

India Solar Cells Market Assessment, By Type [Monocrystalline Cells, Polycrystalline Cells, Thin Film Cells, Passivated Emitter and Rear Contact Cells], By Application [Rural Electrification, Stand-alone Systems, Solar Farms, Building-integrated PV], By End-user [Residential, Commercial, Industrial], By Region, Opportunities and Forecast, FY2018-FY2032F

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Report description:

India solar cells market is expected to observe a CAGR of 22.10% during the forecast period FY2025- FY2032, rising from USD 1.91 billion in FY2023 to USD 9.44 billion in FY2032. India's requirement for solar cells is due to the country's ambitious goal of reaching 500 GW of renewable energy capacity by 2030. India, with its rapidly increasing electricity consumption and significant solar power output, is keen to reduce its dependency on fossil fuels. The country has set lofty renewable energy goals to develop 500 GW of non-fossil fuel-based electricity generation capacity by 2030. To meet the target, India is increasing its solar imports. Moreover, the transformation is motivated by the need to combat climate change, provide energy security, and promote sustainable development. The government has adopted several laws and incentives to stimulate the use of solar energy. As a result, India has emerged as a global leader in renewable energy, attracting investments and technological improvements in the solar sector.

In June 2024, Mercom India stated that as per the Department of Commerce, India had imported solar cells and modules in the 1st quarter of 2024 of nearly USD 2 billion, which is a 147.5% increase compared to last year, where solar cells covered nearly 21% of the quarter's total imports.

Requirement of Power Supply and Other Services in Rural Areas is Accelerating Market Growth

In India, solar cells are vital in providing reliable, pollution-free power to rural areas that are not connected to the electric grid. They fulfill basic requirements such as water, electricity, etc. Furthermore, solar energy guarantees energy autonomy, thereby contributing extensively to the development of rural Indian communities.

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For instance, in September 2024, The Maharashtra cabinet authorized a budget of more than USD 1.2 billion for the Chief Minister Solar Agriculture Feeder Program 2.0, providing a continuous 24-hour power supply to agricultural pumps in the state's rural areas. With 9,000 MW dedicated to solar projects and 7,000 MW decentralized, the program seeks to increase solar energy capacity to 16,000 MW by 2025. A 30% financial incentive for the development of solar power plants between FY2024-FY2026 and FY2026-FY2027 has been announced by the state government, valued at USD 11.97 million. USD 748.57 million in FY2025-FY2026 and USD 448.47 million in FY2026-FY2027 make up this amount.

Solar Farms are Fostering Market Growth

India's dedication and focus on the development of solar farms comes from the immense potential of solar energy and the urgent requirement for sustainable energy solutions. Solar farms have the potential to dramatically reduce dependency on fossil fuels while improving energy security. They enable localized power generation, which benefits the Indian rural communities by increasing the energy availability and quality of life.

For instance, in November 2023, the Indian government initiated the Solar Park Scheme with the aim of developing at least 50 solar parks of 500 MW or above by FY2025-FY2026, with a cumulative capacity of approximately 38 GW. These mega or large solar parks would provide a focal point for concentrated solar power generation and attract investment, thereby creating an enabling environment for the overall growth of solar power across the country.

Rise of Perovskite Solar Cells is Encouraging Market Growth

Perovskite solar cells are expected to revolutionize the solar energy market in India. Owing to high-efficiency potential, low cost of production, and diversified applications, the interest of the research fraternity is increasing for perovskite-related technologies. Indian scientists developed lead-free and low-cost carbon-based perovskite solar cells with higher efficacy. The government is striving to integrate perovskite cells into building materials for sustainable construction.

For instance, in August 2024, Reliance Industries decided to commercialize the technology of perovskite and back-contact heterojunction using intrinsic thin-layer (HJT-IBC) solar cells until 2026. While these technologies have been demonstrated by the company on a small scale, they are likely to form part of its next-generation solar modules, which will boast higher efficiency and lower lifespan costs. Reliance has invested heavily in manufacturing solar cells, scaling up the initial capacity of 10 GW by the end of 2024 to a full capacity of 20 GW by 2026 to help fuel India's renewable energy transformation.

Government Initiatives are Amplifying the Market Prosperity

Government measures are critical for increasing solar cell usage in India, especially when climate change and fossil fuel dependency are considered. Government measures are essential to increase the utilization of solar cells in the country. These measures include financial incentives, such as subsidies and tax credits, to help businesses reduce solar installation costs. Furthermore, measures such as net metering and renewable energy objectives promote investment in solar energy. The government seeks to increase the accessibility of solar energy by giving technical support and encouraging local manufacturing, thereby making it a viable and sustainable choice for a variety of industries.

For instance, in March 2024, the Indian government notified the Delhi Solar Policy 2024 and announced huge incentives and subsidies to encourage the installation of rooftop solar plants by residents and commercial establishments. It has been announced that consumers using less than 400 units per month will have their electricity bills reduced to zero. The announcement further said the government will provide a capital subsidy of USD 23.83 per kW. The policy further aims for 20% of Delhi's electrical needs to cater through solar energy by 2027.

Northern India Dominates the Market Share in All Aspects

Northern India has become the forefront of solar cell manufacturing due to favorable government initiatives and a rapidly rising need for power. As a result, programs, such as grants or tax rebates, support green energy in the Northern area. The initiatives plan to promote the establishment of solar power plants. Moreover, population growth and industrialization in Northern India stimulate the demand for the solar cell market.

For instance, in April 2024, JI Solar announced that Rajasthan leads the country for solar power generation with its 17.8 GW capacity while possessing maximum potential due to its vast dry lands and high irradiation levels. In the Jodhpur district's Bhadla area, the Bhadla Solar Park, India's largest solar park with an output of 2,245 MW, covers 1400 acres. It was developed over time through several phases by stakeholders such as Adani Renewable Energy and Rajasthan Renewable Energy Corporation Limited.

Future Market Scenario (FY2025 - FY2032F)

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-□While government initiatives, such as the PLI scheme, are likely to increase the number of solar cells manufactured in the country with reduced dependency on component imports, the trend, in turn, is likely to open strong growth opportunities for the market in the forecast period.

-□An increased emphasis on rooftop solar installations and off-grid alternatives will empower customers and enhance energy availability in rural communities. This is anticipated to lead to ample opportunities in the future for market growth.

-□Increasing awareness of climate change will increase demand for sustainable energy alternatives, establishing solar cells as a key component of India's energy transformation in the forecast period.

Key Players Landscape and Outlook

The key market players in India's highly competitive solar PV market are seeking a significant advantage by investing heavily in solar farms and developing hybrid PV. To increase their market position, companies adopt various collaborative strategies including partnerships and joint ventures to leverage shared expertise and resources.

The approach not only accelerates innovation but also maximizes production efficiency. With a focus on advanced technology and sustainable practices, players in these markets aim to strengthen their foothold in the rapidly evolving solar energy landscape while also meeting the growing demand for renewable energy solutions.

In September 2024, Tata Power Solar Systems Limited began its solar cell production at its 4.3 GW manufacturing facility in Tirunelveli, Tamil Nadu, making it India's largest single-location solar cell and module plant. The cutting-edge plant, which employs innovative TOPCon & Mono Perc technology, intends to boost local solar component manufacture and help India's clean energy aspirations. The facility will initially operate with a capacity of 2 GW, with plans to increase it to full capacity in the upcoming months. The effort is part of the organization's goal of achieving India's renewable energy targets and lowering dependency on imports.

Table of Contents:

- 1.□Project Scope and Definitions
- 2.□Research Methodology
- 3.□Executive Summary
- 4.□Voice of Customer
 - 4.1.□Product and Market Intelligence
 - 4.2.□Mode of Brand Awareness
 - 4.3.□Factors Considered in Purchase Decisions
 - 4.3.1.□ Features and Other Value-Added Service
 - 4.3.2.□ Efficiency
 - 4.3.3.□ Technical Support
 - 4.3.4.□ Pricing
- 5.□India Solar Cells Market Outlook, FY2018-FY2032F
 - 5.1.□Market Size Analysis & Forecast
 - 5.1.1.□By Value
 - 5.1.2.□By Volume
 - 5.2.□Market Share Analysis & Forecast
 - 5.2.1.□By Type
 - 5.2.1.1.□Monocrystalline Cells
 - 5.2.1.2.□Polycrystalline Cells
 - 5.2.1.3.□Thin Film Cells
 - 5.2.1.4.□Passivated Emitter and Rear Contact Cells (PERC)
 - 5.2.2.□By Application
 - 5.2.2.1.□Rural Electrification
 - 5.2.2.2.□Stand-alone Systems
 - 5.2.2.3.□Solar Farms

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- 5.2.2.4. □ Building-integrated PV
- 5.2.3. □ By End-user
 - 5.2.3.1. □ Residential
 - 5.2.3.2. □ Commercial
 - 5.2.3.3. □ Industrial
- 5.2.4. □ By Region
 - 5.2.4.1. □ North
 - 5.2.4.2. □ South
 - 5.2.4.3. □ East
 - 5.2.4.4. □ West and Central
- 5.2.5. □ By Company Market Share Analysis (Top 5 Companies and Others - By Value, FY2024)

5.3. □ Market Map Analysis, 2024

- 5.3.1. □ By Type
- 5.3.2. □ By Application
- 5.3.3. □ By End-user
- 5.3.4. □ By Region

*All segments will be provided for all regions

6. □ Porter's Five Forces Analysis

7. □ PESTLE Analysis

8. □ Market Dynamics

- 8.1. □ Market Drivers
- 8.2. □ Market Challenges

9. □ Market Trends and Developments

10. □ Case Studies

11. □ Competitive Landscape

- 11.1. □ Competition Matrix of Top 5 Market Leaders
- 11.2. □ SWOT Analysis for Top 5 Players
- 11.3. □ Key Players Landscape for Top 10 Market Players
 - 11.3.1. □ Tata Power Solar Systems Limited
 - 11.3.1.1. □ Company Details
 - 11.3.1.2. □ Key Management Personnel
 - 11.3.1.3. □ Products and Services
 - 11.3.1.4. □ Financials (As Reported)
 - 11.3.1.5. □ Key Market Focus and Geographical Presence
 - 11.3.1.6. □ Recent Developments/Collaborations/Partnerships/Mergers and Acquisition
 - 11.3.2. □ Adani Green Energy Limited (AGEL)
 - 11.3.3. □ Waaree Energies Limited
 - 11.3.4. □ Loom Solar Pvt Ltd.
 - 11.3.5. □ Websol Energy System Limited (WESL)
 - 11.3.6. □ Vikram Solar Ltd.
 - 11.3.7. □ Goldi Solar, Inc.
 - 11.3.8. □ RenewSys India Pvt. Ltd
 - 11.3.9. □ Premier Solar Systems Pvt Ltd
 - 11.3.10. □ Saatvik Green Energy Pvt Ltd.

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

12. □ Strategic Recommendations

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