India Solar Photovoltaic (PV) Market Size and Share Outlook - Forecast Trends and Growth Analysis Report (2025-2034)

Market Report | 2025-07-15 | 137 pages | EMR Inc.

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Report description:

The India solar photovoltaic (PV) market size reached 18.11 Gigawatt in 2024. The market is expected to grow at a CAGR of 13.10% between 2025 and 2034, reaching almost 62.02 Gigawatt by 2034.

A photovoltaic (PV) cell, also referred to as a solar cell, is a device that converts sunlight directly into electricity, operating without mechanical components. Some PV cells can also convert artificial light into electrical energy. Sunlight is made up of photons, which are particles carrying solar energy. These photons have varying energy levels corresponding to the different wavelengths present in the solar spectrum.

According to the India solar photovoltaic (PV) market report, solar photovoltaics (PV) is a highly versatile technology that can be manufactured in large-scale facilities to achieve cost efficiencies, while also being capable of deployment in small quantities for a wide range of applications. These applications span from small residential rooftop systems to large utility-scale power generation installations.

According to the Institute for Energy Economics and Financial Analysis (IEEFA), India has the potential to become the second-largest manufacturer of solar photovoltaic (PV) technology globally by 2026.

Key Trends and Developments

India's solar photovoltaic (PV) market growth is driven by government initiatives, environmental consciousness, technological progress, and affordability drive the expansion.

March 2024

SJVN, an Indian government-owned power generation firm, acquired 200 MW solar capacity in Gujarat Urja Vikas Nigam Ltd.'s auction for GSECL Solar Park.

February 2024

Tamil Nadu Energy Development Agency (TEDA) has issued a tender to set up grid-connected solar photovoltaic (PV) systems in government premises such as collectorates, tax offices, and courts.

February 2024

Adani Green Energy in India has activated 551 MW of solar PV capacity in Khavda, Gujarat, providing electricity to the national grid.

February 2024

India has initiated NTPC's expansive 300MW Nokhra Solar Project in Rajasthan, which is set to generate 730 million units of electricity annually, catering to over 1.3 lakh households.

Government initiative

Government aid drives India solar photovoltaic (PV) market growth by providing incentives like tax credits, rebates, feed-in tariffs, and subsidies to cut initial costs. Policies such as net metering encourage solar investments. India's solar park, VGF, CPSU, defence, canal bank, bundling, and grid-connected rooftop schemes promote solar energy.

Environmental awareness

As per India solar photovoltaic (PV) market analysis, the industry is led by increasing environmental awareness that drives a shift towards renewable energy, particularly solar PV, offering clean power and emission reductions. This movement, spurred by climate change concerns, motivates investments and support for solar energy from governments and organizations.

Technological advancements

Innovations like ultralight fabric solar cells are boosting solar PV market expansion. Tandem solar cells, a new generation technology, increase sunlight conversion into electricity, accelerating India's shift from polluting energy sources like coal and gas.

Cost-effectiveness

Rooftop solar photovoltaics (RTSPV) technology, comprising roof-mounted solar panels in residential, commercial, and industrial buildings, stands as the most rapidly deployable energy generation technology owing to its cost-effectiveness and thus boosting the India solar photovoltaic (PV) market.

India Solar Photovoltaic (PV) Market Trends

As per the India solar photovoltaic (PV) market analysis, the PV sector is set for growth due to technological advancements and rising consumer preference for clean energy. Innovations like ultralight fabric solar cells, converting any flat surface into a power source, boost this market.

Government initiatives, tax exemptions, and tariff schemes amplify demand. Solar rooftop promotion via subsidies further fuels India solar photovoltaic (PV) market growth, as India's abundant sunlight and cost-effective panels make PV utilization advantageous.

India Solar Photovoltaic (PV) Market Segmentation

India Solar Photovoltaic (PV) Market Report and Forecast 2025-2034 offers a detailed analysis of the market based on the following segments:

Market Breakup by Product Type

- Ground Mounted
- Rooftop

Market Breakup by Technology

- Monocrystalline Silicon
- Thin Film
- Polycrystalline Silicon
- Others

Market Breakup by Region

- East India
- West India
- South India
- North India

India Solar Photovoltaic (PV) Market Share

Rooftop solar PV is driving the India solar photovoltaic (PV) market, as they are installed on open land and can be scaled up significantly

Ground-mounted solar arrays optimize energy production by ideal sun positioning. Common in rural or remote regions with abundant land, they benefit from economies of scale, reducing costs per watt produced.

Rooftop solar PV systems, widely adopted in urban settings with constrained ground space, empower property owners to harness rooftops for energy generation. This results in reduced bills, increased energy autonomy, and additional advantages like thermal insulation and mitigating urban heat islands.

Based on technology, the India solar photovoltaic (PV) market share is led by thin-film technology due to its cost-effectiveness and superior performance in low-light settings

India solar photovoltaic (PV) market development is further accelerated by the thin-film technology that is well-suited for large-scale utility projects and applications with weight and space constraints, such as industrial rooftops and integrated building photovoltaics. It is favoured for its aesthetic appeal in architectural designs and its potential for integration into various materials for building-integrated photovoltaics (BIPV).

Monocrystalline silicon, also known as single-crystal silicon, is widely used in making photovoltaic cells due to its efficiency. This silicon type features an unbroken, continuous crystal lattice structure.

Competitive Landscape of India Solar Photovoltaic (PV) Market

In the India solar photovoltaic (PV) market, competitiveness is driven by the solar-related products portfolio, including solar cells, inverters, modules, rooftop systems, home automation solutions, and EV charging stations.

Tata Power Solar Systems Limited

Tata Power Solar Systems Limited, established in 1989 and headquartered in Mumbai, Maharashtra, is a solar energy firm. It produces solar cells, inverters, modules, rooftop systems, home automation solutions, and EV charging stations, among other solar-related products.

Vikram Solar Pvt Ltd

Vikram Solar Pvt Ltd was established in 2006 and is headquartered in Kolkata, West Bengal, is a solar energy firm. It produces solar modules for consumers, dedicated to providing dependable solar solutions through its specialized high-efficiency photovoltaic module manufacturing.

WAAREE Energies Ltd

WAAREE Energies Ltd was established in 1989 with headquarters in Mumbai, Maharashtra, and is a solar electric power generation company. It specializes in solar energy, renewable energy, energy storage solutions, and solar utility products.

EMMVEE Photovoltaic Power Private Limited

EMMVEE Photovoltaic Power Private Limited was established in 1992 and is located in Karnataka, is a producer of intelligent solar solutions. The company was conceived to utilize green energy more effectively, offering solar products that combine advanced technology with innovative design for sustainable living.

Other key players in India solar photovoltaic (PV) market are Loom Solar Pvt Ltd, Websol Energy Systems Limited, Adani Group, Saatvik Group, and Jakson Group among others.

India Solar Photovoltaic (PV) Market Analysis by Region

The National Institute of Solar Energy (NISE) has evaluated that India has a solar capacity potential of approximately 748 GW, considering that 3% of the unused land can be utilized for Solar PV installations. Solar energy holds a pivotal role in India's National Action Plan on Climate Change, prominently featured through initiatives like the National Solar Mission (NSM).

According to the Ministry of Power and New & Renewable Energy, India has recently exceeded the milestone of 70,000 Megawatts in solar power generation capacity in 2023. Among all states, Rajasthan stands out with the largest installed base of renewable energy technology and Gujarat stands at second position thus boosting the India solar photovoltaic (PV) market.

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