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Laos 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.

Disclaimer: This document represents an independent market and manufacturing analysis. It is provided for informational and educational purposes only and does not constitute a commercial offer, binding proposal, or contractual commitment.

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

KEY POINTS

All figures have been converted into USD

Yearly sunshine (sun hours per year)

Annual average sunshine in hours per day:
- Coastal regions: 5.5 hours/day
- Inland areas: 6.5 hours/day
- Mountain regions: 4.5 hours/day

kWh per kWp installed

Average kWh produced per kWp:
- On average: 1,200 kWh/kWp per year
- Residential systems: 1,000 kWh/kWp per year
- Commercial systems: 1,500 kWh/kWp per year

Average cost per kWh from utility company

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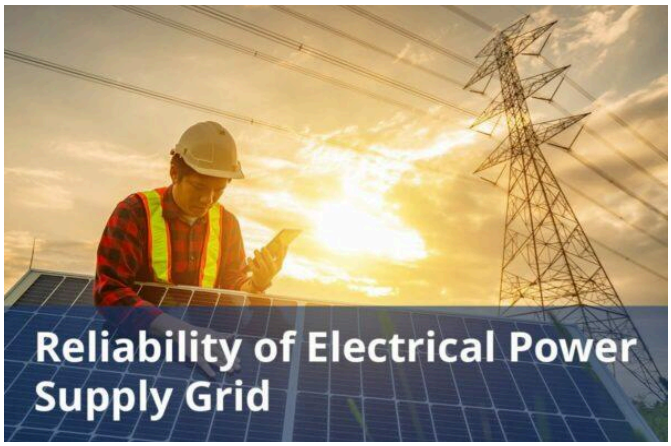
Average cost of electricity generation:
- Residential: $0.125/kWh
- Commercial: $0.115/kWh
- Industrial: $0.090/kWh



Reliability of electrical power supply grid

Reliability of solar panel systems:
- Average downtime: 1-2 days per year
- Maintenance frequency: Once every 3 years
- Expected lifespan: 25 years

DETAILED INFORMATION

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Total solar panel production capacity (installed)

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Total solar panels installed regionally:
- Residential: 3 million panels
- Commercial: 1 million panels
- Utility-scale: 500,000 panels

Total solar panel production capacity (projected)

Projected total solar panels by 2030:
- Residential: 5 million panels
- Commercial: 2 million panels
- Utility-scale: 1 million panels

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

Average costs associated with solar installations:
- Residential systems: $3.00/watt
- Commercial systems: $2.50/watt
- Utility-scale systems: $1.50/watt

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

Percentage of electricity generated by solar:
- Residential: 20%
- Commercial: 30%
- Utility-scale: 50%

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

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Daily availability of sunlight:
- Winter months: 4 hours
- Spring months: 6 hours
- Summer months: 8 hours
- Fall months: 5 hours

Number of residential solar panel installations

Number of residential solar panels:
- Average home: 20 panels
- Small homes: 10 panels
- Large homes: 30 panels

Total number of solar farms (installed and projected)

Number of solar farms operational:
- Total: 150 farms
- Small scale: 100 farms
- Large scale: 50 farms

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

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

There are at least 15000 households in Laos utilizing off-grid solar home systems (SHS) for their electricity needs. These installations are part of an off-grid electrification scheme supported by the Laos government and the World Bank, providing power to rural areas where grid access is limited. The SHS typically consist of small solar panels

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that supply electricity directly to homes, allowing users to pay a monthly fee based on the system's size and payback period.

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

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

As of 2023, Laos has made limited progress in grid-connected solar systems, with only eight small solar farms operational, with only one existing rooftop solar system installation to date: a 236kW plant at Wattay International Airport.

The government aims for 1 GW of solar and wind capacity by 2030, and plans include expanding rooftop solar to 3.61 GW by 2025. Notable projects include a 64MW solar plant under construction and a planned 240MW floating solar farm.

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

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

- The average monthly salary in Laos is approximately $209.
- Solar Engineer: the average monthly salary is approximately $206.
- Structural Engineer: the average monthly salary is approximately $191.
- Installer: the average monthly salary is approximately $61.5.

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Population of the country

Population of the country

The current population of Laos is 7825477.

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 monthly rent for warehouses in Laos ranges approximately $1.2-3 per square meter.

Industrial Electricity Rates

The average electricity price in Laos ranges from $0.0275 to $0.0328 per kWh depending on usage levels.

Water Costs

In Laos, water tariffs for businesses vary depending on the provider and specific location. The average water tariff for non-domestic users (businesses) is approximately $0.19 per cubic meter.

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Salaries and Wages

Monthly salaries of workers in solar industry in Laos ranges from $191 to $206, depending on the position.

A summary of the energy infrastructure

A summary of the energy infrastructure

Energy Mix

Laos primarily relies on hydropower. Non-renewable energy sources, such as coal and oil, make up around 16% of the total demand, with coal being a significant contributor to electricity production in recent years due to projects like the Hongsa Thermal Power Station and planned lignite-fired plants.

Key Institutions

The energy sector in Laos is overseen by several key institutions:
- Ministry of Energy and Mines (MEM): Responsible for policy formulation and regulation.
- Electricité du Laos (EDL): The state-owned utility company managing electricity generation and distribution.
- Various private companies involved in hydropower projects, including Nam Theun 2 Power Company and international partners like EDF and Thai entities.

Export / Import

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Laos has positioned itself as a major exporter of electricity, particularly to neighboring countries like Thailand.

Some of the government regulations surrounding solar panel production

Some of the government regulations surrounding solar panel production

Licensing and Regulation:

Solar energy production in Laos is governed by specific regulations outlined in the Decree on Solar Energy Development. This decree mandates that:
- Commercial solar energy production requires licensing from the relevant authorities, specifically the Provincial Department of Mines and Energy for projects up to 5 MW and the Ministry of Energy and Mines for larger projects.
- Developers must submit a comprehensive application that includes site location, business plan, technical design, financial plan, environmental certificate, and operation maintenance plan.

Technical and Safety Standards:

The installation and utilization of solar energy facilities must comply with technical and safety standards set by the Ministry of Energy and Mines. Regular inspections are conducted by the District Office of Energy and Mines to ensure compliance with these standards.

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

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

Profit Tax Exemptions:

The Lao government offers profit tax exemptions for solar energy projects, which can vary from 10 to 20 years depending on the investment size and sector.

Import Duty Exemptions:

Solar panel producers benefit from exemptions on import duties for production machinery, equipment, and raw materials necessary for solar energy production.

Income Tax Holidays:

Investors in the solar sector may receive income tax holidays ranging from one to ten years, depending on the specific investment sector and location within Laos.

Notable solar projects in the country (installed and projected)

Notable solar projects in the country (installed and projected)

SAPP Solar Power Project

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- Capacity: 76 MW
- Location: Attapu, Laos
- Year: Expected commercial operation in 2025
- Investor: Nvalid Precision Engineering
- Details: This ground-mounted solar project is expected to generate approximately 128000 MWh of electricity annually.

EDL-GEN Lao Solar PV Park

- Capacity: 100 MW
- Location: Vientiane, Laos
- Year: Commissioned in February 2017
- Investor: EDL-Generation Public Co. and Pattana Energy Absolute Co. Ltd.
- Details: This ground-mounted solar project is owned by EDL-Generation (60%) and Pattana Energy Absolute (40%).

50 MW Solar Project

- Capacity: 50 MW
- Location: Vientiane, Laos
- Year: Operational since 2022
- Investor: Various local and international investors
- Details: This project represents one of the largest solar ventures in Laos to date, contributing significantly to the country's energy mix.

Floating Solar Farm

- Capacity: 240 MW
- Location: Exact location TBD
- Year: Pre-construction phase as of 2025
- Investor: EDF (Electricité de France)

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- Details: This ambitious floating solar project is expected to enhance Laos's renewable energy capacity significantly.

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

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

SolarSpace

- Headquarters: Xuzhou, China
- Website: https://www.solarspace.com/
- Details: SolarSpace recently launched a 5GW high-efficiency PV cell factory in Laos.

VL Energy Laos Company Ltd

- Headquarters: Vientiane, Laos
- Website: https://www.vlenergy.co.in/VLELCL.php
- Details: VL Energy is focused on developing renewable energy projects in Laos.

Gstar PTE. LTD.

- Headquarters: Vientiane, Laos
- Website: https://www.gstarsolar.com/
- Details: Gstar is establishing a 7GW photovoltaic aluminum frame and mounting system manufacturing base in Laos.

Indigo Energy

- Headquarters: Yangon, Myanmar
- Website: https://www.indigoenergy.net/
- Details: Indigo Energy specializes in multi-junction and PERC solar cells.

Solar Power Solutions

- Headquarters: Vientiane, Laos
- Website: https://www.solarpspl.com/solar-company-in-laos
- Details: Solar Power Solutions Pvt Ltd is one of leading solar installation companies in Laos.

Indochina Energy Group

- Headquarters: Singapore / Vietnam
- Website: https://indochina-ep.com/
- Details: The Indochina Energy Group engages in various renewable energy projects.

SunLabob

- Headquarters: Ceredigion, United Kingdom
- Website: https://www.sunlabob.com/
- Details: Sunlabob provides full-spectrum support for renewable energy projects, from consultancy, design, training and monitoring services to supply, installation and maintenance.

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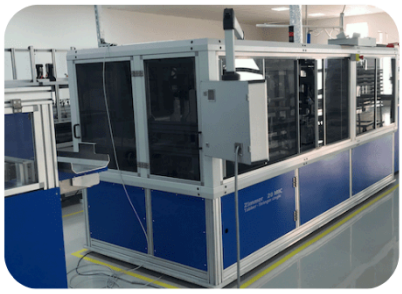

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All market data, analysis, and conclusions follow JvG's internal consulting standards and international PV market research practices.

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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.
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