



Portugal 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.

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

KEY POINTS

All figures have been converted into USD



Yearly sunshine (sun hours per year)

The country has around 2500 to 3200 hours of sunshine yearly, an average of 4–6 h in the winter and 10–12 h in the summer.



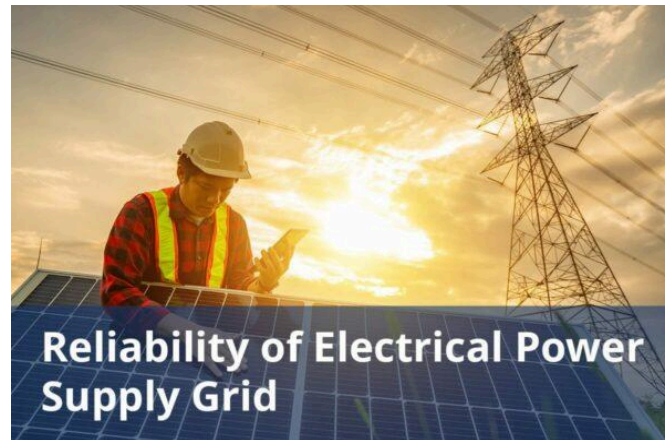
kWh per kWp installed

In Portugal, the typical values can vary from 1200 kWh per kWp to more than 1800 kWh per kWp installed annually.



Average cost per kWh from utility company

As of December 2023, the price of electricity for households is \$0.215/kWh. The electricity price for businesses is \$0.150/kWh. The average wholesale electricity price in Portugal stood at \$32.88 USD per megawatt-hour in May 2024.



Reliability of electrical power supply grid

Portugal's electricity grid has proven reliable, with a peak generation capacity of 19974 MW significantly surpassing the peak consumption of 8794 MW in February 2018. This marks the highest consumption since 2011. The country's power supply is secured by the flexibility offered by combined cycle gas turbines and pumped hydro storage.



DETAILED INFORMATION

Total solar panel production capacity (installed)

Portugal's cumulative solar photovoltaic capacity reached 3.9 GW in 2023.

Total solar panel production capacity (projected)

Portugal's updated National Energy and Climate Plan (NECP) sets an ambitious target of 20.4 GW of installed solar PV capacity by 2030. The majority of this expansion, 14.9 GW, will come from large-scale utility projects, while the remaining 5.5 GW is allocated for decentralized solar installations, such as rooftop solar and community projects.

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

Wind power: the total costs are expected to be in the range of \$59.39 – \$61.86/MWh, for the lowest discount rate, and \$83.15 – \$85.62/MWh, for the highest discount rate. Solar PV: In 2022, PV panels will cost approximately \$636 for a small 0.3 kW to 0.5 kW installation. Natural Gas: \$50-\$122/MWh and \$52.72-\$124.75/MWh, respectively for 5% and 10% discount rates. Coal: The last coal-fired power plant was shut down in 2021. Coal is no longer a primary source of electricity generation.

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

Between January 1st and May 31st of 2023, 18751 GWh of electricity were generated from Continental Portugal, of which 73.2% came from natural resources (30.5% wind, 28.30% hydro, 7.6% bioenergy, and 6.8% solar). Other sources include: Natural Gas (15.9%), Fossil CHP (4.7%), and Pumped Storage (6.2%).

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

Portugal places a high priority on a consistent 24-hour electricity supply. To complement its primary renewable energy sources, the country may need to rely on natural gas plants or electricity imports during periods of peak demand to ensure grid stability.

Number of residential solar panel installations

There is no definitive record of the exact number of residential solar panels Portugal installed available online. However, EDP, a major energy provider in Portugal, claims to have surpassed 100000 residential solar installations on the Iberian Peninsula by 2022.

Total number of solar farms (installed and projected)

According to publicly available records as of May 2024, there are about 236 installed and projected solar farms in Portugal.

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

Current Market Demand:

- In 2021, there was a total installed capacity of 580.46 MW,
- as of 2023, Portugal has approximately 1769.21 MW of installed decentralized electricity production from solar sources.

Projected Market Demand:

- Portugal's National Energy and Climate Plan sets ambitious targets for decentralized solar photovoltaic energy.
- The country aims to achieve an installed capacity of 0.8 GW by 2025,
- increasing to 2 GW by 2030.

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

At the end of 2022, Portugal's solar power sector expanded significantly,

- with installed capacity climbing more than 45% to 2591 MW in 2021.
- The country's solar energy market is projected to maintain a robust growth trajectory,
- expanding at a CAGR of over 6.5% through 2029.

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

Average monthly income for workers in the solar industry in Portugal varies based on their roles and experience.

Solar engineer:

- The average salary in Portugal is \$43,552 USD yearly or an equivalent rate of \$20 USD hourly.
- An entry-level solar engineer with 1-3 years of experience earns an average annual salary of \$30,889 USD,
- while a senior level solar engineer with more than 8 years of experience earns an average of \$53,659 USD annually.

Solar panel technician:

- The average salary in Portugal is \$22,677 USD yearly, or an equivalent rate of \$11 USD hourly.

Population of the country

The current population of Portugal in 2024 is 10223349.

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

Factory rent/mortgage:

- The average rent for commercial properties in Portugal can vary based on location, size, and other factors.
- The average rent for commercial properties is about \$14-19 USD.

Electricity cost:

- As of December 2023, the electricity price for businesses is \$0.150 USD per kWh.
- This includes all components of the electricity bill such as the cost of power, distribution, and taxes.

Salaries & Wages:

- The average labor cost for solar panel production in Portugal is approximately \$22378.53 USD per year or \$10.75 USD per hour.

A summary of the energy infrastructure

Total Installed Capacity:

- Portugal currently has 8.8 GW of hydroelectric capacity,
- 13.3 GW of onshore wind,
- and 3.1 GW of solar,
- which together represent 87% of its total installed capacity.

Electricity Generation:

- In the first half of 2023, Portugal produced about 18751 GWh of electricity,
- of which 73.2% came from natural resources.

Some of the government regulations surrounding solar panel production

Portugal's strategy to reach carbon neutrality centers on significantly expanding renewable electricity generation,

- transitioning to electric power for various energy uses,
- and implementing measures to reduce energy consumption.

Portugal has set aggressive targets for reducing emissions and increasing energy efficiency by 2030.

- The country aims to significantly expand its renewable energy sector,
- targeting 85% of electricity generation from clean sources.

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

Simplified permits for renewables:

- The Portuguese government has eliminated the need for renewable energy developers to obtain operating licenses for power plants,
- battery storage systems,
- and self-consumption units.

EU production plan funds:

- The European Commission has granted Portugal €350 million to support domestic companies producing renewable energy equipment.

Notable solar projects in the country (installed and projected)

Installed Projects:

- Central Fotovoltaica Alcoutim (Alcoutim Solar Power Plant):
 - Location: Alcoutim
 - Capacity: 219 MW
 - Details: Inaugurated Oct 2021.
- EDP's Alqueva Floating Solar Power Plant:
 - Location: Alentejo
 - Capacity: 5 MW
 - Details: Operational since July 2022.
- The Cerca Photovoltaic Plant:
 - Location: situated in the municipalities of Alenquer and Azambuja
 - Capacity: 202 MWp capacity
 - Details: Operating 2024.

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

Beon Energy:

- They manufacture micro-inverters and solar kits to optimize energy storage during peak demand.

Brighter Energy:

- The Company is a solar technology innovator focused on creating sustainable energy solutions.

Aura Power:

- A leading developer of large-scale solar and battery storage projects.



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.

REFERENCES

All References

For a detailed list of references and additional information, please visit our website with the current report at:

<https://www.pvknowhow.com/solar-report/portugal/>

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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