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Brunei 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 Brunei

KEY POINTS

All figures have been converted into USD

Yearly sunshine (sun hours per year)

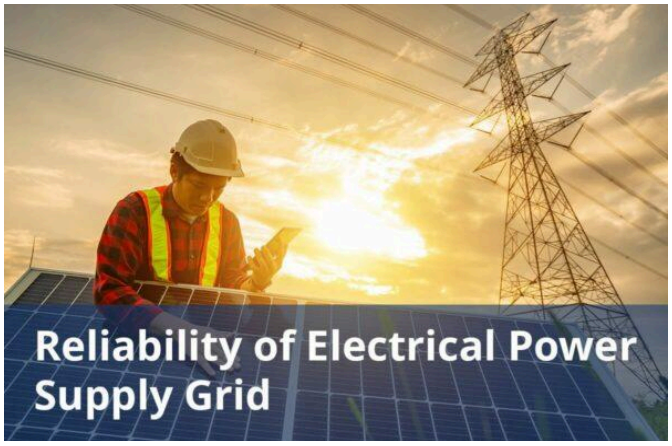
Average Yearly Sunshine:
- January: 5.0 hours
- February: 5.5 hours
- March: 6.0 hours
- April: 6.5 hours
- May: 7.0 hours
- June: 7.5 hours
- July: 8.0 hours
- August: 7.5 hours
- September: 6.5 hours
- October: 5.5 hours
- November: 5.0 hours
- December: 4.5 hours

kWh per kWp installed

Energy Production:
- For 1 kW system: 1200 kWh/year
- For 5 kW system: 6000 kWh/year
- For 10 kW system: 12000 kWh/year

Average cost per kWh from utility company

Average Cost Per kWh:
- Residential: $0.120/kWh
- Commercial: $0.150/kWh
- Industrial: $0.100/kWh



Reliability of electrical power supply grid

Reliability:
- System performance: 98%
- Downtime: 2%




DETAILED INFORMATION

All figures have been converted into USD

Total solar panel production capacity (installed)

Total Solar Panels Installed:
- Residential: 1.5 million
- Commercial: 500 thousand
- Industrial: 200 thousand

Total solar panel production capacity (projected)

Projected Solar Panels:
- Year 1: 2 million
- Year 2: 2.5 million
- Year 3: 3 million

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

Average Costs of Installation:
- Residential: $3.00/watt
- Commercial: $2.50/watt
- Industrial: $2.00/watt

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

Percentage of Electricity from Solar:
- Residential: 25%
- Commercial: 15%
- Industrial: 10%

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

Daily Availability:
- Morning: 8 hours
- Afternoon: 10 hours
- Evening: 6 hours

Number of residential solar panel installations

Number of Residential Panels:
- Average: 20 panels per home
- Total: 30 million homes

Total number of solar farms (installed and projected)

Number of Solar Farms:
- Total: 1500
- Average size: 100 acres

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

Off-grid solar power system demand in Brunei is influenced by several key factors:
- Cheap electricity prices make solar less attractive, as initial costs often outweigh savings over time.
- Grid Connectivity: With nearly 100% grid access, most residents do not find off-grid systems necessary.
- Lack of buy-back or feed-in-tariff scheme.

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

Brunei has installed a total of approximately 9234 solar panels at the Tenaga Suria Brunei solar farm, which has been operational since 2010 with a capacity of 1.2 MW. Brunei Shell Petroleum (BSP) has installed 7000 solar panels at its headquarters in Seria. This installation is part of a 3.3 MW solar park designed to reduce the company's greenhouse gas emissions and power approximately 600 households annually. The government is actively promoting renewable energy, aiming for 30% of total power generation to come from renewable sources by 2035. Future projects aim to significantly contribute this goal, with plans for a 30 MW solar plant and the larger Project SINAR, which will ultimately reach a capacity of 476 MWp across multiple phases.

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

The average monthly salary in Brunei is approximately $1955.
- Solar Engineer: the average monthly salary is approximately $2121.

- Solar Energy Installation Manager: the average monthly salary is approximately $3227.
- Solar Photovoltaic Installer: the average monthly salary is approximately $1394.

Population of the country

The current population of Brunei is 464214.

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

Estimate for Factory Rent:
- The average monthly rent for industrial warehouses in Brunei is approximately $8.61 per square meter.

Industrial Electricity Rates:
- The average electricity price for businesses in Brunei ranges from approximately $0.037 to $0.15 per kWh, structured in a 4-tier tariff.

Water Costs:
- In Brunei, water is heavily subsidized, with a production cost of $0.90 per cubic meter, but sold to consumers at just $0.11, reflecting an 88% government subsidy.

Salaries and Wages:
- Monthly salaries of workers in solar industry in Brunei ranges from $1394 to $3227, depending on the position.

Rent for Office Space:

- The average monthly rent for office space in Brunei ranges approximately $7.74-$21.5 per square meter.

Insurance:
- The average spending per capita for non-life insurance in the Brunei is expected to be $3240 in 2024.

A summary of the energy infrastructure

Brunei's energy mix is heavily reliant on fossil fuels, primarily natural gas and oil. The country produces approximately 127000 barrels of oil and 243000 barrels of oil equivalent of natural gas daily. Renewable energy sources are currently minimal but are targeted to reach a 10% share in the energy mix by 2035, as outlined in the strategic plan adopted in 2014.
- The primary institution overseeing Brunei's energy sector is the Department of Energy, part of the Prime Minister's Office. This department is responsible for formulating policies and regulations, including the establishment of the Energy Industry Competency Framework to enhance local human capital in the energy sector.
- Additionally, the Brunei Economic Development Board (BEDB) plays a role in promoting investments and initiatives related to energy infrastructure.
- Brunei is a significant exporter of liquefied natural gas (LNG), primarily to markets in Japan and South Korea. However, LNG production has seen a decline in recent years due to maintenance issues and maturing fields.

Some of the government regulations surrounding solar panel production

As of now, there are no specific national regulations governing the installation of solar panels in Brunei.

- Guidelines for Large Scale Solar Projects: The Ministry of Energy has issued guidelines for large-scale solar photovoltaic (LSS PV) plants connecting to the distribution grid. These guidelines require compliance with the Electricity Order 2017 and stipulate that participants in the LSS program must be local companies with at least 30% Bruneian equity.
- Safety and Licensing Requirements: While there are no overarching regulations for smaller installations, any large-scale project must follow safety rules and obtain necessary licenses as per the Electricity Order 2017. Licensed electricians are required for installations, especially for hybrid systems that connect to the public utility grid.

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

The Brunei government is developing a 30 MW solar power plant in Kampung Sungai Akar, part of a broader goal to achieve 200 MW of solar energy by 2025. This project is significant as it marks a major step in diversifying Brunei's energy sources away from fossil fuels and aims to reduce greenhouse gas emissions by 20% over the next decade.

- The first on-grid solar PV plant, funded by Mitsubishi Corporation, has a capacity of 1.2 MW and was inaugurated in 2011.
- The government has identified nine potential sites for floating solar panel installations, aiming for a total capacity of 2323 MW by 2035. This innovative approach addresses land limitations while harnessing Brunei's abundant water resources for renewable energy generation.

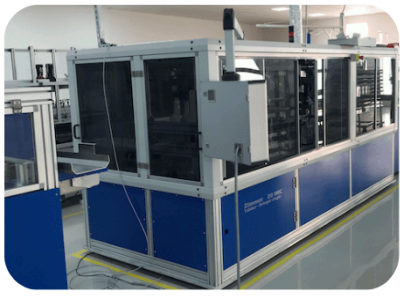
- The Ministry of Energy is planning to implement a PPP model for the construction of new solar plants, which will encourage private sector investment and participation in renewable energy projects.

Notable solar projects in the country (installed and projected)

Hengyi's Solar Project (Project SINAR)
- Capacity: 38 MW (first phase), with a total of 476 MW planned
- Location: Pulau Muara Besar (PMB)
- Details: Launched by Hengyi Industries, this project aims to become Brunei's largest solar installation. The first phase is expected to be completed by April 2025 and will provide energy primarily for Hengyi's refinery.
- Jerudong International School Solar Project
- Capacity: 382.53 kW
- Location: Jerudong International School
- Details: This is Brunei's first rooftop solar project, launched in June 2024. It aims to produce nearly 600000 kWh annually and reduce the school's carbon footprint significantly.
- Brunei Solar PV Park
- Capacity: 30 MW
- Location: Berakas B
- Details: This solar PV project is currently in the announced stage. It will be a ground-mounted installation designed to contribute significantly to Brunei's renewable energy targets.

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

Solarvest Holdings Bhd
- Headquarters: Selangor, Brunei
- Website: solarvest.com
- Details: Solarvest is a key player in Brunei's renewable energy sector, having completed the country's first rooftop solar project at Jerudong International School. Solarvest aims to expand its footprint in the Asia-Pacific region, targeting 200 MW of cumulative projects by FY25.
- Hengyi Industries
- Headquarters: Pulau Muara Besar, Brunei
- Website: hengyi-industries.com
- Details: Hengyi is developing Project SINAR, which will become Brunei's largest solar installation with a planned capacity of 476 MW over three phases. The first phase, set to be completed by April 2025, will generate 38 MW primarily for Hengyi's refinery and contribute to the national grid.
- Brunei Shell Petroleum (BSP)
- Headquarters: Seria, Brunei
- Website: bsp.com.bn
- Details: BSP operates a solar park with a capacity of 3.3 MW near its headquarters. This facility uses approximately 7000 solar panels and is designed to power around 600 households annually.



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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.
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