

Solar Power Generation Market Forecasts to 2032 – Global Analysis By Component (Solar Panels/Modules, Inverters, Mounting Systems, Balance of System [BOS], Energy Storage Solutions, and Monitoring & Control Systems), Deployment (On-Grid, Off-Grid, and Hybrid), Technology, End User, and By Geography

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Abstracts

According to Statistics MRC, the Global Solar Power Generation Market is accounted for \$292.9 billion in 2025 and is expected to reach \$479.6 billion by 2032, growing at a CAGR of 7.3% during the forecast period. Solar power generation is the process of converting sunlight into usable electricity through photovoltaic (PV) cells or concentrated solar power systems. These technologies capture solar energy and transform it into electrical power without emitting greenhouse gases, making it a clean and renewable energy source. Widely used in residential, commercial, and industrial applications, solar power helps reduce dependence on fossil fuels while promoting sustainability and supporting the global shift toward green energy solutions.

According to the International Energy Agency (IEA), global solar PV generation increased by a record 270 TWh in 2022, reaching over 1,300 TWh.

Market Dynamics:

Driver:

Government policies and incentives promoting renewable energy adoption

Policies like feed-in tariffs, tax credits, and renewable portfolio standards de-risk investments and enhance the economic viability of solar projects. Furthermore, national commitments to carbon neutrality, as seen in the US Inflation Reduction Act and the European Green Deal, are creating long-term, predictable demand. These initiatives effectively lower the cost of capital and accelerate the deployment of utility-scale and distributed solar capacity, making them a fundamental driver for sustained market expansion and technological advancement.

Restraint:

Land availability and regulatory hurdles for large-scale projects

Large-scale solar farms require extensive, contiguous areas, leading to competition with agricultural and conservation land, which can trigger local opposition. Additionally, navigating the lengthy and often fragmented processes for permits, environmental clearances, and grid connection approvals creates substantial project delays and increases costs. These factors can deter investment and slow down the pace of new solar installations, acting as a major restraint on the industry's growth potential.

Opportunity:

Advancements in battery storage and smart grid integration

The declining cost and improving efficiency of batteries enable the storage of solar energy for use during peak demand or nighttime, overcoming the challenge of intermittency. Moreover, integration with smart grids allows for better demand management and two-way energy flow, enhancing grid stability. This synergy transforms solar from a variable source into a reliable, dispatchable power solution, unlocking new value streams and accelerating its adoption across residential, commercial, and utility sectors.

Threat:

Competition from other renewable sources like wind and hydro

The solar industry faces persistent competition from established renewable alternatives, particularly wind and hydropower. In regions with favorable conditions, onshore and offshore wind can often achieve lower levelized costs of electricity, making them a preferred choice for utilities. Additionally, while limited in new site availability,

hydropower provides crucial baseload generation that solar cannot match without storage. This competition for grid capacity, policy attention, and investment capital pressures the solar market to continuously innovate and reduce costs to maintain its competitive edge.

Covid-19 Impact:

The COVID-19 pandemic initially disrupted the global solar supply chain, causing project delays and construction halts due to lockdowns and material shortages. Factory closures in key manufacturing hubs led to component price volatility and logistical bottlenecks. However, the market demonstrated remarkable resilience, recovering strongly in 2021 as supply chains adapted and construction resumed. The crisis underscored the strategic importance of energy security and decarbonization, leading many governments to reinforce their clean energy commitments in economic recovery plans, ultimately strengthening the market's long-term fundamentals post-pandemic.

The solar panels/modules segment is expected to be the largest during the forecast period

The solar panels/modules segment is expected to account for the largest market share during the forecast period as this component represents the core capital expenditure of any solar project. Continuous technological innovations driving up panel efficiency, coupled with sustained manufacturing scale and plummeting costs, solidify its dominance. Additionally, relentless global demand for new installations, from massive utility farms to distributed rooftop systems, ensures that panels remain the highest revenue-generating segment, with its market size directly tied to the annual capacity additions worldwide.

The hybrid segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the hybrid segment is predicted to witness the highest growth rate driven by the escalating need for grid stability and energy self-sufficiency. These systems, which integrate solar with other sources like wind or, crucially, battery storage, offer a more reliable and dispatchable power solution. Their ability to provide uninterrupted electricity and optimize energy usage makes them increasingly attractive for commercial, industrial, and remote microgrid applications, positioning hybrid projects as the next evolutionary step in renewable energy deployment.

Region with largest share:

During the forecast period, the Asia Pacific region is expected to hold the largest market share. This dominance is anchored by colossal investments and ambitious renewable targets in China and India, which are rapidly expanding their solar capacity to meet soaring energy demand and address pollution concerns. Furthermore, supportive government policies, vast manufacturing capabilities, and the availability of significant land resources for large-scale projects consolidate the region's position as the global solar powerhouse and primary demand center.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR. While China and India remain key growth engines, emerging economies in Southeast Asia, such as Vietnam, Thailand, and the Philippines, are accelerating their solar deployments through favorable feed-in tariffs and auctions. This combination of established market expansion and burgeoning new markets, all fueled by strong policy backing and falling technology costs, positions the Asia Pacific region for the most rapid growth in the coming years.

Key players in the market

Some of the key players in Solar Power Generation Market include NextEra Energy, Inc., Enel S.p.A., Iberdrola, S.A., ?lectricit? de France S.A., Engie SA, RWE AG, TotalEnergies SE, ?rsted A/S, Brookfield Renewable Partners L.P., Corporaci?n Acciona Energ?as Renovables, S.A., Adani Green Energy Limited, Tata Power Company Limited, ReNew Energy Global plc, ACWA Power Company, Abu Dhabi Future Energy Company PJSC, Scatec ASA, Canadian Solar Inc., China Three Gorges Corporation, and State Power Investment Corporation Limited.

Key Developments:

In October 2025, Iberdrola has completed the acquisition of Caixa de Previd?ncia dos Funcion?rios do Banco do Brasil ('PREVI')'s stake in Neoenergia, amounting to 30.29% of the capital. Following the transaction, agreed upon in the spirit of full cooperation that has always governed relations between the two companies, Iberdrola now controls approximately 84% of the company's share capital.

In July 2024, Enel S.p.A. ("Enel") informs that EGPE, a Group company controlled through Endesa, signed an agreement with Masdar, a major renewable player, for the

sale to the latter of a minority stake, equal to 49.99% of the share capital, in EGPE Solar[4], a vehicle recently incorporated to encompass all of Endesa's already operational photovoltaic (PV) assets in Spain, for an overall installed capacity of around 2 GW.

In June 2024, NextEra Energy Resources and Entergy announced a joint development agreement to accelerate the development of up to 4.5 gigawatts of new solar generation and energy storage projects across Arkansas, Louisiana, Mississippi, and Texas, aiming to provide low-cost renewable energy to growing markets.

Components Covered:

Solar Panels/Modules

Inverters

Mounting Systems

Balance of System (BOS)

Energy Storage Solutions

Monitoring & Control Systems

Deployments Covered:

On-Grid

Off-Grid

Hybrid

Technologies Covered:

Photovoltaic (PV) Systems

Concentrated Solar Power (CSP)

End Users Covered:

Residential

Commercial

Industrial

Agriculture

Utilities & Power Generators

Regions Covered:

North America

US

Canada

Mexico

Europe

Germany

UK

Italy

France

Spain

Rest of Europe

Asia Pacific

Japan

China

India

Australia

New Zealand

South Korea

Rest of Asia Pacific

South America

Argentina

Brazil

Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & Africa

What our report offers:

- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2024, 2025, 2026, 2028, and 2032
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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