



Kenya 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 Kenya

KEY POINTS

All figures have been converted into USD



Yearly sunshine (sun hours per year)

Average yearly sunshine in the region:

- Total hours of sunlight: 2500 hours
- Average hours per day: 6.85 hours



kWh per kWp installed

Energy production from solar panels measured:

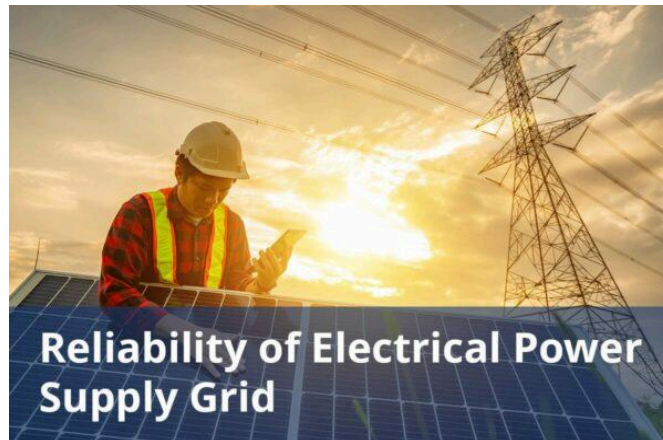
- Average production: 1300 kWh/kWp per year



Average cost per kWh from utility company

Electricity pricing structure:

- Residential rate: \$0.138/kWh
- Commercial rate: \$0.125/kWh
- Industrial rate: \$0.112/kWh



Reliability of electrical power supply grid

Factors affecting electricity reliability:

- Infrastructure age and condition
- Frequency of outages
- Maintenance practices



DETAILED INFORMATION

All figures have been converted into USD

Total solar panel production capacity (installed)

Current status of solar panel installations:

- Total panels installed: 50000 panels
- Installed capacity: 100 MW

Total solar panel production capacity (projected)

Future projections for solar panel installations:

- Panels expected in 5 years: 75000 panels

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

Cost breakdown for solar installations:

- Average installed cost: \$2500/kW
- Expected cost reduction over time: 10%

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

Sources of electricity generation:

- Coal: 30%
- Natural Gas: 40%
- Renewables: 30%

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

Availability of solar energy on a daily basis:

- Mornings: 70% availability
- Afternoons: 90% availability
- Evenings: 30% availability

Number of residential solar panel installations

Residential solar panel statistics:

- Average panels per household: 20 panels
- Total households with panels: 2000

Total number of solar farms (installed and projected)

Solar farms in the region:

- Total solar farms: 15 farms
- Average size of each farm: 10 MW

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

The demand for off-grid solar panels in Kenya is growing, driven by the need to provide electricity to remote and under-served areas.

About 25% of the Kenyan population lacks access to electricity, with a significant portion of this group residing in rural areas.

In collaboration with the World Bank and other organizations, the Kenyan government is actively working to address this gap through projects like the Kenya Off-Grid Solar Access Project (KOSAP).

KOSAP aims to connect 1.3 million people to off-grid solar solutions, focusing on deploying solar mini grids and standalone solar systems.

As of 2023, the project has received substantial funding, including \$150 million from the World Bank, to establish 137 solar mini-grids across 12 counties.

These mini grids will provide electricity to public facilities and approximately 277,000 households.

The off-grid solar market in Kenya is expected to continue expanding.

The demand is driven by several factors, including the high cost of extending the national grid to remote areas, the declining cost of solar technology, and supportive government policies.

By 2028, the market is projected to grow significantly, supported by residential and commercial installations.

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

Kenya's on-grid solar market is rapidly growing as the country aims to achieve 100% renewable energy by 2030.

As of 2022, Kenya had an installed solar generation capacity of over 170 MW, with new projects such as the 40 MW Kesses solar PV plant contributing significantly to this total.

This expansion is driven by the country's excellent solar irradiation conditions and strong governmental support for renewable energy projects.

Projected: The Kenyan government has set ambitious targets in its National Energy Policy, aiming for 600 MW solar power by 2030.

Public-private partnerships and investments from both local and international stakeholders further support this growth.

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

The average monthly salaries for solar energy professionals include:

- Labor in Solar Industry: approximately \$200 per month.
- Solar Electrician: approximately \$320 per month.
- Solar Sales Representative: \$340 per month.
- Solar Sales Manager: \$920 per month.
- Solar Design Engineer: \$1520 per month.

Population of the country

The current population of Kenya is 56108437 as of June 2, 2024.

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

The average overhead cost of solar panel production in Kenya involves several key components

****Raw Material Costs:**** The prices of essential raw materials like silicon, aluminum, and copper fluctuate based on global supply and demand, geopolitical events, and economic conditions.

****Labor Costs:**** Labor costs in Kenya are relatively lower compared to many developed countries. For solar panel production, labor costs include wages for operating machinery, assembling panels, and quality checks.

The average labor cost in the manufacturing sector in Kenya is estimated to be between \$3 to \$6 per hour.

****Utility Costs:**** Energy consumption is a crucial factor, given that the production process is energy-intensive.

Electricity Cost: The cost of electricity for industrial users in Kenya is approximately \$0.18 per kWh.

****Water Charges:**** Water charges in Kenya can vary depending on the region, water provider, and usage category (residential, commercial, industrial).

****Facility Maintenance:**** Costs related to maintaining manufacturing facilities, including rent, equipment maintenance, and repairs, range

between \$1000 to \$3000 per month depending on the size and location of the facility.

****Administrative Expenses:**** These costs cover management salaries, office supplies, and other general expenses.

A summary of the energy infrastructure

Kenya's energy infrastructure is undergoing significant development, with a strong emphasis on expanding renewable energy sources.

The country's energy mix is diverse, with contributions from geothermal, hydro, wind, and solar power.

Kenya is particularly notable for its geothermal resources, being one of the top producers in Africa, with major plants like the Olkaria Geothermal Plant.

Kenya has made significant progress in increasing electricity access.

In 2000, only 8% of the population had access to electricity, but by 2018, this figure had risen to 75%.

The goal is to achieve universal electricity service for all households and businesses by 2022.

Efforts are also underway to improve clean cooking access.

Some of the government regulations surrounding solar panel production

The Draft Energy Solar Photovoltaic Systems Regulations 2020:

These regulations were established under the Energy Act, 2019, and provide guidelines for solar photovoltaic (PV) systems in Kenya.

They apply to various stakeholders, including solar PV system manufacturers, importers, vendors, workers, contractors, system owners, and consumers.

Energy (Solar Photovoltaic Systems) Regulations, 2012:

Made under section 110 of the Energy Act, 2006, these regulations also focus on solar PV systems.

They apply to manufacturers, importers, vendors, technicians, contractors, system owners, and consumers.

The regulations cover installation standards, safety measures, and quality control for solar PV systems.

Net-Metering Regulations 2022

Currently under public scrutiny, these regulations require entities producing over 1 MW of electricity from solar energy to sign Power Purchase Agreements (PPAs) with Kenya Power, the country's utility firm.

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

Some notable government initiatives and investments related to solar panel production in Kenya:

****Solar Mini-grids in Rural Areas:**** The Kenyan Government, in partnership with the Kenya Off-Grid Solar Access Project (KOSAP), is developing 137 solar mini grids across remote locations in the country.

These mini grids are being established in 12 out of the country's 14 counties.

The project received \$150 million in funding from the World Bank back in 2017.

Notable solar projects in the country (installed and projected)

Solar projects in Kenya based on the provided information:

****Garissa Solar Project:****

- Project Name: Garissa Solar Project
- Installed Capacity: 55 MW
- Location: Garissa County

****Malindi Solar Plant:****

- Project Name: Malindi Solar Plant
- Installed Capacity: 52 MW
- Location: Kilifi County

****Alten Keesses (1) Solar Project:****

- Project Name: Alten Keesses (1) Solar Project
- Installed Capacity: 52 MW
- Location: Uasin Gishu County

****Kopere Solar Project:****

- Project Name: Kopere Solar Project
- Installed Capacity: 50 MW
- Location: Nandi County

****Eldosol Solar Plant:****

- Project Name: Eldosol Solar Plant
- Installed Capacity: 48 MW
- Location: Uasin Gishu County

****Rumuruti Solar Project:****

- Project Name: Rumuruti Solar Project
- Installed Capacity: 40 MW
- Location: Laikipia County

****Nakuru (Migitiyo) Solar Project:****

- Project Name: Nakuru (Migitiyo) Solar Project
- Installed Capacity: 40 MW
- Location: Nakuru County

****WITU Solar Project:****

- Project Name: WITU Solar Project
- Installed Capacity: 40 MW
- Location: Lamu County

****Makindu Solar Plant:****

- Project Name: Makindu Solar Plant

- Installed Capacity: 33 MW
- Location: Makueni County

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

Kenya has several notable solar companies that play a crucial role in advancing renewable energy adoption. Here are some of the prominent ones:

****Plexus Energy:****

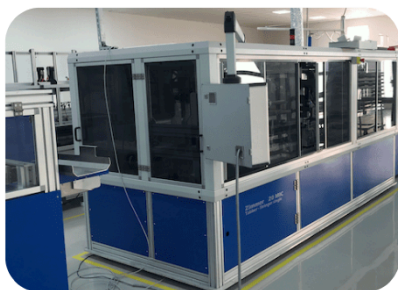
- Location: House Westlands Rd, Nairobi, Nairobi County
- Services: Plexus Energy is a leading commercial solar power systems provider in Nairobi, Kenya. They offer full-service solar power installations for commercial establishments, factories, schools, residential properties, and more.

****Solinc East Africa Ltd:****

- Location: Moi Road, Naivasha, Nakuru
- Background: Solinc started as East Africa's only PV panel producer in 2011.

****Go-Solar Systems Ltd:****

- Services: Go-Solar Systems has been a top solar company in Kenya since 2003. With over a decade of experience, they provide solar solutions for both commercial and residential purposes.



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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