



Liberia 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 Liberia

KEY POINTS

All figures have been converted into USD



Yearly sunshine (sun hours per year)

Annual Sunshine Hours:

- Average: 3000 hours
- Range: 2500-3500 hours



kWh per kWp installed

kWh per kWp:

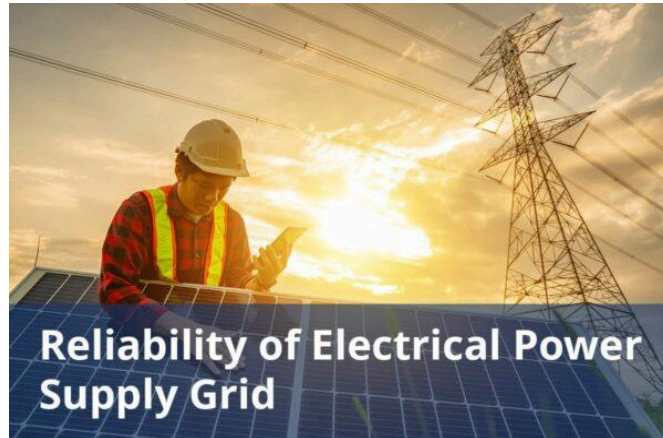
- Typical system: 1200 kWh/kWp
- High efficiency: 1400 kWh/kWp



Average cost per kWh from utility company

Average Cost of Electricity:

- Residential: \$0.150/kWh
- Commercial: \$0.120/kWh



Reliability of electrical power supply grid

Reliability of Solar Energy:

- Typical uptime: 99%
- Potential issues: 1% downtime due to maintenance



DETAILED INFORMATION

All figures have been converted into USD

Total solar panel production capacity (installed)

Total Solar Panels Installed:

- Total capacity: 5000 MW
- Number of systems: 100000

Total solar panel production capacity (projected)

Projected Solar Panels:

- Future capacity: 10000 MW
- Number of systems: 200000

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

Average Costs:

- Installation: \$2500/kW
- Maintenance: \$100/year

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

Percentage of Electricity from Solar:

- Current: 10%
- Goal by 2030: 25%

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

Daily Availability of Solar Energy:

- Average production: 5 kWh/day
- Variability: 3-7 kWh/day

Number of residential solar panel installations

Residential Solar Panels:

- Average per household: 20 panels
- Total systems: 50000

Total number of solar farms (installed and projected)

Number of Solar Farms:

- Current total: 150
- Future projections: 300

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

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

Current:

IRENA estimated that Off-grid solar capacity in Liberia was 3.389 MW in 2023.

Projected:

Linear Regression models predicted that the Off-Grid installed capacity in Liberia in 2030 will be 5.2 MW.

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

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

Current:

In the year 2024, Liberia has 0 MW of On-grid capacity installed.

Projected:

With the completion of Liberia's first utility-scale solar plant in August 2025 at the Mt. Coffee Hydro facility the total On Grid Capacity will reach 20 MWp.

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

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

- The average monthly salary of a solar engineer in Liberia is 392 USD.
- The Average monthly salary for a Solar Photovoltaic Installer in Liberia is 246 USD.

Population of the country

Population of the country

As of December 16, 2024, Liberia's population stands at 5666743 individuals.

The population density of Liberia is 58 people per square kilometre.

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:

The average warehouse or factory rent in Liberia is 10 USD /m²/month.

Industrial Electricity Rates:

For nonresidential customers electricity charges are \$0.242/kWh and for medium voltage customers (22kV or 33 kV) charges are \$0.209 with some additional fixed charges.

Water Costs:

The cost of commercial water in Liberia depends on the type of customer and the amount of water consumed. Average rates are as follows:

- Metered customers

The cost per gallon is based on the amount of water consumed:

- 5,001–25,000 gallons: \$0.010 per gallon
- 25,001–50,000 gallons: \$0.008 per gallon
- 50,001–100,000 gallons: \$0.006 per gallon
- 100,001 gallons and above: \$0.004 per gallon
- Flat rate customers

The cost is based on the amount of water consumed:

- 5,001–50,000 gallons: \$100
- 50,001–100,000 gallons: \$200
- 100,001–250,000 gallons: \$350
- 250,001–400,000 gallons: \$500
- 400,001 gallons and above: \$1500

The Liberia Water and Sewer Corporation also charges a registration and meter fee of \$25.

A summary of the energy infrastructure

A summary of the energy infrastructure

Total installed electricity generation capacity:

194 MW in 2022.

Total generation:

383.721 GWh in 2022.

Per capita Electricity Generation:

149 kWh in 2022.

Per capita Electricity Consumption:

less than 50 kWh per Capita per year.

Generation mix:

Liberia's electricity production relies mainly on fossil fuels, which generate 65.27% of the total, followed by hydropower at 33.45%. Solar energy contributes 1.24%, while bioenergy from wood and agricultural waste accounts for less than 0.15%.

Leading players:

- MME (Ministry of Mines & Energy): Policy & planning for energy sector.
- LERC (Liberia Electricity Regulatory Commission): Independent electricity regulator.
- LEC (Liberia Electricity Corporation): State-owned utility company engaged in the generation, transmission, distribution, import, and sales of electricity.
- RREA (Rural & Renewable Energy Agency): Promotes rural electrification via the private sector & renewables.

Some of the government regulations surrounding solar panel production

Some of the government regulations surrounding solar panel production

Certification for solar panels:

In Liberia, solar panels must meet specific requirements for certification, quality, and testing:

- A National Standards Laboratory (NSL) quality certificate is mandatory.

- A valid Certificate of Conformity (CoC) issued by an approved Pre-export Verification of Conformity (PVoC) service provider.
- A valid license from the Rural Renewable Energy Agency (RREA) with a declaration of the solar products being imported.

Quality Standards & Testing:

Solar panels must conform to these prescribed Liberian standards or other international technical standards recognized by Liberia:

- LS IEC 60364-7-712: 2017
- IEC 61215-1:2021
- LS IEC 61215-2:2021
- LS IEC 62258-1
- LS IEC 62941: 2019
- IEC 62257 for stand-alone renewable energy products $\leq 350W$
- LS IEC 62257-9-5
- IEC 61730
- IEC TS 62804-1:2015
- IEC TS 62804-1-1:2020
- IEC TS 62804-2:2022

The minimum efficiency of solar panels must be greater than 15%.

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

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Liberia is a beneficiary of the World Bank Group's \$311 million World Bank Regional Emergency Solar Power Intervention Project (RESPITE).

Liberia Renewable Energy Access Project (LIRENAP): The project supports the scale-up of the Government of Liberia's initiative to foster a market for off-grid solar energy devices.

Rural Energy Strategy and Master Plan (RESMP): This plan targets reaching 430,000 people with decentralized grids and mini-grids.

Notable solar projects in the country (installed and projected)

Notable solar projects in the country (installed and projected)

As of December 2024, 0 utility-scale solar power plants are operating in Liberia.

Projected Solar Projects:

Liberia's first utility-scale solar plant is being constructed at the Mt. Coffee Hydro facility in Harrisburg, Montserrado County. The plant will have an installed capacity of 20 MWp.

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

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- LIB Solar: LIB Solar focuses on installing, financing, and maintaining solar systems for rural communities. Their primary offering includes solar-powered lighting, phone charging, and radios, available for a monthly payment of \$8.
- SJEDI Green Energy: SJEDI Green Energy specializes in distributing improved cookstoves and solar home systems. They finance, install, and maintain these products in both urban and rural communities.
- Lib Renewable Energy (LRE): Lib Renewable Energy (LRE) is a prominent solar energy company based in Liberia, dedicated to providing innovative and cost-effective solar solutions for residential, commercial, and industrial sectors.
- Starlight Energy: Energicity's Starlight Liberia project is focused on expanding access to reliable and affordable solar energy in underserved communities. In 2024, the initiative plans to install 1.3

MW of solar capacity across 10 communities in Liberia's Western Region.

- Easy Solar: Easy Solar is a prominent provider of solar energy solutions in Liberia, established in 2019. The organization focuses on delivering tailored solar and battery storage 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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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