Colombia Solar Energy Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

Market Report | 2023-01-23 | 95 pages | Mordor Intelligence

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Report description:

Colombia's solar energy market is expected to register a CAGR of more than 50 % during the forecast period, reaching the installed capacity of 4019 MW in 2027 from 440 MW in 2022. With the COVID-19 pandemic, the market had not witnessed any major negative impact. The market grew by around 18.8% in 2020, despite challenges related to workforce availability, supply chain, and a few others. The primary drivers of the market include government initiatives like net-metering to promote renewable energy, reduce GHG emissions, and have a sustainable form of energy. Furthermore, the Colombian solar energy market is expected to grow with the increase in electricity demand, which is expected to be generated from its upcoming and under-construction solar PV projects. However, the increasing adoption of alternate clean power sources and problems associated with renewable energy grid integration are likely to hinder the growth of the solar energy market during the forecast period.

Key Highlights
The solar photovoltaic (PV) segment is expected to dominate the market during the forecast period, owing to the higher investments.
Colombia has a high average solar radiation because of its location in the equatorial zone. This has created enormous opportunities to exploit solar energy from the area with the best solar resource.
The government initiatives to promote renewable power generation is expected to drive the country's solar energy market during the forecast period.

Colombia Solar Energy Market Trends

Solar Photovoltaic is Expectd to Dominate the Market

Colombia faces several challenges in securing a reliable, affordable, and climate-friendly energy supply. Persistently low reserve-to-production ratios in oil and gas and advancing climate changes are putting the country's energy system at risk. Heavily relying on hydro-power, Colombia's electricity system may become more vulnerable to extreme weather patterns, such as El Nino and La Nina. Therefore, the country is looking to increase solar energy to reduce this dependency, especially photovoltaic solar energy.
However, the country's National Energy Plan for 2050 expects to double the share of coal-fired generation to 12.5% of installed capacity by 2028. The Transmission Expansion Plan expects coal to deliver over 18.5% of power by 2031. These additions would trump any efforts to decarbonize Colombia's energy system and reduce greenhouse gas (GHG) emissions.
In the case of photovoltaic (PV), the country has a smaller footprint compared to its neighboring countries, like Brazil and Argentina. However, increasing research highlights that solar PV is expected to play a definitive role due to its versatility, scalability, and its complementarity with existing large hydro generation in the country.
Furthermore, due to Colombia's relatively small per capita energy consumption, a transition toward solar PV may occur much faster than elsewhere. For instance, in 2020, Colombia's energy use per capita 2020 was around 1,370 kWh compared to 3,348 kWh in French Guiana and with 6,918 kWh in Paraguay.
Furthermore, geographical and weather conditions are inherently important for variable energy sources, like solar PV systems. Countries near the equator, such as Colombia, have a higher average solar radiation than most countries in Europe or the United States. For instance, the Guajira Peninsula in the northeast and the Orinoco flatlands in the east of Colombia reached the highest national values of around 6.0 kWh/m2.
Not only La Guajira but also places like Atlantico, Antioquia, and Valle de Cauca are suitable locations for large-scale adoption of solar energy in the country. The country's geographic positioning is one of the primary reasons for considering it as an important solar energy generator in the future. Further, the effect of solar energy lasts for up to 12 hours a day, which can reduce dependency on other sources.
As of 2021, the El Paso solar plant was the largest solar plant built in the country, with around 86.2 MW of total solar PV capacity. The facility, located in the northern part of Colombia, alone accounts for a significant percentage of the country's installed solar capacity.
Further, El Paso can produce approximately 176 GWh each year, meeting the annual energy needs of a large number of Colombians while avoiding the CO2 annual emission of approximately 100,000 ton.
Therefore, owing to the above points, solar PV is expected to dominate the market during the forecast period.

Government Initiatives are Expected to Drive the Market

In the current scenario, the energy generation mix of Colombia is dominated by hydropower, with more than 70% share. The country also has a considerable share of gas power generation, which is approximately equal to 11%% in the total energy generation mix. Though the hydropower technology is well developed in the country, the Colombian government is conscious of the reliability issues associated with the source as the country has witnessed the occurrence of droughts and other climate change issues in extreme weather conditions. Thermal power raises the dilemma in terms of GHG emissions caused by the use of fossil fuels for power generation. To reduce the vulnerability, the government has taken a number of concrete steps to diversify the power generation sources.
The most lucrative government incentives are the tax-based reforms brought up in 2020 for accelerated investment in the renewable energy sector. The following are the financial incentives:

VAT Exemption: The procurement of equipment, machinery, elements, and services required for the initial investment, investment for renewable power generation and consumption, and assessment of potential resources are all exempted from value-added tax

(VAT).
Tariff Exemption: Independent power producers (IPP)s that import materials, equipment, machinery, and other supplies, which are to be used in renewable energy projects, are all eligible for fee waivera and import tariffs.
Accelerated Depreciation: The renewable energy-based power producers that invest in machinery, equipment, and construction work that are required for pre-investment, investment, and the operation of renewable energy projects, after the enactment of Law 1715 of 2014, are eligible for the accelerated depreciation regime incentive at an annual rate of up to 20%.

The Colombian government has also launched tenders to invite applications for the solar power projects in the country. In the second quarter of 2021, the Ministry of Mines and Energy launched the third renewables auction in which 796 MW of solar power development was allocated. The selected companies include EDF, Canadian Solar, Solar Pack, Enel, and Celsia. The projects were planned to be completed by 2023.
Before this, the second suction that was launched by the government had already secured around 1.3 GW of solar and wind capacity to be added to the national grid by the end of 2022. The developers who had delivered the projects included Trina Solar with around three project allocation, Eolos Energia, and Vientos del Norte mainly.
The government has more new plans for new auctions in 2025-2026. There will be a joint renewable energy and reliable charge auction.
All such initiatives on behalf of the Colombian government are expected to have a positive effect on the solar energy market of the country during the forecast period.

Colombia Solar Energy Market Competitor Analysis

The Colombian solar energy market is consolidated. Some of the key players in the market include Ventus Ingenieria SRL, Enel Green Power SpA, Trina Solar Ltd, Solen Technology, and Ecopetrol SA.

Additional Benefits:

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