



# Alofi solar energy market

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The global solar photovoltaic (PV) market size was USD 316.78 billion in 2023. The market is expected to grow from USD 399.44 billion in 2024 to USD 2,517.99 billion by 2032 at a CAGR of 25.88% over the forecast period (2024-2032). Asia Pacific dominated the solar photovoltaic (PV) market with a market share of 49.16% in 2023. The Solar PV market in the U.S. is projected to grow significantly, reaching an estimated value of USD 331.25 billion by 2032, driven by the need to combat climate change through renewable energy sources reinforced by government tax credit and feed-in-tariff programs.

Solar energy is used to convert sunlight into electricity by using photovoltaic effect technology. These PV systems are the most reliable and widely available source of renewable energy. Fossil fuel is responsible for generating major pollution in the environment and solar energy is a very feasible alternative to fossil fuel. The U.S., Germany, China, and Spain are the accounts for maximum sun-based resources in the world. The demand for renewable energy is very high and the unit cost of silicon-based cells is declining, these are the major factors influencing this market positively.

The COVID-19 has impacted numerous business which includes oil & gas, manufacturing, aviation, tourism, and others. The governments in many countries had imposed nationwide lockdowns & restrictions due to this pandemic, which has severely affected economies worldwide, disrupted supply chains, caused a delay in many projects, and created a labor shortage. In many countries, the renewable industry highly depends on imports, primarily from China. As per the Government of India, the country's almost 80% of solar modules and solar cells demand are fulfilled from China, along with equipment such as prefabricated structures, raw materials, and inverters in India.

Power consumption in the Asia Pacific and other regions has increased considerably over the last few years. Robust economic growth, surging population, and booming manufacturing sector have led to the a surge in power consumption. The developing economies are witnessing high electricity demand due to expansion and infrastructure development. Industrialization and urbanization along with the rising living standard of people increase the demand for electricity generation.

As demand for electricity is increasing, many countries across the world are increasing their power generating capacity either by expanding the existing ones or installing new plants. The government in many countries has imposed stringent carbon emission norms due to which the focus towards the renewable sector is increasing, particularly towards solar photovoltaic generation. This is expected to push this market towards growth during the forecast period.

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Off-grid areas have very limited access or no access to grid-connected electricity. Such areas are dependent on

secondary sources of Photovoltaic, such as solar energy. Many regions around the world have large-sized off-grid areas that do not have access to grid-connected electricity. According to World Energy Outlook, more than 1 billion people worldwide are still living without electricity.

In the Sub-Saharan Africa region, the urban electrification rate is 60% and the rural electrification rate is 14%. This encourages governments of Sub-Saharan countries to use sun-energy to meet the power requirement in rural and urban areas. According to the Bloomberg New Energy Finance report, around 1.2 GW of sun energy-based projects is expected to come online in Sub-Saharan countries by the end of 2021. Hence, the growing off-grid areas worldwide are expected to boost this market during the forecast period.

Numerous countries across the globe have established environmental norms as environmental protection awareness is increasing widely. This forces power generation companies to change their production pattern and adopt eco-friendly and clean resources. Key countries around the world are expanding their renewable energy sources of power generation to decrease their dependency on conventional sources. Sun-based energy is a crucial renewable energy source having the potential to meet increasing electricity demand.

According to recent estimates by the International Energy Agency (IEA), around USD 2.8 trillion has been invested in energy in 2023. More than USD 1.7 trillion have been spent on clean energy, including renewables, nuclear, grids, storage, low-emission fuels, efficiency improvements, and end-use renewables, and electrification. For every dollar spent on fossil fuels, USD 1.7 is spent on clean energy. Five years ago, the ratio was 1:1.

Utility-scale solar projects require a large land power generation. The selection such land can be hampered by many environmental or technical parameters. The use of such land for the deployment of solar systems can impact the natural areas and biodiversity.

For instance, the deployment of solar photovoltaic plant is very difficult in wetlands, agricultural land, water bodies, and forest due to instability and inaccessibility of land. Large-scale sun-based energy power plants need to consider various factors such as land, transportation networks, implications on near residential areas, and distance to the electricity grid. The above factors hamper the global solar photovoltaic (PV) market growth.

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