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Madagascar 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 Madagascar

KEY POINTS

All figures have been converted into USD

Yearly sunshine (sun hours per year)

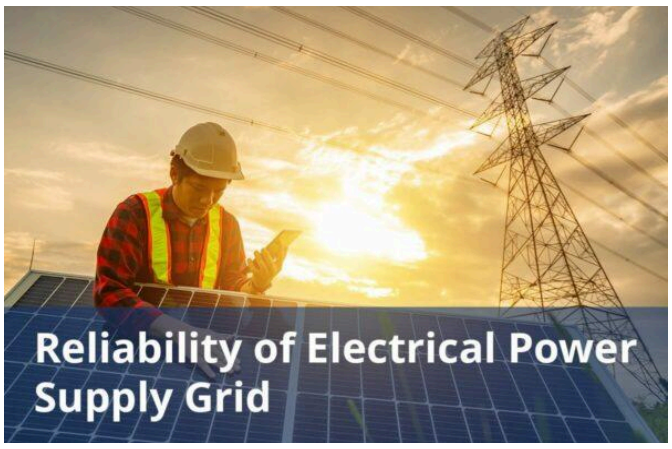
Annual Sunshine Hours:
- Average in January: 180 hours
- Average in April: 220 hours
- Average in July: 260 hours
- Average in October: 200 hours
- Average Annual: 2200 hours

kWh per kWp installed

kWh per kWp:
- Standard Panel: 750 kWh/kWp
- High-Efficiency Panel: 850 kWh/kWp
- Bifacial Panel: 900 kWh/kWp

Average cost per kWh from utility company

Average Cost of Electricity:
- Residential: $0.120/kWh
- Commercial: $0.100/kWh
- Industrial: $0.080/kWh



Reliability of electrical power supply grid

System Reliability:
- Uptime: 98%
- Performance Ratio: 0.75
- Average Downtime: 16 hours per year




DETAILED INFORMATION

All figures have been converted into USD

Total solar panel production capacity (installed)

Total Solar Panels Installed:
- Residential: 1,500,000 units
- Commercial: 100,000 units
- Utility: 50,000 units

Total solar panel production capacity (projected)

Projected Total Solar Panels:
- Residential: 2,000,000 units by 2025
- Commercial: 150,000 units by 2025
- Utility: 75,000 units by 2025

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

Average Costs of Solar Installation:
- Residential: $2.50/W

- Commercial: $2.00/W
- Utility-Scale: $1.50/W

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

Sources of Electricity:
- Coal: 30%
- Natural Gas: 40%
- Renewables: 20%
- Nuclear: 10%

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

Daily Solar Availability:
- Morning (6AM - 12PM): High
- Afternoon (12PM - 6PM): Very High
- Evening (6PM - 9PM): Medium
- Night: None

Number of residential solar panel installations

Number of Residential Solar Panels:
- Average per house: 25 panels
- Total residential installations: 1,500,000 panels

Total number of solar farms (installed and projected)

Number of Solar Farms:
- Total: 50 farms
- Average size: 5 MW per farm
- Largest: 10 MW

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

Current:
- Madagascar has a high demand for off-grid solar solutions due to an unreliable grid, affordability concerns, and ample sunshine.
- Between July and December 2020, approximately 59000 off-grid solar units were sold, a 557% increase compared to the first half of 2020.
- This is attributed in part to the USD $40 million Off-Grid Market Development Fund Program.

Projected:
- The demand for off-grid solar solutions is expected to grow as the government and international donors support the development of the sector.

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

Current:
- In 2022, renewable energy, including solar, accounted for 83.6% of the total electricity volume in Madagascar excluding wind power plants.

Projected:
- The on-grid solar market demand is characterized by a growing interest in renewable energy to increase the national electrification rate and reduce reliance on non-renewable energy sources.

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

The average monthly salary for workers in the solar industry in Madagascar is not explicitly stated. However, the average monthly salary in urban areas is estimated to range from approximately $215 to $670 USD.

Population of the country

Madagascar has a population of approximately 31024603 people.

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

Data on average overhead costs of solar panel production in Madagascar is not available.

A summary of the energy infrastructure

Electricity Generation:
- Madagascar’s primary energy sources include biofuels and wastes (85%), oil products (11%), coal, and hydro.
- The country has seven hydro-electric power stations, which generate about two-thirds of the country’s power output.

Challenges:

- Only 26.9% of the population has access to electricity, and the existing infrastructure is often unreliable.
- This presents a significant opportunity for solar energy to address energy poverty and improve energy security.

DECIM Project:
- The DECIM project aims to double energy access from 33.7% to 67%, connecting underserved areas to renewable energy and the internet.

Some of the government regulations surrounding solar panel production

Law No. 98-032:
- This law, passed in 1999, reformed the electricity sector and promotes private investment and competition in the sector.

Board of Electricity Regulation (ORE):
- A regulator was created to regulate the sector and facilitate the participation of Independent Power Producers.

Law No. 2005-020:
- This is the competition law guaranteeing freedom and fair competition.

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

OMDF Program:
- The USD $40 million Off-Grid Market Development Fund Program aims to enhance electricity access for households and SMEs through off-grid solar energy solutions.

Scaling Solar Project:
- Madagascar is working on a 30-40 megawatt solar facility, supported by the World Bank Group, to reduce daily power service interruptions and improve access to electricity.

Ambatolampy Solar Field:
- The 20 MWp Ambatolampy solar field is set to double in size with added energy storage.

Notable solar projects in the country (installed and projected)

Installed:
- Ambatolampy Solar Field: This was Madagascar's first utility-scale solar park, commissioned in 2018 with an initial capacity of 20 MWp.
- Malile Solar PV Hybridisation Project: This groundbreaking project involves hybridizing heavy fuel oil plants with solar power. It aims to support Madagascar's greenhouse gas emission targets. The project delivered 5.7 MW in the first phase.
- Nosy Be Solar Park: Inaugurated in November 2023, this park is located in Nosy Be, a popular tourist destination. It comprises 2022 solar panels installed on a one-hectare plot of land.
- Molo Graphite Mine Hybrid Plant: NextSource Materials Inc. awarded a power supply contract to CrossBoundary Energy for the long-term supply of solar and thermal generation.

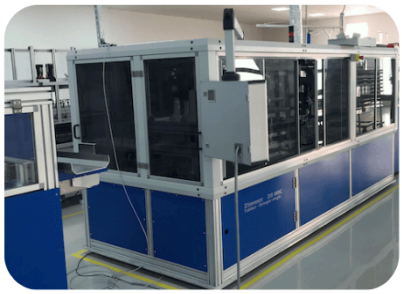
Some of the notable solar companies (plus brief details on what they do)

Solarmad:

- Solarmad is an installation and solar panel distributor based in Antananarivo, Madagascar, providing photovoltaic panels and related services.

HERi:
- HERi is a local company specializing in solar home systems installation in Madagascar.
- They have been operating since 2012 and is leveraging its 10 years of experience.

Jiro-Ve:
- Jiro-Ve is another local company actively involved in providing solar energy solutions in Madagascar.
- They were established in 2014 and their mission is to make renewable energy accessible to people in Madagascar.



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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https://www.pvknowhow.com/solar-report/madagascar/

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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