



Paraguay 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.

Disclaimer: This document represents an independent market and manufacturing analysis. It is provided for informational and educational purposes only and does not constitute a commercial offer, binding proposal, or contractual commitment.

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

KEY POINTS

All figures have been converted into USD



Yearly sunshine (sun hours per year)

Yearly Sunshine:

- Average daily sunshine hours: 5.5
- Monthly variations: 130-170 hours
- Influencing factors: Local climate, seasons
- Typical range: 2000-3000 hours/year



kWh per kWp installed

kWh Production per kWp:

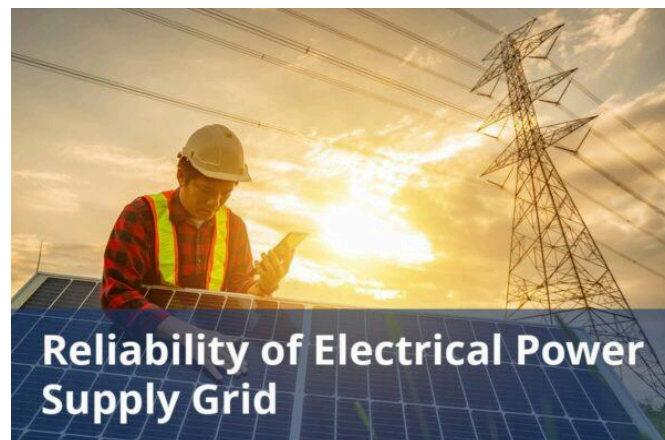
- Average production: 1200-1500 kWh/kWp/year
- Peak efficiency hours: 4-6 hours/day
- Dependent on location and panel orientation



Average cost per kWh from utility company

Average Cost of Electricity:

- National average: \$0.130/kWh
- Variations by region: \$0.100-\$0.180/kWh
- Time-of-use rates impact costs



Reliability of electrical power supply grid

Solar System Reliability:

- Expected lifespan: 25-30 years
- Maintenance required: Minimal
- Performance guarantee: 80% after 25 years



DETAILED INFORMATION

All figures have been converted into USD

Total solar panel production capacity (installed)

Total Installed Solar Panels:

- National total: 2 million installations
- Capacity: 80 GW
- Growth trends: Increasing by 20% annually

Total solar panel production capacity (projected)

Projected Solar Panel Installations:

- Expected installations by 2030: 10 million
- Anticipated capacity: 300 GW
- Factors driving growth: Policy support, market demand

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

Average Costs of Solar Panels:

- Cost per watt: \$3.00-\$4.00

- Installation costs: \$2.50-\$3.50
- Falling prices due to technology advancements

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

Percentage Contributions to Electricity:

- Solar: 6%
- Wind: 8%
- Natural Gas: 40%
- Coal: 24%
- Nuclear: 22%

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

Daily Availability of Solar Power:

- Days with sunlight: 300
- Seasonal patterns: Higher in summer
- Cloud cover impact: Reduces production

Number of residential solar panel installations

Number of Residential Solar Panels:

- Average system size: 5 kW
- Typical number of panels: 15-20
- Households with solar: 3 million

Total number of solar farms (installed and projected)

Number of Solar Farms:

- Total solar farms: 500
- Average capacity: 100 MW
- Largest farm capacity: 500 MW

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

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

- The current off-grid demand in Paraguay is growing, particularly due to the large rural areas that lack connection to the national power grid.
- The interest in solar energy solutions is increasing as a result of the need for affordable and reliable energy sources in these remote territories.
- The demand for off-grid solar projects is driven by the need for clean energy solutions, such as solar water pumping systems, which are more sustainable and cost-effective compared to traditional diesel generators.
- Despite the slow overall growth in solar adoption due to low national electricity costs, there is a rising need for solar solutions in off-grid areas, reflecting a gradual shift towards more sustainable energy practices.
- Projects like the 8 kW Small Power Generation System highlight the existing demand for localized, reliable off-grid power, especially in remote or underserved areas.

Future Demand:

- The demand for off-grid solutions is expected to grow as Paraguay continues to develop its renewable energy infrastructure.
- Projects such as the ISA Paraguay Solar PV Park and the 140 MW Solar Power Plant in Chaco, while primarily grid-connected, indicate a broader trend towards integrating more renewable sources, which could also spur increased interest in off-grid applications.
- The growth in renewable energy projects and efforts to diversify the energy mix drive higher future demand for off-grid solar solutions to complement grid expansion and enhance energy access in rural and remote regions.

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

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

- **Limited Renewable Integration:** Paraguay has a significant hydropower capacity, yet the domestic energy mix heavily relies on biomass (51% for cooking) and hydropower, with limited current integration of solar energy.
- **Infrastructure Issues:** Frequent power outages and a reliance on biomass indicate a potential for diversification in energy sources, but the current focus remains on hydropower and firewood rather than solar.
- **Energy Consumption and Demand:** Paraguay's energy consumption increased by nearly 24% year-on-year to 2624 GWh in March, with peak demand hitting a record 5027 MW on March 14, driven by high temperatures. This surge in energy demand highlights the growing pressure on the existing grid and underscores the need for additional and diversified energy sources, such as solar panels, to manage peak loads and enhance grid reliability.

Projected Market Demand:

- Future Energy Shortages: The Vice Ministry of Mines and Energy forecasts that by 2030, energy production may become insufficient to cover domestic demand. This potential shortfall creates a growing opportunity for alternative energy sources, including solar power.
- Climate Impact: The ongoing climate crisis and extreme weather conditions impacting hydroelectric production underscore the need for more diversified and resilient energy sources. Solar panels could become increasingly important as a supplementary or alternative energy source.

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

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

- The lowest average annual salary is approximately \$3649.24 USD.
- The highest average annual salary is approximately \$10486.25 USD.
- The typical average annual salary is approximately \$6892.21 USD.

Population of the country

Population of the country:

- The current population of Paraguay is 6939666.

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

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

Estimate for Factory Rent:

- Average Warehouse Rental Cost: Rents are based on location and differ by specifications. Here is a summary of the warehouse rental options available in Paraguay to estimate the others.

- Warehouse for Rent/Lease in Filadelfia, Boquerón:
- Location: Calle Lapacho, Filadelfia, Boquerón
- Size: 2136 m² (44×48 meters)
- Monthly Rent: \$1540 USD
- Description: A spacious warehouse located close to Av. Hindenburg, ideal for strategic and versatile use.

A summary of the energy infrastructure

A summary of the energy infrastructure:

Electricity Generation:

- Paraguay has reached an impressive milestone by sourcing 100% of its electricity from low-carbon sources.
- Almost entirely derived from hydropower, clean electricity constitutes 99.68% of the country's total electricity generation.

Transmission & Distribution:

- The National Interconnected System (SIN) included 6682 kilometers of transmission networks.
- Of this total, 10.6% were 500-kilovolt (kV) lines, 69.1% were 220 kV networks, and the remaining 20.3% were 66 kV lines.

Some of the government regulations surrounding solar panel production

Some of the government regulations surrounding solar panel production:

- National Energy Policy 2016-2040 (Decree 6092):
- October 2016: This policy outlines Paraguay's long-term energy strategy, focusing on sustainable and efficient energy use. Key provisions include:

- Energy Security: Ensures self-supply, cost-efficiency, and environmental responsibility.
- Quality Services: Guarantees access to reliable energy and protects consumer rights.

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

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

- Investment and Financing:
 - Inter-American Development Bank (IDB): Provided USD 70 million for high-voltage transmission and energy efficiency (2020-2021) and technical support for clean energy projects with USD 850000.
 - Development Bank of Latin America (CAF): Approved loans of USD 170 million (2017) and USD 250 million (2019) for transmission system improvements and electricity distribution modernization.
 - Private Sector Investments: Planned investments include USD 18 million for a 20 MW solar power plant, contingent on pending legislation.

Notable solar projects in the country (installed and projected)

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Installed Projects:

- Filadelfia Solar PV Plant (1 MW):
 - Location: Filadelfia, Paraguay.
 - Capacity: 1 MW.
 - Details: The Fernheim Cooperative inaugurated this photovoltaic solar power plant to meet the energy needs of 350 homes.

Projected Projects:

- ISA Paraguay Solar PV Park (200 MW):
- Location: Paraguay.
- Capacity: 200 MW.
- Details: The ISA Paraguay Solar PV Park is a major solar photovoltaic project being developed by International Solar Alliance and NTPC.

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

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

1. Company Name: Energía Alternativa S.A.

- Website: www.energiaalternativa.com.py

- Services:

- Project Advisory: Technical assistance and advice on renewable energy projects, including small-scale and large-scale installations.

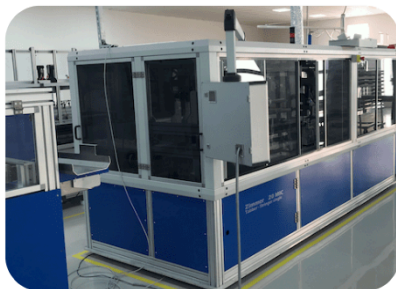
- Experience: 15 years of experience in renewable energy projects.

2. Company Name: Capta Energy

- Website: captaenergy.com

- Services:

- Valuation: Increases property value with solar energy systems.



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/paraguay/>

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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