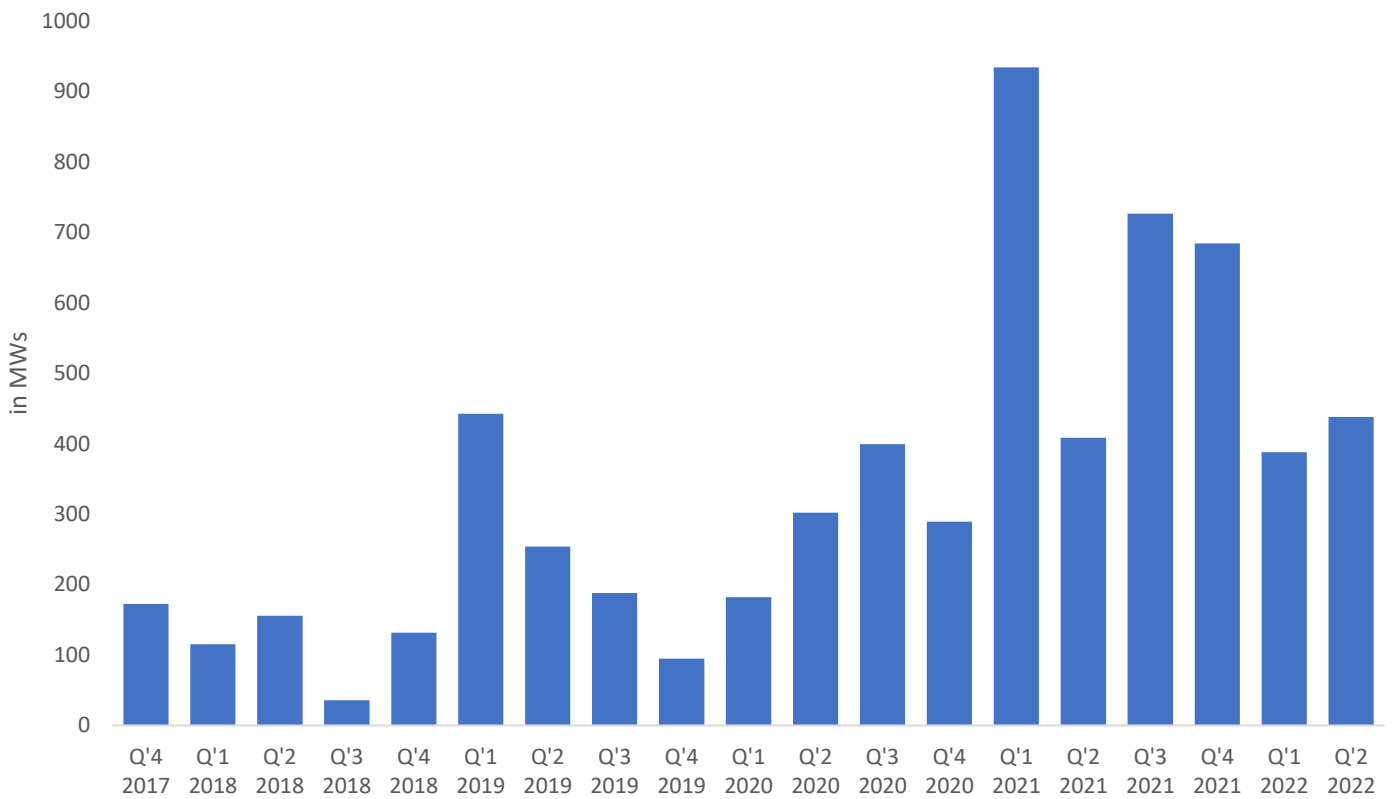
## **Solar Rooftop Installation**

Rooftop Solar installations increased by 13 percent in Q2 2022 reaching around 438 MW compared to Q1 2022. There was a year-over-year growth of 7 percent compared to Q2 2021. Rooftop Solar contributes just 12 percent of the total Solar PV installations in the second quarter of 2022. The



installations in the quarter were slow due to a BCD, one of the major reasons for the decline in the overall installations of rooftops in the second quarter was the lack of panels availability, as C&I consumers don't want to install the projects with higher panels price, which went down to the lowest a few quarters back. The good days were gone for the C&I consumers as they have to pay extra costs for the procurement of modules on the imposition of BCD.

Quarterly Rooftop Solar Installations in India 2017-2021



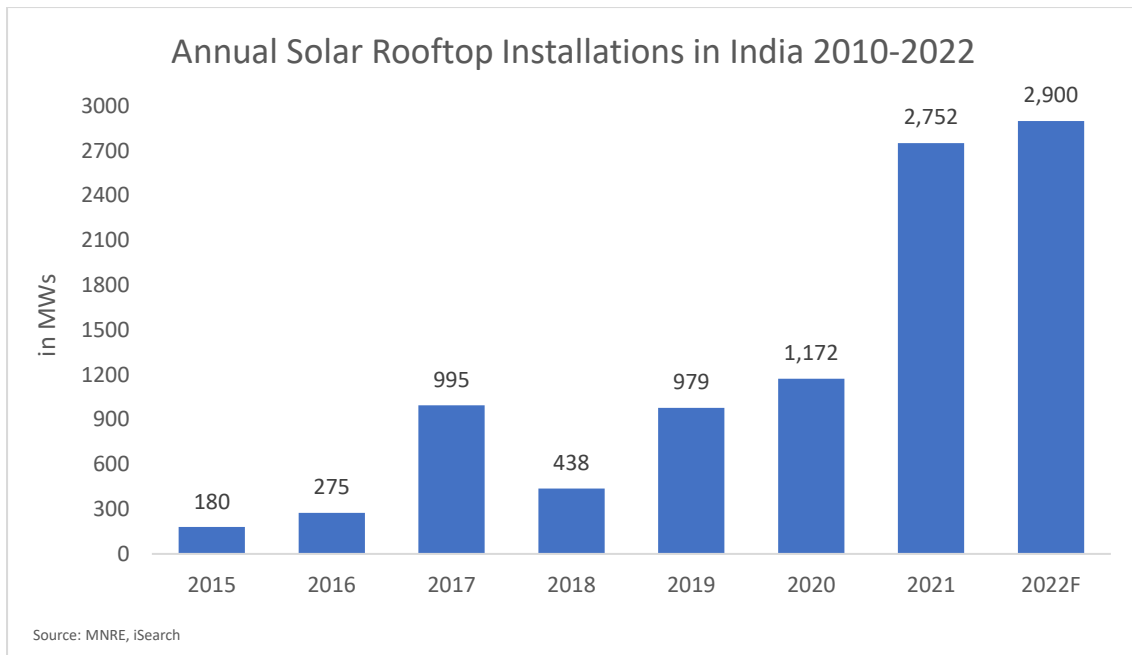
Source: MNRE, CEA

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Cumulative rooftop Solar installations have reached 7 GW as per MNRE monthly updates and still make up just 13 percent of the total Solar PV installations in the country, the target for Solar rooftops by December 2022 is 40 GW, still, a long way to go to reach the target, it is impossible to install 40 GW of Solar rooftop projects. We can estimate that India can achieve below 10 GW of rooftop Solar installations by 2022.

The rooftop consumer's major objective for a Solar system is to reduce their electricity bills as installing a Solar system for large consumers is beneficial, but due to BCD, their payback period will increase.

Rooftop Solar installations will grow exponentially in 2022 as the demand in commercial and industrial are increasing every year. Also, the recent update on the Coal shortage will kick up the Solar rooftop installation in the coming quarters as the C&I consumer's dependence on distribution companies (discoms) will reduce, this will help them smooth the flow of their day-to-day operation which is getting disrupted due to load shedding. In the first half of 2022, around 825 MW of Solar Rooftop being installed as per MNRE monthly update.



India installed around 438 MW of Solar rooftop projects in the quarter second of 2022. But the good days are already over as BCD on Solar modules and cells is being imposed, the installations might start falling again as rooftop installations always go for higher wattage imported panels from Chinese companies such as Mono Perc, Bifacial, now these panels cost 40 percent extra, the installers will suffer a huge loss as the cost of projects for rooftop Solar become very competitive from the past few quarters and negotiation for the higher price will be very difficult for the installers.

### Installed Power Capacity from Different Sources

Renewable capacity additions continue to increase at a rapid pace in India, accounting for approximately 28.3 percent of India's power capacity mix at the end of June 2022. India's total installed power capacity stood at over 403.8 GW at the end of the second quarter of 2022 from all the sources, with renewables accounting for 114.064 GW making up 28.3 percent, compared to cumulative renewable energy installations of 109.88 GW at the end of March 2022, which represented a 3.8 percent growth quarter-over-quarter.

