

Solar Panel - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2024 - 2029)

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Abstracts

The Solar Panel Market size is estimated at USD 257.22 billion in 2024, and is expected to reach USD 419.32 billion by 2029, growing at a CAGR of 10.27% during the forecast period (2024-2029).

Key Highlights

Over the medium term, factors such as supportive government policies for solar energy adoption and decreasing solar energy prices are expected to be among the most significant drivers for the solar panel market during the forecast period.

On the other hand, competition from other renewable energy sources, such as bioenergy, wind energy, and hydropower, threatens the market during the forecast period.

However, advancements in developing more innovative and efficient solar panels are ongoing. This factor is expected to create several opportunities for the market in the future.

The Asia-Pacific region dominates the market and will likely register the highest CAGR during the forecast period. Due to the growing number of industries and infrastructural development activities in countries such as China, India, and Japan, as well as their high solar panel manufacturing base, they are driving the solar panel market.

Solar Panel Market Trends

Thin Film Solar Panel to Witness Significant Growth

The thin-film photovoltaic module is considered a breakthrough in solar technology and is rapidly increasing its share in the solar power sector. Thin-film solar cells include amorphous silicon (a-Si), cadmium telluride (CdTe), and gallium selenide (CIGS) cells. CIGS thin-film solar cells convert sunlight into electrical energy and are made by coating multiple thin films on a glass substrate. They have a relatively higher absorption coefficient among non-silicon-based cells, which results in high conversion efficiency and long stability. Among all the types, CdTe is the most widely used and is estimated to hold a significant market share in the thin-film industry.

Thin-film solar PV cells can be slightly less expensive to produce (per kW) than traditional silicon solar cells, as they require fewer construction materials. For instance, thin-film solar panels cost around USD 0.50 to USD 1 per watt for the materials, while traditional solar panels cost around USD 3 per watt. Due to their lower cost, mass production of thin-film solar cells is much easier than crystalline silicon. However, they are less efficient than crystalline silicon.

Thin-film solar panels can be manufactured on flexible substrates, such as rolls of stainless steel or plastic. This flexibility allows for unique installations with irregular shapes on curved surfaces and rooftops. The versatility of thin-film panels opens up a new market for manufacturers to explore.

With such unique features of this solar panel type, solar energy installation has witnessed significant growth in recent years. According to the International Renewable Energy Agency, the installed solar PV capacity in 2023 was around 1412.09 GW compared to 1066.55 GW, signifying the rapid solar panel installations worldwide.

Additionally, investment in solar energy is experiencing a global boom. Driven by falling panel costs and a growing urgency to combat climate change, solar is on track to surpass oil and gas investment for the first time as of 2024.

In February 2024, the Italian government announced an investment of EUR 90 million (USD 97 million) in Enel's 3Sun solar photovoltaic panel factory in Sicily. The National Recovery and Resilience Plan has EUR 90 million for this project, which allows the current factory to strengthen itself and establish a new production line potentially manufacturing different solar panel types in the factory, including thin film solar panels.

Therefore, the thin-film solar panel is expected to grow significantly during the forecast period.

Asia-Pacific is Expected to Dominate the Market

Asia-Pacific is emerging as a powerhouse in the global solar panel market, driven by rapidly growing energy demands, favorable government policies, and a solid commitment to transitioning toward renewable energy sources. This vast and diverse region, encompassing countries like China, India, Japan, Australia, and Southeast Asia, presents immense growth opportunities for solar panel manufacturers, installers, and associated industries.

Asia-Pacific is home to the most populous and rapidly developing economies like India and China. As industrialization and urbanization activities in the region increase, there is a surge in energy demand. With the imperative of renewable energy adoption, solar energy has emerged as an ideal solution as these countries have high solar potential, and the cost of solar energy is declining.

With its massive manufacturing facilities, China has been a global leader in solar panel manufacturing. The country is responsible for approximately 80% of the global solar panel and associated equipment manufacturing, highlighting the region's importance in the solar panel industry.

Beyond China's already established solar panel manufacturing sector, various countries are still striving to develop their manufacturing base. For instance, in October 2023, China-based photovoltaics company Longi announced that the company reached an agreement with the Malaysian government to build three photovoltaic (PV) factories in Serendah, a town located 25km north of the country's capital, Kuala Lumpur.

Favorable government policies promoting clean energy and declining solar panel prices are making solar power an increasingly attractive option. This trend is particularly evident in the rooftop solar segment, where commercial and industrial sectors are embracing solar solutions to reduce energy costs and enhance their sustainability profile, further driving the solar panel market in the region.

In addition to distributed rooftop solar, Asia-Pacific is witnessing a surge in large-scale, utility-scale solar power projects. Countries like China, India, Australia, and Vietnam invest heavily in solar parks and utility-scale installations to meet their renewable energy targets and reduce carbon footprints. These massive projects require substantial solar

panels, creating a lucrative market for panel manufacturers and suppliers.

Therefore, the Asia-Pacific region is expected to dominate the solar panel market during the forecast period.

Solar Panel Industry Overview

The solar panel market is partially fragmented. Some key players in this market (in no particular order) include LONGI Green Energy Technology Co. Ltd, Trina Solar Co. Ltd, JinkoSolar Holding Co. Ltd, Canadian Solar Inc., and First Solar Inc.

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