

Solar Energy Market - Forecasts from 2021 to 2026

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Abstracts

The global solar energy market is expected to grow at a compound annual growth rate of 5.12% over the forecast period to reach a market size of US\$267.747 billion in 2026 from US\$68.579 billion in 2019. The global solar energy market is growing at a significant rate in the recent years and have been expected to increase more in the upcoming years. The major driving forces for such a growth in this market are increasing concerns of the economies towards the environment sustainability and decarbonization making the power energy companies to improvise their technology towards renewable sources in an efficient way. To support this, governments are also providing the rebate policies to further promote the renewable energy market. Solar energy comes up as third renewable source of energy across the world, and one of the reliable sources from household consumption's point of view. People can have solar energy systems at their rooftops and though, the main concern for the general people to use the cost and the space of plantation of the solar energy. The Covid-19 has slowed the progress a little, but as per IEA report, the renewable energy sector is most resilient to the crisis and will continue to grow as forecasted. Despite the disruption in each sector, solar energy is expected to remain resilient in 2020. However, irrespective of the growing revenue, the cost of production for companies is also decreasing due to government policies, thus, increasing the scope of future strategic investment for the companies in the coming years.

In the upcoming years, all the countries have potential growth of the solar energy, Germany, India, and US are having the significant potential to grow. India is planning to increase the dependency of electricity more on the renewable sources to 55% by 2030 as the demand has been projected to increase by 15280 TWH by 2040 and investments will increase to US\$ 500 billion by 2028 (source: IBEF). It can be noticed that there may be a growth of the PV solar plants in the coming period due to cost-competitiveness. While US has accounted for the 8300 MW installed capacity in 43 states in 2019, representing over 70% of all the commercial solar capacity installed in the US (source:

SEIA)). The top companies of the US are also shifting their technology towards the solar energy, having Apple and Amazon having the highest installed capacity among them.

Technology insights

There are mainly 4 types of technology used, among which thin film sheet is acquiring a significant share in the solar projects, mainly in commercial and utility-scale projects due to the light weight and low cost of installation. Although, thin sheets are having the less effectiveness as compared to the crystalline silicon segment (both mono and poly) which is mainly used in the premium segment of the solar market at present.

Solar energy can be captured for electricity production using:

A solar or photovoltaic cell, which converts sunlight into electricity using the photoelectric effect. Typically, photovoltaics is found on the roofs of residential and commercial buildings. Additionally, utilities have constructed large (greater than 100 MW) photovoltaic facilities that require anywhere from 5 to 13 acres per MW, depending on the technologies used.

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Solar hot water heaters, typically found on the roofs of homes and apartments, provide residential hot water by using a solar collector, which absorbs solar energy, that in turn heats a conductive fluid, and transfers the heat to a water tank. Modern collectors are designed to be functional even in cold climates and on overcast days.

With the anticipated improvements in technology and increased supply of panels from

China/Europe, the capital costs are expected to stabilize at lower levels. As a result, investors/developers are expected to focus on the commercial viability of solar projects.

By location, the global solar energy market is segmented as rural and urban areas. The rural areas have the potential growth of the solar energy as the countries are providing incentives to the companies who will establish the solar power plants in rural areas. This will lead to the improvement of the living standard of the people and improvise the areas as well. In many countries, it has one of the lowest costs – both in residential and commercial applications, but also increasingly in the utility-scale field, even if external costs are not added to fossil fuels and nuclear power. Still, solar power's share in most markets is insignificant, although, decarbonization through electrification of heat, transport and power sectors offer huge solar business opportunities. While digital solar & storage business models are taking off for residential and commercial consumers, smart building technologies reveal their potential to optimize self-consumption rates of the building stock and smoothen grid feed-in, which enables a cleaner yet reliable electricity supply.

In Germany, a market introduction program for residential storage systems limits the feed-in behavior of PV systems to less than 50% of its maximum output. Due to this limitation, the feed-in during peak generation is reduced. Applying an optimized generation and storing strategy allows to increase the existing grid capacity for PV power. This allows to integrate more renewable electricity within the same grid design, avoiding network upgrades. Solar & Storage shall have a right for grid connection and fair, consumer contract level metering costs.

So far, only five CSP projects, namely, ACME solar tower (2.5 MW), Dhursar (125 MW), Godawari solar project (50 MW), Megha solar plant (50 MW), and national solar thermal power facility (1 MW) have started operations in India. Owing to factors, such as, huge capital expenditure, difficulty in securing land and water, and insufficient DNI data, other projects have been delayed. By 2030 at the latest, and in some markets earlier, solar PV is expected to deliver the lowest cost of energy for new power generation installations. This decline reflects a series of technological improvements mainly driven by: –Increasing module efficiency (i.e., using better manufacturing techniques and new cell structures)⁷–Reducing overall usage of material content, in addition to the effect of rising module efficiency through reducing wafer thickness, decreasing silicon losses, silver paste, etc.⁸–Improvements in manufacturing processes, which increase throughput, reduce labor costs, and achieve greater economies of scale.

As per WE Forum, India will need to double its electricity output by 2030 to meet this

massive rise in demand, while also honoring its commitment to reduce its carbon footprint by 35% from 2005 levels. This would require roughly half the additional output to come from renewables, which translates to adding 25 GW of renewable capacity annually until 2030. An expansion of this magnitude will require funding of around \$76 billion to 2022, growing to \$250 billion during 2023-30, as per India's Economic Survey 2018-19. Therefore, on an annualized basis, investment opportunities of over \$30 billion are expected to emerge in the next decade and beyond, about three times current levels - clearly indicating a huge and untapped investment potential.

Supportive Government Policies Driving the Market

The country has identified the potential of renewable energy, such as solar and wind, in decarbonizing the economy and meeting targets as per the Paris Agreement, and the Government of India has been bent towards increasing the share of renewables in the country's energy mix.

The government is aiming at 25,750 megawatts (MW) of new power generation capacity from solar plants under the ambitious Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM) scheme by 2022, with total financials of more than Rs. 32,000 crores.

The Ministry of New and Renewable Energy had launched the scheme in 2019, with three components -- installation of 10,000 MW capacity through small renewable energy-based power plants of capacity up to 2 MW each on barren or fallow land of farmers; installation of 17.5 lakh standalone off-grid solar water pumps; and solarization of 10 lakh existing grid-connected agriculture pumps.

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With the government promoting solar installation in the rural areas by providing subsidized solar panels and another incentive, the solar PV installation is expected to increase during the forecast period and is expected to drive the market.

Concluding, the solar energy market is having the potential growth in the upcoming years, mainly in PV solar system due to lower costs, easy installation and potential government policies which will promote the environment sustainability as well.

Segmentation

By area

Rural areas

Urban areas

By product type

Silicon

Thin sheet

Poly-crystalline

Mono-crystalline

By technology

PV

CSP

Solar heating and cooling

By application

Residential

Commercial/Industrial

By region

North America

USA

Canada

Mexico

South America

Chile

Brazil

Argentina

Peru

Uruguay

Others

Europe

Germany

UK

France

Others

Middle East and Africa

Saudi Arabia

United Arab Emirates

South Africa

Others

Asia Pacific

India

Thailand

Japan

China

Indonesia

South Korea

Others

Note: The report will be dispatched in 3 business days.

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- 11.20. eSolar Inc (US)
- 11.21. Yingli Solar
- 11.22. Wuxi Suntech Power Co Ltd

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