

India Solar Energy Market, By Technology (Solar Photovoltaic, Concentrated Solar Power), By Solar Module (Monocrystalline, Polycrystalline, Cadmium Telluride, Amorphous Silicon Cells, Others), By Application (Residential, Commercial, Industrial), By End Use (Electricity Generation, Lighting, Heating, Charging) By Region, Competition, Forecast & Opportunities, 2021-2031F

Market Report | 2025-06-06 | 84 pages | TechSci Research

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Report description:

Market Overview

The India Solar Energy Market was valued at USD 8 billion in 2025 and is projected to reach USD 14 billion by 2031, expanding at a CAGR of 10.51% during the forecast period. As a clean, renewable, and increasingly cost-effective energy source, solar energy is gaining traction across India. The country's commitment to sustainability and climate goals has positioned solar power as a central pillar of its energy strategy. Strong policy support, technological advancements, and growing investor interest are accelerating deployment across both urban and rural areas. India has made notable progress in expanding its installed capacity, with over 100 GW achieved as of early 2025. Record installations in 2024 highlight the market's momentum, particularly in utility-scale and rooftop solar segments. Solar energy's scalability, declining component costs, and potential to reduce reliance on fossil fuels further strengthen its role in the nation's transition to a cleaner energy mix. As infrastructure improves and regulatory frameworks evolve, the market is poised for continued robust growth.

Key Market Drivers

Government Policies and Initiatives

India's solar energy market has seen significant acceleration due to proactive government policies and strategic initiatives. The National Solar Mission, launched under the National Action Plan on Climate Change, has set ambitious goals, targeting 500 GW of non-fossil fuel energy capacity by 2030, with solar expected to be a major contributor. Programs like PM-KUSUM aim to solarize agricultural pumps, enhancing rural energy access while reducing fossil fuel dependence. Financial mechanisms such as tax

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incentives, accelerated depreciation, and viability gap funding have lowered entry barriers for investors. The Solar Energy Corporation of India (SECI) and Indian Renewable Energy Development Agency (IREDA) play pivotal roles in project financing and development. Additionally, Renewable Purchase Obligations (RPOs) compel certain industries and power distributors to source a share of their electricity from renewable sources, further stimulating demand. India added 24.5 GW of solar capacity in 2024 alone, including 18.5 GW from utility-scale projects and 4.6 GW from rooftop installations, underscoring the effectiveness of these policy frameworks.

Key Market Challenges

Land Acquisition and Infrastructure Constraints

A prominent challenge in India's solar energy market is land acquisition for utility-scale projects. Securing large, non-agricultural land parcels that are free from legal encumbrances and in proximity to transmission infrastructure is often difficult. India's dense population and competing land use priorities—ranging from agriculture to industry and urban expansion—intensify the issue. Even in areas with ample solar potential, such as Rajasthan or Gujarat, inadequate grid infrastructure can hinder power evacuation, creating bottlenecks. Legal complexities, environmental clearance requirements, and local community resistance further delay project execution and escalate costs. These issues introduce uncertainty for developers and investors, impacting project timelines and financial viability. Although initiatives like green energy corridors aim to alleviate these constraints, coverage remains limited, particularly in remote regions with high solar irradiance.

Key Market Trends

Growth of Rooftop Solar and Decentralized Systems

India is witnessing rapid growth in rooftop solar installations and decentralized solar applications. This trend is driven by supportive government schemes, rising electricity tariffs, and increased awareness of solar's long-term cost benefits. Residential and commercial users are adopting rooftop systems to reduce reliance on grid power and diesel generators. Programs such as the Grid-Connected Rooftop Solar Scheme provide subsidies to residential consumers, while net metering policies incentivize feeding excess power back into the grid. Commercial and industrial users, facing higher tariffs, are turning to solar for operational cost savings and sustainability goals. Rooftop solar offers flexibility, ease of installation, and scalability, making it an attractive option across urban and semi-urban regions. As a result, decentralized solar is emerging as a vital complement to utility-scale development, especially in areas where land and infrastructure constraints limit larger projects.

Key Market Players

- Adani Green Energy Limited
- Tata Power Solar Systems Limited
- ReNew Power Ventures Pvt. Ltd.
- Azure Power Global Limited
- ACME Solar Holdings Limited
- Hero Future Energies Pvt. Ltd.
- Greenko Group
- Waaree Energies Ltd.

Report Scope:

In this report, the India Solar Energy Market has been segmented into the following categories, in addition to the industry trends which have also been detailed below:

- India Solar Energy Market, By Technology:

- o Solar Photovoltaic
- o Concentrated Solar Power

- India Solar Energy Market, By Solar Module:

- o Monocrystalline
- o Polycrystalline
- o Cadmium Telluride
- o Amorphous Silicon Cells
- o Others

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- India Solar Energy Market, By Application:

?o?Residential

?o?Commercial

?o?Industrial

- India Solar Energy Market, By End Use:

?o?Electricity Generation

?o?Lighting

?o?Heating

?o?Charging

- India Solar Energy Market, By Region:

?o?South India

?o?North India

?o?West India

?o?East India

Competitive Landscape

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

Available Customizations:

India Solar Energy Market report with the given market data, 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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