

Solar PV Module Market Expected to Grow at 7.4% CAGR Through 2030

Solar PV Module Market to Hit \$260.2 Billion by 2030, Driven by Global Clean Energy Demand

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The global [solar PV module market](#) is rapidly expanding, fueled by the urgent need for clean and sustainable energy solutions. According to a new report by Allied Market Research titled "Solar PV Module Market: Global Opportunity Analysis and Industry Forecast, 2021–2030," the market was valued at \$127.9 billion in 2020 and is projected to reach \$260.2 billion by 2030, growing at a strong CAGR of 7.4% from 2021 to 2030.

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Solar PV module market to grow from \$127.9B in 2020 to \$260.2B by 2030, driven by clean energy demand, falling costs, and large-scale solar installations.”

Allied Market Research

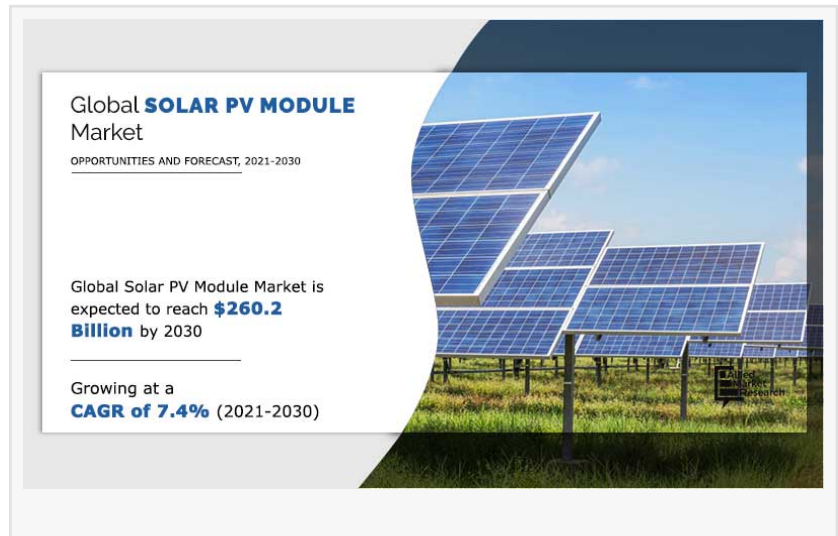
A solar PV (photovoltaic) module consists of multiple photovoltaic cells arranged in a framework that converts sunlight into direct current (DC) electricity. These modules are widely used in residential, commercial, and utility-scale solar projects, making solar energy one of the fastest-growing power sources globally.

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The market growth is fueled by the rapid adoption of [renewable energy](#), declining costs of solar technologies, rising grid-scale solar installations, and supportive government incentives worldwide. Increasing investments in utility-scale solar farms, rooftop installations, and smart grid infrastructure also contribute to the strong demand for PV modules.

Moreover, advancements in module efficiency, including mono PERC, bifacial modules, and thin-



film technologies, are creating new opportunities for manufacturers and solar developers.

▣ Regional Insights: Asia-Pacific Leads the Solar Revolution

In 2020, the Asia-Pacific region accounted for more than 57.5% of the total market share, driven by rapid industrialization, government subsidies, and surging demand for renewable energy. China and India lead the market as both countries aggressively expand solar capacity to meet their energy requirements.

North America and Europe follow, with growing renewable adoption in the U.S., Germany, and other countries, though they are projected to grow at slightly lower rates compared to Asia-Pacific.

▣ Key Market Drivers: Asia-Pacific Surge & Global Renewable Push ▣

The solar PV module market is driven by several prominent factors:

▣ Rise in Renewable Energy Investments: Governments around the world, especially in Asia-Pacific and LAMEA, are aggressively adopting renewable power generation to meet growing electricity demand and reduce carbon emissions.

▣ Policy Support & Tax Incentives: Initiatives such as the U.S. federal investment tax credit (ITC), feed-in tariffs, and net metering are incentivizing solar panel installation across commercial and residential sectors.

▣ Cost Reduction & Efficiency Improvements: Technological advancements and mass production have significantly lowered the cost of solar PV modules, making them an economic choice compared to conventional energy sources, especially during peak power demands.

▣ Fossil Fuel Price Volatility: Rising costs of fossil fuels have further accelerated the shift toward solar power as a more stable and sustainable energy source.

However, challenges such as grid connection issues, interconnection delays, and insufficient grid capacity remain as potential barriers during the forecast period.

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▣▣ Market Segmentation Insights ▣

By Technology Type:

The crystalline silicon segment dominated in 2020, capturing around 78.0% of the market share

due to higher conversion efficiency compared to thin film solar technology.

Thin film is expected to grow but remains secondary to crystalline technology for now.

By Product Type:

Monocrystalline solar PV modules led the market with about 49.0% share in 2020, thanks to their superior efficiency, durability, and lower operational costs compared to polycrystalline and other technologies.

By Connectivity:

The on-grid segment accounted for over 87.6% share in 2020, led by government incentive schemes and the rising integration of distributed solar in urban areas.

Off-grid solutions are growing but remain niche for remote locations without grid access.

By Mounting Type:

The ground-mounted segment led the market in 2020, contributing about 60.0% of the revenue, driven by large-scale utility solar power plants.

The rooftop segment is projected to grow at the highest CAGR of 7.8%, as residential and small commercial installations expand worldwide.

By End-Use Application:

Utility-scale projects dominated the market with a 57.6% share in 2020, due to large solar farms providing grid-level electricity.

The residential segment is projected to grow at the fastest CAGR of 7.9% as more homeowners invest in [solar energy systems](#).

□ Impact of COVID-19 on Solar PV Module Market

The global solar PV module market faced a temporary decline in 2020 due to the COVID-19 pandemic. China, being the largest producer of PV modules, was severely affected by lockdowns and disrupted global supply chains. Countries dependent on imports, such as India, experienced shortages, delaying project executions.

However, the market is expected to recover strongly by 2022, driven by continued policy support and increasing awareness of clean energy solutions.

□ Major Players in the Market □

Key industry leaders contributing to the global solar PV module market include:

BASF SE

Nan Ya Plastics Corporation

Exxon Mobil Corporation

Asian Paints Ltd.

C-Chem Co. Ltd.

I.G. Petrochemicals Ltd.

Mitsubishi Gas Chemicals Co. Ltd.

Polynt Spa

Thirumalai Chemicals Ltd.

UPC Technology Corporation

These companies focus on expanding production capacities, innovating new PV module technologies, and forming strategic partnerships to strengthen their market share.

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□ Future Outlook: Bright Solar Energy Horizons □

The solar PV module market forecast remains optimistic, with strong momentum anticipated until 2030. The combination of policy incentives, technological improvements, and rising environmental concerns ensures steady growth, particularly in the Asia-Pacific region.

As renewable energy becomes the backbone of global energy policies, solar PV modules will continue to play a critical role in providing sustainable electricity solutions globally.

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