India Solar Module Market Assessment, By Type [Monofacial Modules, Bifacial Modules, Polycrystalline Modules], By Application [Rooftop Installations, Irrigation Systems, Solar Farms, Water Heating Systems, Solar EV Charging Stations, Others], By End-user [Residential, Commercial, Industrial], By Region, Opportunities and Forecast, FY2018-FY2032F

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Report description:

India solar module market is expected to observe a CAGR of 11.83% during the forecast period FY2025- FY2032, rising from USD 7.03 billion in FY2023 to USD 17.20 billion in FY2032.
Indian energy landscape requires solar modules or solar panels to support its transition to renewable energy, and thereby reduce dependency on fossil fuel. Localized energy production encourages using solar panels to improve the condition of rural areas through the provision of power for cooking, lighting, and other uses, leading to economic growth and ecological sustainability, thereby playing a vital role in climate change mitigation efforts and national carbon-emission reduction strategies. Hence, India is focusing on increasing its solar capacity, and this will continue over the projected years.
For instance, in July 2024, Ornate Solar announced that India's solar energy capacity has reached a huge milestone of 85,474 MW, with the country adding 1,197 MW of new capacity in June. The expansion of solar power is crucial for addressing rising energy demands and accelerating the transition to renewable energy. As India expands its solar infrastructure, it positions itself as a pioneer in sustainable energy production, helping to meet environmental goals and ensure energy security.
Rise in Rooftop Solar Installation Capacity to Augment Market Growth
In India, the requirement for rooftop solar installations is increasing rapidly. Hence, the Indian government is focusing on major initiatives. The initiatives are expected to lead to a substantial increase in rooftop solar capacity throughout the country, thereby fostering the market growth rate extensively.
For instance, in August 2024, the Indian government announced that India has built 1.1 GW of rooftop solar capacity during the

first half of 2024, which is 26% higher than the recorded capacity in the same duration last year. The residential sector saw unprecedented growth rates with increasing installations by more than ten times than observed in the previous quarter. Gujarat, Kerala, Maharashtra, Uttar Pradesh, and Tamil Nadu led in rooftop solar capacity additions, accounting for more than 81% of all installations during the quarter. As of June 2024, India's total rooftop solar capacity reached 11.6 GW.

Rise in Utilization of Solar Panels in Irrigation Systems to Expedite the Market Growth

Solar panel systems are utilized in irrigation systems for a long-lasting and natural source of power required for the operation of water pumps. This leads to reduced dependence on fossil fuels, lowered running costs, and a minimal ecological impact. Solar-powered irrigation systems enhance water efficiency through the sensible management of water incorporating techniques such as drip irrigation which lead to increased farm output. Furthermore, these are useful for off-grid zones to improve agricultural productivity, promote sustainable agriculture, and reduce greenhouse gases released into the atmosphere.

For instance, in February 2024, India effectively installed more than 2,95,000 solar water pumps for farmers under the Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM) scheme which aims at improving irrigation and reducing dependence on diesel. Notably, Haryana, Maharashtra, and Rajasthan account for nearly seventy-five percent of these installations. The success of the scheme highlights its role in advancing sustainable agriculture, boosting farmer incomes and helping achieve India's renewable energy targets through access to solar technology.

Solar EV Charging Stations are Propelling Market Growth

Rising EV charging stations in India are influencing the demand for solar panels significantly. In recent times, India has seen a significant rise in public charging stations. Charging stations nowadays are gradually integrating solar panels to allow for a more sustainable power source which results in less reliance on the grid and lower operational expenses. The synergy between EV sales and solar power consumption in India is boosting the growth of EV charging stations, thereby, proliferating market growth and contributing to a cleaner environment.

For instance, in July 2024, the first grid connected solar powered EV charging station of Delhi was launched by the National Solar Energy Federation of India (NSEFI). The innovative project is being developed in collaboration with Bombay Suburban Electric Supply (BSES) aimed at promoting sustainable energy and upgrading the electric vehicle infrastructure. The charging station is capable of charging two and four wheelers in an hour. The pilot initiative is supported by a German non-profit organization, Sequa GmbH, which demonstrates a model for solar power integration into EV charging stations, contributing to India's renewable energy objectives and promote electric mobility development.

Government Initiatives are Amplifying the Market Prosperity

Government initiatives play a significant role in India for the adoption of solar panels or clean energy generation. The Indian government has sponsored various projects to promote the use of solar energy, including the Jawaharlal Nehru National Solar Mission. These initiatives offer monetary incentives to cut the cost of solar panels for residential rooftops and business buildings, thereby making solar energy more affordable across the country.

The goal is to reduce carbon emissions while also supporting local renewable energy companies, which has helped India to become a global leader in the solar power industry. Subsidies for rooftop solar systems, the Production Linked Incentive (PLI) program to stimulate local manufacturing, and the National Green Hydrogen Mission are all major initiatives. These efforts have greatly increased India's solar power capacity, which now accounts for a major part of the country's overall renewable energy.

Northern India Comprehensively Led the Market Share

Northern India emerged as the market leader in 2024 and is expected to maintain its position over the forecast years. The region's vast population, along with a prominent industrialization, has positioned it as a solar power hub in the country.

For instance, in June 2024, Rajasthan Urja Vikas Nigam Ltd. (RUVNL) launched a solar tender for 8,000 MW, which stands as one of the biggest individual tenders in India's solar energy industry. The step aims to boost solar power output in Rajasthan strengthening the state's role as a major player in India's renewable energy scene. Moreover, Rajasthan is expected to continue building its reputation of being the largest source of renewable energies in India, especially in the solar power sector.

Future Market Scenario (FY2025 - FY2032F)

- The utilization of solar panels in irrigation systems in India will contribute to provide sustainable farming methods and enhance agricultural output, yielding extensive opportunities for market growth in the forecast years.
- The charging stations for electric vehicles are expected to increase the need for solar panels, thereby leading to ample market

growth opportunities.
-The utilization of perovskite solar cells in bifacial solar modules is expected to increase market growth at an exponential rate in the projected years, improving effectiveness and reducing expenses.
-The Indian government's investment in infrastructure to support solar panel installations will be improved through the development of solar parks and cities.
Key Players Landscape and Outlook
In the highly competitive solar module business, market players in India are always searching for strategies that would give them an edge over their rivals. Therefore, they have been investing heavily in rooftop solar installation and building integrated photovoltaics. Furthermore, the organizations are indulging in a variety of collaborations to promote the installations of solar energy projects, such as rooftop-solar projects, solar farms, etc.
In July 2024, Waaree Energies Ltd. signed a contract with Serentica Renewables to supply 900 MW of bifacial solar modules for a major solar power project in Rajasthan. It is regarded as one of India's largest projects that uses Waaree's Elite Series N Type Top-Con bifacial solar modules. The cooperation intends to increase renewable energy generation, cut-down carbon emissions, and aid India's transition to sustainable energy.

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