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Benin 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 Benin

KEY POINTS

All figures have been converted into USD

Yearly sunshine (sun hours per year)

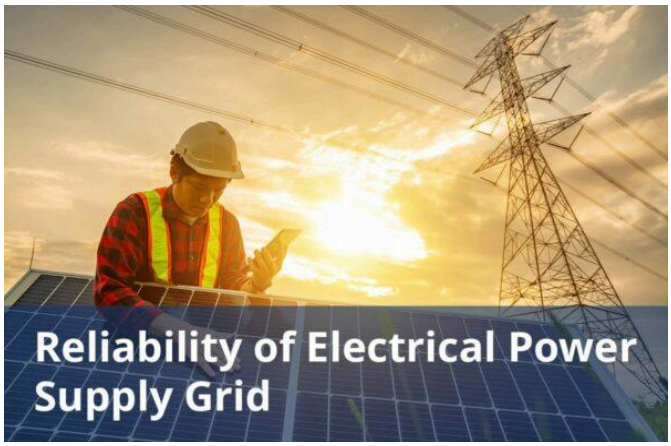
The weather in Benin depends on region and season; however, the average; however, on average, there are 2304 hours of sunshine per year.

kWh per kWp installed

The photovoltaic power potential ranges between 1314 and 1607 kWh/kWp/yr in the Benin Republic.

Average cost per kWh from utility company

In 2021, the cost of residential electricity was noted as $0.560/kWh.



Reliability of electrical power supply grid

* A 2020 survey in Benin revealed that 40% of the population experienced consistently reliable electricity service.
- Conversely, 5% reported inconsistent or non-existent electricity despite being connected to the grid.
- A significant majority, 55% of those surveyed, lacked any connection to the national power grid.




DETAILED INFORMATION

All figures have been converted into USD

Total solar panel production capacity (installed)

As of 2022, Benin has a solar panel production capacity of 213.1 MW.

Total solar panel production capacity (projected)

By 2030, Benin aims to achieve a solar energy generation capacity of 300 Megawatts.

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

The cost of electricity from solar power in Benin varies based on the type of system and other factors:
- Pay-As-You-Go Solar Products: As of September 2016, customers could access basic pay-as-you-go solar products (for lighting and phone charging) for approximately USD 0.95 per week (based on a 24-month repayment plan).
- Solar Home Systems: The European Investment Bank has installed 107,000 solar home systems in Benin, offering them at a daily cost of 20 cents per day for users.

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

According to the IEA, Benin's electricity mix by percentage includes Oil (24.7%), Natural gas (68.8%), and Solar PV (6.5%).

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

In Benin, the average daily availability of electricity from the grid is not readily available. However, outages and inconsistencies are common due to infrastructural challenges and dependence on imports.

Number of residential solar panel installations

* French energy giant Engie deployed 107,000 solar home systems (SHS) in Benin with the EIB loan.
- EIB (European Investment Bank) noted that the funds would give 643,000 people access to electricity.

Total number of solar farms (installed and projected)

Installed Solar Farms: The information is sparsely available; however, at least 2 solar minigrids are expected to be already installed.

Projected Solar Farms: This information is sparsely available; however, at least 20 solar minigrids are expected to be installed in the coming years.

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

The demand for off-grid solar solutions in Benin is growing, driven by the need to increase electricity access, particularly in rural and peri-urban areas where grid connectivity is limited.

Current Demand and Deployment
- ENGIE Energy Access has launched the construction of two solar-powered mini-grids and a 68 km low-voltage distribution network in northern and central Benin.
- The mini-grids will have a total capacity of 1200.1 kWp and will provide 6000 connections.
- The mini-grid project is part of the Millennium Challenge Account – Benin II Program, which aims to enhance off-grid electricity access for rural and peri-urban populations.
- The demand for off-grid solar solutions in Benin is high, particularly in rural and remote areas where access to the national grid is limited.
- Engie Energy Access's recent launch of a mini-grid in Dohouè, powered by 135 kW of solar panels and 130 kWh of Lithium-ion batteries, is a clear indication of the current demand.
- The government is actively promoting off-grid solar projects as part of its strategy to improve energy access, as evidenced by the recent VAT exemption on imports of solar panels and related equipment.

Future Projections
- The future demand for off-grid solar in Benin is expected to rise as more rural communities seek reliable and sustainable energy sources.

- Engie Energy Access plans to construct an additional 20 mini-grids, which will collectively provide 1.2 MW of installed capacity and support over 30000 people in rural areas.

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

Current Demand
- Benin's on-grid solar demand is currently modest but steadily increasing.
- With 28 MW of installed solar capacity as of last year, the country is beginning to integrate more solar energy into its national grid.
- Ongoing projects, such as the 25 MW solar plants by Toyota Tsusho, reflect the government's focus on expanding solar capacity.

Future Demand
- Looking ahead, the demand for on-grid solar in Benin is expected to grow significantly as the government aims to achieve significant increase of solar capacity by 2026.
- This ambitious target indicates a strong push towards diversifying the energy mix and increasing domestic electricity generation.

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

The typical salary for a Solar Photovoltaic Installer in Benin ranges from approximately $1926.63 to $6486.75 USD per year, with an average of about $4096.55 USD per year.

Population of the country

The current population of Benin is 14501763.

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

Key Components of Administrative Costs
- Salaries and Wages: The typical salary for a Solar Photovoltaic Installer in Benin ranges from approximately $1926.63 to $6486.75 USD per year, with an average of about $4096.55 USD per year.
- Rent for Office Space: The cost of renting shared office space in Benin City ranges across cities and locations. Some costs we were able to find include $1.77 USD per day in Parakou and $3.54 – $7.7 USD per day in Cotonou.

A summary of the energy infrastructure

Electricity Generation
- Benin's electricity generation is sourced from a variety of means, including fossil fuels, natural resources, and renewable energy (RE).
- In 2022, natural gas was the predominant source of electricity, accounting for 73.1% of generation.
- Oil contributed 23.6% to the total electricity production.
- Solar PV accounted for just 3.3%
- Benin relies on Nigeria, Ivory Coast, and Ghana for most of its electricity supply.

Transmission & Distribution
- Benin's electricity infrastructure comprises 5620 kilometers of domestic transmission and distribution lines, along with 618 kilometers of transnational lines.

Energy Access

- Benin's energy landscape is defined by low per capita energy consumption, extensive reliance on biomass, and the overexploitation of natural forest resources.
- Only about 41% of the population has access to electricity.

Some of the government regulations surrounding solar panel production

Electricity Code of 2020
- Law Nr. 2020-05 (1 April 2020): This law replaces the previous Electricity Code (Law Nr. 2006-16) and marks a significant shift by ending the state utility's monopoly on energy generation, transmission, distribution, and marketing. It introduces a more open market for private sector participation.
- Declaration Regime: For electrical installations for own use below a certain capacity.
- Authorisation Regime: For public interest generation, off-grid areas, and self-generation above a specified capacity.

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

Action Programme 2016-2021
- Target: The program aimed to achieve a total of 95 MW of grid-connected solar PV capacity by 2021. This target reflects the government's commitment to increasing solar energy capacity in the country.

Projet de Valorisation de l'Énergie Solaire (PROVES)
- Objective: This project aims to install 105 solar/diesel hybrid mini-grids across Benin. As of November 2019, 79 mini-grids had been constructed in rural villages.

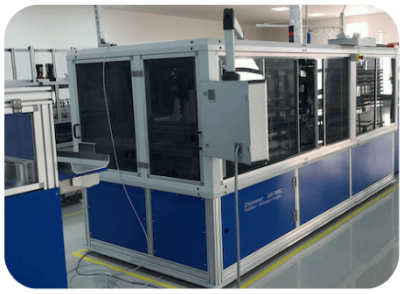
Notable solar projects in the country (installed and projected)

Current Solar Projects in Benin:
- Illoulofin Photovoltaic Solar Power Plant (25 MWp):
  - Location: Illoulofin, Pobè, Plateau department.
  - Capacity: 25 MWp.
  - Details: This is the first large-scale solar power plant in Benin, inaugurated on July 19, 2022. The plant is equipped with 47212 solar modules and 113 inverters.
- Projected Projects:
- Toyota Tsusho Solar Plant (25 MW):
  - Location: Pobè region, Benin.
  - Capacity: 25 MW.

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

Company Name: Dulosolar Benin
- Location: 01 BP 490, Cotonou, Benin
- Contact Numbers: (229) 90 90 53 55 / (229) 66 51 51 88
- Website: www.dulosolar.com
- Services Provided: Dulosolar Benin specializes in the design, development, and commercialization of turnkey photovoltaic solar power plants.

Company Name: MySol Bénin
- Location: Zone de L'aéroport, Villa Censad, Cotonou, Benin
- Contact Number: +229 69 70 99 99
- Website: https://www.facebook.com/MySolbenin



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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/benin/

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.
www.jvg-thoma.com

Contact & Further Information

For further discussion or clarification of manufacturing-related aspects, please contact:

J.v.G. Technology GmbH
www.jvg-thoma.com
info@jvg-thoma.com

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