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Colombia Solar Report

Prepared by J.v.G. Technology GmbH
J.v.G. Technology GmbH is a German engineering company specializing in turnkey solar module production lines and manufacturing consulting, with project experience ranging from 20 MW to 500 MW per production line, including multi-line and gigafactory projects exceeding this scale.

This Solar Report is part of the **PVKnowHow** Knowledge Network.
The data, analysis, and conclusions in this document are based on real research, consulting insights, and international solar market data.

Gain comprehensive insights into the statistics and metrics surrounding the solar production industry in Colombia

KEY POINTS

All figures have been converted into USD

Yearly sunshine (sun hours per year)

Average yearly sunshine is approximately 5.4 hours per day.

This equates to around 1,946 hours of sunshine each year.

Factors such as climate and geographical location can affect these values.

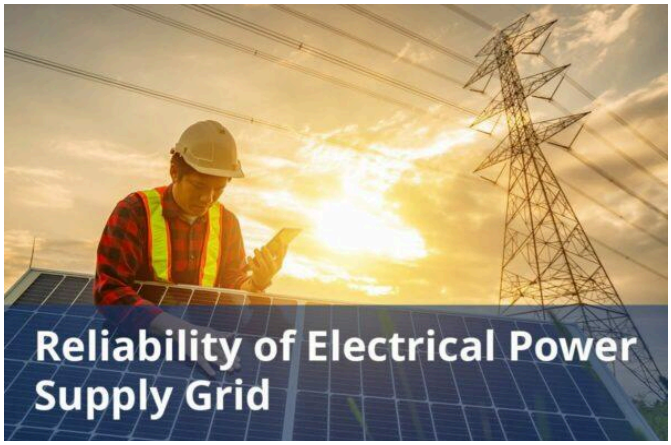
kWh per kWp installed

The average energy production from a solar panel is approximately 1,250 kWh per kWp installed annually.

This production can vary based on location and panel efficiency.

Average cost per kWh from utility company

Residential electricity prices:
- For 0-100 kWh: $0.135/kWh
- For 100-600 kWh: $0.135/kWh
- For 600-1000 kWh: $0.1945/kWh
- For consumption above 1000 kWh: $0.2196/kWh



Reliability of electrical power supply grid

Solar energy systems generally have a reliability of around 95%.

This reliability can be influenced by factors such as maintenance and monitoring systems.




DETAILED INFORMATION

All figures have been converted into USD

Total solar panel production capacity (installed)

As of 2023, there are approximately 20 million total solar panels installed nationwide.

This number is expected to increase as renewable energy adoption continues.

Total solar panel production capacity (projected)

It is predicted that by 2030, the total number of installed solar panels could reach up to 35 million.

This projection is based on current trends in renewable energy investment.

Average costs of various electricity generation sources (coal, natural gas, solar, etc)

The average cost of solar panel installation is around $3.00 per watt.

This can vary based on system size, location, and installer.

Percentages of various electricity generation sources (coal, natural gas, solar, etc)

Approximately 7% of total electricity generation in the U.S. comes from solar energy.

This percentage has been steadily increasing over the years.

Average daily availability of electricity from the national grid (measured in hours)

Solar energy availability per day can vary greatly.

On average, systems can expect to generate energy for about 5 to 7 hours per day depending on the location.

Number of residential solar panel installations

There are about 5 million residential solar panel systems in operation as of 2023.

This number is steadily increasing as more homeowners adopt solar energy.

Total number of solar farms (installed and projected)

There are approximately 1,800 large-scale solar farms operating in the U.S.

These farms contribute significantly to the national grid.

Off-grid market demand for solar panels (current and projected)

The off-grid solar market in Colombia has been growing steadily, driven by the need to provide electricity to remote and rural areas as 470780 Households are without access to electricity in 2021.

The government has contributed to the growth of solar energy in Colombia by implementing significant tax incentives for renewables and issuing a new decree to reduce barriers for off-grid solar projects. Hybrytec Company has carried out 50 off-grid projects, providing comprehensive solar solutions for homes and communities, including lighting, refrigeration and freezers, water pumping, and heating. The Institute for Planning and Promotion of Energy Solutions in Non-Interconnected Zones (IPSE) has also played a role in increasing the installed capacity of PV in off-grid areas to nearly 2.5 MW.

Despite these efforts, solar PV still plays a minor role in both grid and off-grid areas in Colombia.

The off-grid solar market in Colombia is anticipated to experience substantial growth in the coming years.

On-grid market demand for solar panels (current and projected)

As of 2023, the on-grid solar capacity is estimated to be around 676 MW. The demand is driven by residential, commercial, and industrial sectors seeking to reduce electricity costs and carbon footprints.

The Colombian government aims to achieve 4-5 GW solar power capacity to its grid by 2030.

Average monthly income of workers in solar industry (labor cost)

The average monthly salaries for solar energy professionals include:
- Solar Electrician: $500-$700
- Solar Sales Representative: $1000-$1500

- Solar Sales Manager: $2000-$3000
- Solar Design Engineer: $1200-$1500
- Labor Cost: $300-$400

Population of the country

The population of Colombia is approximately 52360566.

Average overhead costs of solar panel production (with a brief breakdown)

The average overhead costs for solar panel production in Colombia involve several components:
- Raw Material Costs: Raw materials, such as silicon, aluminum, and copper, are major expenses. These costs fluctuate based on global supply and demand, geopolitical events, and economic conditions.
- Labor Costs: Labor costs in Colombia for the solar industry can be significant. The average labor cost for skilled technicians and factory workers is relatively lower than in developed countries but varies widely depending on the skill level and region.

Minimum Wage: Colombia has a national minimum wage that varies depending on the sector.
- Public Sector: Around $360 USD per month
- Private Sector (non-agricultural): $300 per month

A summary of the energy infrastructure

Colombia has made significant strides in transforming its energy infrastructure, focusing on diversifying its energy sources and committing to clean energy. The country's energy transition is guided

by its National Energy Plan 2020-2050, which aims to integrate wind, solar, and geothermal energy into the electricity mix.

In alignment with its goals set at COP26, Colombia targets a 51% reduction in greenhouse gas emissions by 2030. This ambitious plan is supported by policies such as the Energy Transition Law, which promotes energy efficiency and low-carbon technologies, including hydrogen and carbon capture and storage (CCS).

Some of the government regulations surrounding solar panel production

To meet the goals proposed in Colombia's Nationally Determined Contribution (NDC), in the National Development Plan 2018-2022 and the National Development Plan 2022-2026, Colombia has implemented various regulations and norms that encourage the adoption of clean energy sources and discourage the use of fossil resources.

Law 1715 of 2014: The law promotes the incorporation of renewable energy sources and efficient use of energy, focusing on renewable energy sources and the incorporation with the national electricity market, as well as the role of renewables in non-interconnected areas (NIZ).

Government initiatives in solar panel production (includes investments and subsidies)

The Colombian government has implemented multiple policies and initiatives to boost the domestic manufacturing of solar panels and the solar industry.

Law 1715 of 2014: This law provides tax incentives, accelerated depreciation, and exemptions from import duties for renewable energy equipment, including solar panels.

National Development Plan (PND) 2018-2022: The PND outlines Colombia's strategic goals, including the expansion of renewable energy sources.

Notable solar projects in the country (installed and projected)

Following are the notable solar projects in Colombia:

El Paso Solar Park Colombia:
- Location: Cesar Department
- Capacity: 86.2 MW
- Developer: Enel Green

Celsia Solar Bolívar:
- Location: Bolívar Department
- Capacity: 10.5MW
- Developer: Empresa De Energia Del Pacifico

La Sierpe Solar Park:
- Location: Sucre Department
- Capacity: 26 MW
- Developer: AAGES Devco Services

Celsia Solar Yumbo:
- Location: Valle del Cauca Department
- Capacity: 9.8 MW
- Developer: Celsia

La Loma Solar Park:
- Location: La Loma
- Capacity: 187 MW
- Developer: Enel Green Power

Atlantico Sabanalarga Solar PV Park (Projected):
- Location: Atlantic
- Capacity: 240 MW
- Developer: Diverxia Infrastructure SL

El Espinal Cubico Solar PV Park (Projected):
- Location: Tolima, Colombia
- Capacity: 10 MW
- Developer: Empresa De Energia Del Pacifico

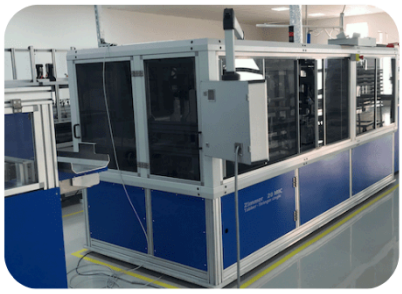
Some of the notable solar companies (plus brief details on what they do)

Following are the lists of top solar companies in Colombia:

Celsia:
- Overview: A leading energy company in Colombia, heavily involved in renewable energy projects, including solar power.

Solen Technology:
- Overview: A leading company with more than ten years of experience and innovation in solar and wind energy projects.

Enel Green Power Colombia:
- Overview: Part of the Enel Group, a global leader in renewable energy.



ABOUT THIS REPORT

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All market data, analysis, and conclusions follow JvG's internal consulting standards and international PV market research practices.

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For a detailed list of references and additional information, please visit our website with the current report at:
https://www.pvknowhow.com/solar-report/colombia/

About J.v.G. Technology GmbH

J.v.G. Technology GmbH is a European engineering and advisory specialist for solar production lines and manufacturing equipment, supporting investors and operators with market, location and production-focused decision frameworks.
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