

India Photovoltaics Market Assessment, By Type [Monocrystalline Silicon, Polycrystalline Silicon, Thin Film Cells, Organic PV], By Grid Type [On grid, Off grid, and Hybrid], By Installation [Ground Mounted, Roof Mounted, BIPV, & Floating PV], By Application [Solar Farms, Electronic Devices, Healthcare Facilities, Public Infrastructure, Aerospace, Construction, Military, and Defence, Transportation, and Others], By End-user [Residential, Commercial & Industrial, and Utility], By Region, Opportunities, and Forecast, FY2018-FY2032F

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Abstracts

Photovoltaics Market in India has been experiencing robust growth and is projected to reach USD 8.77. billion by FY2032 from USD 4.72 billion in FY2024 growing at CAGR of 8.05% for the forecast period between FY2025 and FY2032. Significant factors include the government's vision to provide electricity in rural areas of the country, a robust rise in the number of rooftop solar panel installations in the residential sector, a large number of the population willing to reduce electricity bills emerging from the increased power consumption across the nation coupled with continuous government initiatives and schemes being offered to solar energy companies in terms of subsidies and tax rebates are likely to propel the demand of solar panels in coming years. All these drivers play a significant role in fuelling the market size of India's photovoltaics market during the forecast period.

India saw the highest year-on-year (Y-o-Y) growth in renewable energy additions of

9.83% in 2022. Over the past nine years, the installed capacity of solar energy has grown significantly, multiplying by a factor of 24.4. As of February 2023, the total installed solar energy capacity in India stands at 63.3 gigawatts (GW). Furthermore, among the total installed solar capacity of 50 gigawatts (GW), a significant majority of 42 GW is contributed by ground-mounted solar photovoltaic (PV) systems. On the other hand, rooftop solar (RTS) installations account for only 6.48 GW, while off-grid solar PV contributes 1.48 GW.

A Substantial Increase in the Number of Solar Parks

Solar parks or solar farms in India has witnessed a significant increase over the last few years. Some of the major solar parks of India includes Bhadla Solar Park having a capacity of 2,245 MW which is also the world's largest PV solar park followed by Pavagada solar park with a capacity of 2,050 megawatts that's makes it second largest in the world. Government of India has been taking several initiatives for setting up multiple solar parks across the country for which a scheme was rolled out by Ministry of New & Renewable Energy to provide Central Financial Assistance (CFA) of up to Rs. 25 lakh per solar park for preparation of Detailed Project Report. With the increase in the number of solar parks, the photovoltaics market is expected to surge as solar panels are largely being used at these solar farms. Several international solar energy companies have an opportunity to tap this market potential in India by setting up their solar plants. India holds a great opportunity for photovoltaics market owing to the maximum sunny days (300 out of 365) which becomes a great resource for this market.

Environmental Concerns are Acting as a Catalyst India's Photovoltaics Market

Environmental concerns are driving India's photovoltaics market due to the urgent need to reduce carbon emissions and reliance on fossil fuels. The country has set an ambitious target to increase its non-fossil fuel capacity to 500 GW by 2030. High air pollution levels in many cities emphasize the necessity for clean energy sources. The government's policies encourage the use of locally produced solar cells and modules, promoting sustainable practices and fostering domestic manufacturing. This transition to renewable energy not only addresses environmental issues but also generates job opportunities and supports economic growth.

For instance, in December 2024, Government of India decided to mandate the use of locally made solar cells in government projects from June 2026 is a significant step toward environmental sustainability. The country's renewable energy ministry announced that only solar cells from an approved list of domestic manufacturers will be

used, aiming to curb Chinese imports. This initiative aligns with India's goal of increasing its non-fossil fuel capacity to 500 GW by 2030. Currently, India has a solar PV module-making capacity of about 80 GW, while solar cell capacity is slightly more than 7 GW, with a heavy reliance on Chinese imports. By ramping up domestic production and supporting local manufacturers, India is not only reducing its carbon footprint but also fostering a sustainable PV market. Tata Power, Reliance Industries, and other major firms are setting up substantial cell-making plants to support this initiative.

Rise in Rooftop Solar Panels Leading to Demand for Monocrystalline Silicon

The cost of solar panels has significantly decreased in recent years, making rooftop solar installations more affordable and financially attractive. Technological advancements, economies of scale, and increased competition have contributed to the cost reduction. Moreover, advances in solar technology have made rooftop solar panels more efficient, durable, and aesthetically appealing. With over 300 million households and an abundance of sunshine for most of the year, India possesses immense potential for rooftop solar installations in residential areas. Rising demand among consumers along with the government support pushes the market for the rooftop solar panels in India cities, particularly in Gujarat and Rajasthan.

As per the most recent data provided by the ministry, the rooftop solar capacity increased to 8,877 megawatts (MW) by 31st March 2023, compared to 7,520 MW recorded on 30th September 2022. Since, the rooftop solar panels are mostly composed of monocrystalline silicon, hence the demand for monocrystalline silicon solar PV panels is increasing at a rapid rate.

Government Regulations

The Indian government is placing significant emphasis on advancing the technology of solar photovoltaics (PV) and is making substantial investments in this area. Additionally, the government has implemented a range of policies aimed at enhancing the solar PV market in the years ahead. For example, Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM) scheme was launched in 2019 to promote the installation of solar pumps and the solarization of agricultural feeders. It aims to increase farmer income, reduce dependence on grid electricity, and promote sustainable agriculture practices. Under PM-KUSUM, farmers in Gujarat have been able to install solar-powered irrigation pumps on their agricultural lands. These solar pumps provide a reliable and cost-effective source of energy for irrigation, reducing farmers'

dependence on traditional grid electricity. In 2022, the scheme successfully incorporated a solar capacity of 30,800 megawatts (MW) with a total financial support of Rs. 34,422 Crore from the central government. This financial support includes service charges provided to the implementing agencies.

Additionally, the Atal Jyoti Yojana (AJAY) was introduced by the Ministry of New and Renewable Energy (MNRE) to bring light to areas with inadequate illumination by installing solar streetlights. It is a sub-scheme under the off-grid and decentralized solar application scheme of the Ministry of New and Renewable Energy (MNRE), Government of India.

Impact of COVID-19

The Indian solar industry has experienced significant challenges as a result of the COVID-19 pandemic. These challenges include cash flow shortages, difficulties in recovering payments from distribution companies, limited working capital, workforce availability concerns, and disruptions in the supply chain. Despite these obstacles, the government has displayed a positive approach to mitigating the adverse impacts on the sector.

The ongoing pandemic may serve as a catalyst for the Indian government, the solar industry, and related stakeholders to strategize and navigate towards the achievement of India's solar energy targets effectively.

Key Players Landscape and Outlook

The solar photovoltaic market in India is witnessing notable growth, leading international companies to prioritize quality and brand positioning in order to sustain their market share and expand their global presence. These companies are increasing their investments in research and development, marketing, and the expansion of distribution networks. Manufacturers are actively studying consumer behavior to gain deeper insights into their requirements and are continuously introducing new products to meet those demands.

In May, 2023, TP Saurya Limited, a subsidiary of Tata Power Renewable Energy Limited (TPREL), signed a power purchase agreement (PPA) with Tata Power Trading Company Limited. The agreement is for the establishment of a 200 MW AC solar project in Bikaner, Rajasthan. Once the project becomes operational, it is expected to generate approximately 485 million units of energy annually over a span of 25 years.

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*Companies mentioned above DO NOT hold any order as per market share and can be changed as per information available during research work

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