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Photovoltaic (PV) Market Forecasts to 2032 – Global Analysis By Component (Photovoltaic Panels, Inverters, Mounting Structures, Tracking Systems, Balance of System (BoS) and Other Components), Material, Grid Type, Installation Type, Technology, Application and By Geography

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Abstracts

According to Stratistics MRC, the Global Photovoltaic (PV) Market is accounted for $121.05 billion in 2025 and is expected to reach $267.60 billion by 2032 growing at a CAGR of 12% during the forecast period. The process of using semiconducting materials that exhibit the photovoltaic effect to directly convert sunlight into electricity is known as photovoltaic. When photons from sunlight are absorbed by these materials, electrons are excited and an electric current is produced. Solar panels made up of several solar cells, inverters, and other electrical components are commonly seen in photovoltaic systems. Photovoltaic technology is a clean, renewable energy source that has little effect on the environment and is widely employed in commercial, industrial, and residential settings. Through sustainable electricity generation, it is essential to lowering reliance on fossil fuels and halting climate change.

Market Dynamics:

Driver:

Rising demand for clean energy

Solar energy is being significantly invested in by governments and organisations around the world in an effort to lower carbon emissions. The efficiency and affordability of PV

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systems have increased due to technological developments. Rooftop solar panels are becoming more and more popular among consumers who want to reduce their electricity costs. Subsidies, tax breaks, and supportive laws all increase market adoption. Consequently, the market for photovoltaics is growing quickly in the commercial, industrial, and residential domains.

Restraint:

Intermittency of solar power

Periods of poor or no electricity output result from solar energy generation's reliance on weather. It is challenging to depend on solar energy for a steady power source because of this inconsistency. Large-scale energy storage devices are frequently needed to counteract this, which raises the cost. Additionally, because solar electricity must be balanced with other energy sources, grid integration becomes complicated. As a result, solar technology adoption is slower and expenses are higher.

Opportunity:

Expanding rural electrification initiatives

Solar photovoltaic systems provide rural populations without access to conventional power infrastructure with an affordable and sustainable answer. Such efforts are receiving more and more support from governments and international organisations in the form of grants, subsidies, and advantageous policies. This promotes the use of solar technologies in isolated areas and private investment. Local economies gain from better energy access as a result, which increases demand for PV systems. In the end, decentralised solar solution innovation and market expansion are fuelled by rural electricity.

Threat:

Competition from other renewables

In some areas, wind energy, for example, can produce electricity more reliably, which lowers the need for solar power. A dependable and proven source, hydropower frequently enjoys superior government incentives. Additionally, geothermal and bioenergy options offer scalability and reasonable cost. Investors and developers may find certain renewable technologies more appealing if they are subject to more

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advantageous subsidies or regulations. As a result of these rival renewable industries, the PV market will experience slower development and innovation.

Covid-19 Impact

The COVID-19 pandemic disrupted the photovoltaic (PV) market by causing supply chain interruptions, project delays, and labor shortages due to lockdowns and travel restrictions. Manufacturing slowdowns, particularly in China—the largest PV component producer—led to global material shortages. However, government stimulus packages and a renewed focus on green recovery strategies gradually revived demand. Residential installations saw a temporary dip, while utility-scale projects rebounded faster. Overall, the pandemic highlighted the need for resilient, localized solar supply chains and energy independence.

The photovoltaic panels segment is expected to be the largest during the forecast period

The photovoltaic panels segment is expected to account for the largest market share during the forecast period by serving as the core component for solar energy generation. Continuous technological advancements have improved panel efficiency, making solar power more cost-effective and widely adopted. Government incentives and sustainability goals are encouraging residential, commercial, and industrial sectors to invest in solar panels. The decreasing cost of raw materials and mass production also make photovoltaic panels more accessible. As demand for clean energy rises globally, the panel segment remains crucial to the market's rapid expansion.

The commercial & industrial (C&I) segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the commercial & industrial (C&I) segment is predicted to witness the highest growth rate, due to scalability and cost-efficiency for large-scale solar installations. C&I businesses benefit from solar energy systems that help reduce operational costs by lowering electricity bills, contributing to long-term financial savings. Moreover, these businesses often prioritize sustainability, helping to meet renewable energy targets and enhance corporate social responsibility (CSR) profiles. The rise in energy prices and the push for energy independence further incentivize C&I players to adopt solar technologies. Additionally, government incentives and rebates tailored for the C&I sector make photovoltaic solutions more economically viable and attractive.

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Region with largest share:

During the forecast period, the Asia Pacific region is expected to hold the largest market share due to the increasing demand for clean energy and government incentives. Countries like China, India, Japan, and South Korea are leading the market, with significant investments in solar energy infrastructure. The region benefits from abundant sunlight and cost-effective production, making solar power a key component of energy strategies. Technological advancements and falling solar panel prices are further fuelling adoption, positioning Asia Pacific as a global leader in PV energy production.

Region with highest CAGR:

Over the forecast period, the North America region is anticipated to exhibit the highest CAGR, owing to high demand for renewable energy. The U.S. and Canada are investing heavily in solar energy projects, with a focus on reducing carbon emissions and enhancing energy security. Advancements in solar technology, such as improved efficiency and energy storage solutions, are further boosting market expansion. Additionally, the region's strong focus on sustainability and clean energy policies is expected to continue driving demand for photovoltaic systems in residential, commercial, and utility-scale applications.

Key players in the market

Some of the key players profiled in the Photovoltaic Market include LONGi Green Energy Technology, Tongwei Co., Ltd., JA Solar Technology Co., Ltd., JinkoSolar Holding Co., Ltd., Trina Solar Limited, Canadian Solar Inc., First Solar, Inc., Risen Energy Co., Ltd., Hanwha Q CELLS, REC Solar Holdings AS, Adani Solar, Seraphim Solar, GCL System Integration, SunPower Corporation, Enphase Energy, Inc., Sungrow Power Supply Co., Ltd., Huawei Digital Power, Sharp Corporation.

Key Developments:

In August 2024, Tongwei announced plans to acquire a controlling stake in Runergy for approximately $698 million. This acquisition includes a 5 GW solar module plant in Huntsville, Alabama, positioning Tongwei to capitalize on U.S. manufacturing subsidies and expand its presence in the U.S. market.

In July 2024, LONGi and Invenergy established Illuminate USA, a joint venture to build a 5 GW solar module manufacturing plant in Ohio. This initiative leverages U.S. clean

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energy subsidies and aims to enhance LONGi's footprint in the North American market.

In November 2023, JA Solar entered into a strategic cooperation agreement with CJ Olivenetworks Vina, a subsidiary of South Korea's CJ OliveNetworks in Vietnam. This partnership aims to strengthen cooperation in the Vietnamese photovoltaic market and jointly promote its high-quality development.

Components Covered:

- Photovoltaic Panels
- Inverters
- Mounting Structures
- Tracking Systems
- Balance of System (BoS)
- Other Components

Materials Covered:

- Silicon-based
- Non-silicon

Grid Types Covered:

- On-grid
- Off-grid

Installation Types Covered:

- Ground-mounted

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- Building-integrated Photovoltaics
- Floating Solar Photovoltaics
- Other Installation Types

Technologies Covered:

- Monocrystalline Silicon (Mono-Si)
- Polycrystalline Silicon (Poly-Si)
- Perovskite Solar Cells
- Organic Photovoltaics (OPV)
- Concentrated Photovoltaics (CPV)
- Other Technologies

Applications Covered:

- Residential
- Commercial & Industrial (C&I)
- Utility-scale
- Military
- Agricultural
- Space-based
- Other Applications

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Regions Covered:

- North America
  - US
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  - Mexico
- Europe
  - Germany
  - UK
  - Italy
  - France
  - Spain
  - Rest of Europe
- Asia Pacific
  - Japan
  - China
  - India
  - Australia
  - New Zealand
  - South Korea
  - Rest of Asia Pacific

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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
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- 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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