

# **India Rooftop Solar Market By Technology (Thin Film, Crystalline Silicon), by Grid-type (Grid Connected, Off-grid), by End-use (Residential, Commercial, Industrial), By Region, Competition, Forecast, and Opportunities, 2029**

<https://marketpublishers.com/r/I1AC7393676AEN.html>

Date: October 2023

Pages: 70

Price: US\$ 3,500.00 (Single User License)

ID: I1AC7393676AEN

## **Abstracts**

India rooftop solar market is anticipated to grow at a steady pace in the forecast period of 2025-2029. The increasing need for cost savings in energy and growing awareness among residential and commercial consumers to install solar panels, along with strong support from the central government, is helping accelerate the pace of rooftop solar installations in India. In Union Budget 2023-24, the government allocated USD 885 million (INR 7,327 crore) for the solar power sector, including grid, off-grid, and PM-KUSUM projects.

A rooftop solar power system, also known as a rooftop photovoltaic (PV) system, is a PV system with electricity-generating solar panels mounted on the roof of a residential or commercial structure. Due to their small capacities, compared to utility-scale solar ground-mounted PV power stations with capacities in the megawatt range, rooftop-mounted systems are more of a type of distributed generation. The majority of rooftop PV plants are connected to the grid by solar power systems.

Rooftop PV systems typically have a capacity of 5 to 20 kW for residential applications, whereas commercial ones typically have a capacity of 100 to 1 MW. Modern-scale PV frameworks with a power scope of 1 to 10 Megawatts can be introduced on extremely enormous housetops.

### **Declining Cost of Solar PV Systems**

The declining cost of sun-oriented PV frameworks has been a huge driver for this market. As a clean and renewable energy source, solar PV systems are gaining popularity, and India, with its abundant sunlight, has enormous potential for solar power generation. The diminishing expenses have made sun-oriented energy more reasonable and seriously contrasted with traditional petroleum derivative-based sources. A few elements that have added to the decrease in the expense of sunlight-based PV frameworks are the fast headway in innovation and assembling processes. Throughout the long term, there have been effective enhancements in sunlight-based charger proficiency, prompting higher power yield per unit area. Additionally, supply chain cost reductions have been brought about by advancements in manufacturing methods and economies of scale.

The government drives and strategies play had a critical impact in advancing sunlight-based energy reception in India. The Indian government has acquainted different measures to energize interest in the area, for example, offering monetary impetuses, tax cuts, and smoothed-out guidelines. Both, domestic and foreign investors, have participated in these initiatives, resulting in increased competition and further cost reduction.

In addition, India's solar PV system production capacity has significantly increased. However, costs have been reduced due to the establishment of solar manufacturing units and domestic production of key components. This localized manufacturing contributes to the expansion of the domestic economy and encourages the creation of new jobs.

The India rooftop solar market has been transformed by the falling cost of solar PV systems. It has opened open doors for broad sending of sun-based power across different areas, including private, business, and modern. Businesses and households have been encouraged to install solar PV systems and reduce their reliance on grid electricity because of the falling cost of solar energy. In addition, the declining cost of sun-powered energy has likewise drawn in utility-scale sun-oriented projects. Large solar parks have been set up all over India, significantly increasing the country's overall solar capacity. These activities assist with fulfilling the developing energy need, decreasing ozone-depleting substance outflows, and upgrading energy security.

Lastly, a significant contributor to the expansion of the solar market in India has been the decreasing cost of solar PV systems. Innovative progressions, government drives, expanded creation limits, and economies of scale have all added to this cost decrease. India is moving toward a cleaner and more sustainable energy future due to the

widespread uptake of solar power, which has increased due to its affordability and competitiveness.

### Commercialization of Building-Integrated Photovoltaics

The commercialization of building-integrated photovoltaics (BIPV) is a significant contributor to India's expanding solar market. BIPV includes the mix of sun-powered photovoltaic components into building structures, such as rooftops, veneers, and windows, empowering the age of clean power while filling in as useful structure parts. India's fast urbanization and the rising interest in reasonable foundations have established a great climate for BIPV reception.

There are several advantages that BIPV systems have over traditional solar installations. They give double usefulness by creating power while satisfying the engineering and primary necessities of structures. With this integration, separate solar panels are no longer required, which improves aesthetics and maximizes space utilization.

BIPV's potential has been recognized by the Indian government, which has actively promoted its commercialization through policies and incentives. The Energy Conservation Building Code and the Solar Rooftop Photovoltaic Program are two examples that have been put into place to encourage the incorporation of BIPV into both, new construction and renovation projects. BIPV is an appealing option for developers and building owners because these initiatives offer financial support, tax incentives, and simplified regulatory procedures. The developing consciousness of natural manageability and the need to lessen fossil fuel byproducts have additionally added to the rising interest in BIPV in India.

The nation's commitment to clean energy and climate change mitigation is reflected in BIPV systems. They assist with decreasing the dependence on petroleum products, lower ozone-depleting substance discharges, and add to accomplishing India's environmentally friendly power targets.

Also, the declining expenses of sun-based PV frameworks, as referenced prior, have made BIPV more financially practical. Incorporating renewable energy generation into buildings has become a cost-effective option due to the falling prices of solar panels and advancements in BIPV technology.

Moreover, the commercialization of BIPV is driving the development of the sun-based

market in India. The double usefulness and stylish appeal of BIPV frameworks, alongside government impetuses and strategies, have pushed their reception in new developments and retrofitting projects. BIPV has become an appealing and financially viable option for the Indian market due to its environmental benefits and falling prices for solar PV systems.

### Increasing Demand for Clean Energy

The rooftop solar energy market in India is anticipated to be driven by the rising demand for clean energy. Rooftop solar energy has emerged as a promising solution in the country's efforts to address environmental concerns while simultaneously meeting its growing energy needs. By making use of the rooftops of residential, commercial, and industrial buildings, rooftop solar installations use solar power to generate clean electricity and reduce reliance on fossil fuels. India's obligation to sustainable power and its aggressive objective of 450 gigawatts (GW) of sustainable power limit by 2030 has established a positive climate for housetop sun-oriented reception. To encourage rooftop solar installations, the government has implemented several policies and incentives, such as net metering, feed-in tariffs, subsidies, and tax benefits. These actions plan to make housetop sun-based more available and monetarily reasonable for shoppers.

Rooftop solar energy has many benefits. It considers decentralized power age, diminishing transmission misfortunes, and improving energy security. It does not require any additional land or infrastructure to be incorporated into existing structures. Additionally, rooftop solar systems save consumers money in the long run by reducing their electricity consumption.

In conclusion, the rooftop solar energy market in India is anticipated to be propelled by the rising demand for clean energy, which is being fueled by government initiatives and environmental concerns. Rooftop solar installations are a popular choice for consumers in a variety of industries due to the advantages of decentralized power generation, cost savings, and environmental sustainability. As the nation keeps on focusing on environmentally friendly power, housetop sunlight-based energy will assume a huge part in India's progress towards a cleaner and more manageable energy future.

### Market Segmentation

The India rooftop solar market is segmented by technology, grid-type, end-use, and region. Based on technology, the market is divided into thin film and crystalline silicon.

Based on grid-type, the market is divided into grid connected and off-grid. Based on end use, the market is divided into residential, commercial, and industrial. Based on region, the market is segmented into North India, South India, West India, and East India.

## Market Players

Major market players in the India rooftop solar market are Cleantech Solar Energy India Pvt. Ltd, Fourth Partner Energy Pvt. Ltd, Amplus Solar Power Pvt. Ltd, Clean Max Enviro Energy Solutions Pvt. Ltd, Sunsource Energy Pvt. Ltd, Orb Energy Private Limited, Tata Power Solar Systems Limited, Mahindra Susten Pvt. Ltd, Growatt New Energy Technology Co. Ltd, and Sungrow Power Supply Co. Ltd.

## Report Scope:

In this report, the India rooftop solar market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

### India Rooftop Solar Market, By Technology:

Thin Film

Crystalline Silicon

### India Rooftop Solar Market, By Grid-type:

Grid Connected

Off-grid

### India Rooftop Solar Market, By End-use:

Residential

Commercial

Industrial

### India Rooftop Solar Market, By Region:

West India

North India

South India

East India

### Competitive Landscape

Company Profiles: Detailed analysis of the major companies present in the India Rooftop Solar Market.

### Available Customizations:

With the given market data on the India rooftop solar market, TechSci Research offers customizations according to a company's specific needs. The following customization options are available for the report:

### Company Information

Detailed analysis and profiling of additional market players (up to five).

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