

Country Assessment Report

Country/Region name:

Brunei is situated in Southeast Asia on an island called Borneo and has a land area of 5,765km² with a population of 460,000 people. Brunei has 161 km of coastline next to the South China Sea, and shares a 381 km border with Malaysian states of Sarawak & Sabah.

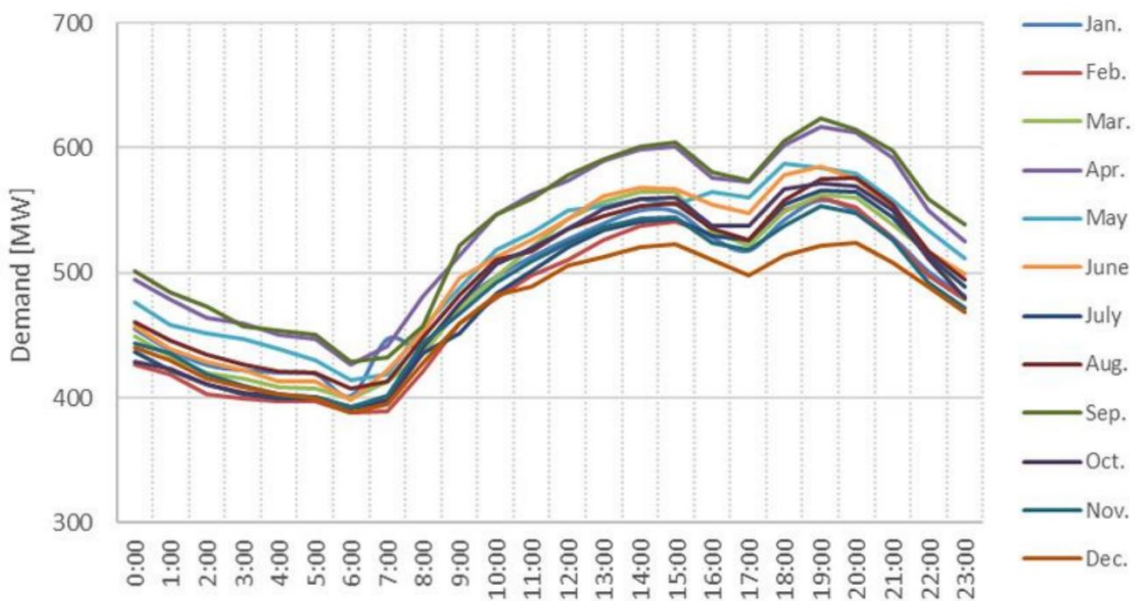
Generation and demand: (type, MW, TWh)

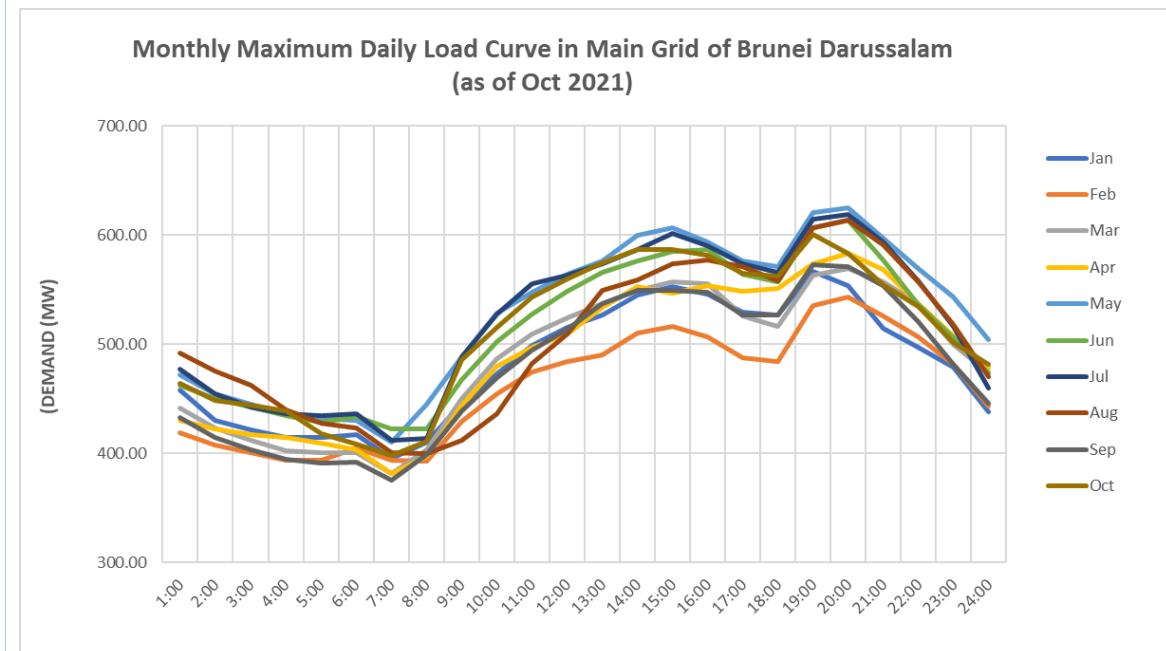
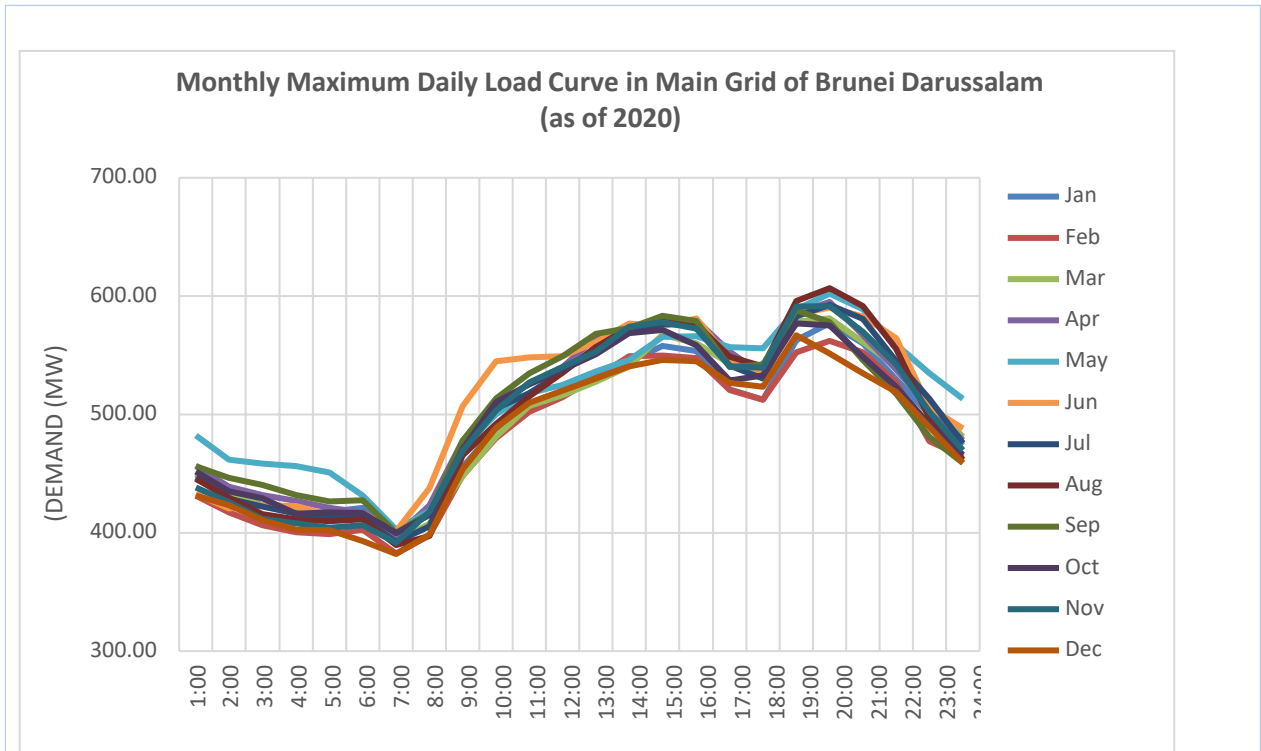
Total Installed Capacity: **893 MW**

- Thermal (Gas): **97.8%**
- Diesel Generator: **1.7%**
- Renewable Source (Solar): **0.55%**

Maximum Demand: **632 MW** (2019), **607 MW** (2020), **629 MW** (2021)

Figure 2.5: Monthly Maximum Daily Load Curve in Main Grid of Brunei Darussalam (as of 2019)





Source: [Link](#)

Electrical interconnection and import/export:

There are two power systems in Brunei Darussalam. The Department of Electrical Services (DES) power system covers the whole country, supervises Temburong district, and comprises four power stations and transmission lines at 275 kV, 132 kV, and 66 kV. However, the current maximum operating voltage is 66 kV. Since some transmission lines were designed at 275 kV and 132 kV, DES is considering operating the transmission network at 132 kV / 275 kV when power demand grows.

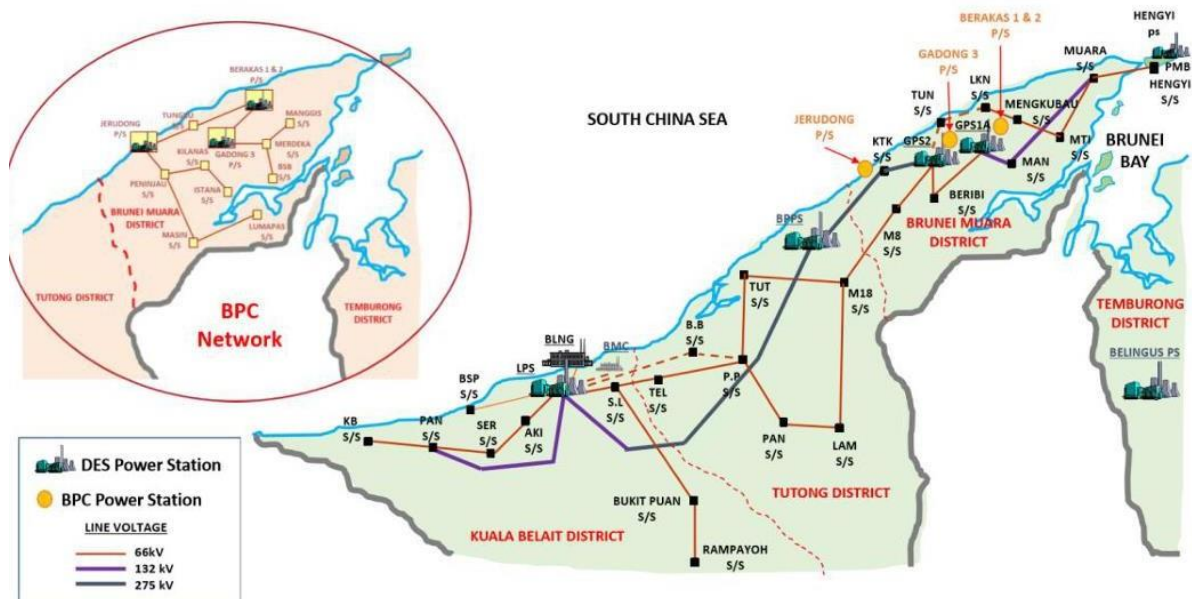
DES operates four power stations: Gadong 1 and 2, Bukit Panggal, Lumut, and Belingus. Gadong 1 and 2, Bukit Panggal, and Lumut power stations use gas thermal power plants and are connected to the main grid. The Belingus power station is in Temburong district and uses a diesel power plant. The total generation capacity is approximately 613 MW. In 2020, Temburong district is powered by two separate electrical grids. Around 2MW of the load in Temburong District is powered from the main grid via an 11kV system through the new built SOAS bridge. The rest of the load in Temburong district is currently powered by one diesel power station. There is a plan to power the whole Temburong district from the main grid electrical system in the future after the completion of a new 66kV networking linking the main grid to Temburong grid.

The other power system is that of the Berakas Power Company (BPC) that covers Brunei Muara district, including Bandar Seri Begawan (BSB), which is a load centre. The BPC power system comprises three power stations and transmission lines at 66 kV. The BPC operates three power stations: Berakas 1 and 2, Jerudong, and Gadong 3 power stations. These power stations use gas thermal power plants whose total generation capacity is about 280 MW.

The DES and BPC power systems are synchronised with a 66kV transmission line.

Brunei does not currently import or export electrical power.

Figure 2.2: Transmission Network of DES and BPC



Source: [Link](#)

Historical support or development of renewables in the country/region:

2010: Tenaga Suria Brunei - 1.2MWp

2021:

- Temburong District Office Rooftop Solar – 100kWp
- Brunei Shell Petroleum Flagship Solar - 3.3MWp
- Berakas Power Company Solar – 191kWp

Electricity market structure:

The Department of Electricity Services (DES) is the government utility in charge of the generation, transmission, and distribution of electricity in the country. The DES also sets the standards for the usage of power in public buildings and oversees their overall electro-mechanical maintenance. The second power generation source in Brunei is from the Berakas Power Company (BPC).

AENBD (Autoriti Elektrik Negara Brunei Darussalam) functions as the regulators to enforce and oversee the implementation of the Electricity Order 2017. AENBD was formed and mandated in June 2017 to enforce and oversee the implementation of Electricity Order 2017, particularly in regulating activities in the country's electricity industry. The move to implement such Order is to strengthen the law and safety aspects of electricity in terms of the generation, transmission, distribution and its use to enable the development of a more efficient, competitive and increasingly sustainable power industry in Negara Brunei Darussalam

There are independent industrial power producers such as the power generation for Brunei Shell Petroleum offshore platforms and the power generation at Hengyi Refinery located on an island (Pulau Muara Besar). These independent producers are not connected to the national grid.

Source: [Link](#)

AENBD Website: [Link](#)

Brunei Electricity Order 2017: [Link](#)

Description of renewables support mechanism:

Net Metering: A programme that allows customers who generate electricity from Solar Photovoltaic (PV) system to export excess electricity back to the national grid and receive credits in return, to offset their electricity bills.

Voluntary Reporting for Renewable Energy (VRRE): Contractors, Project Owners, Owners are encouraged to report their solar PV installations project to the Ministry of Energy. At present, self-reported information on renewable energy is limited to the installation level (i.e. nameplate capacity and fuel type) and as such does not present risks of double counting. The self-reporting form can be downloaded at this [link](#). Source - [Link](#)

Responsible government department: (include key contacts)

Sustainable Energy Division, Ministry of Energy ([Link](#)): Sustainable Energy Division (SED) is a Governmental division responsible for Sustainable Energy Policy Development and the implementation of Renewable Energy and Energy Efficiency & Conservative Initiatives and Programmes in Brunei Darussalam..

Electrical Authority (AENBD), Ministry of Energy ([Link](#)): AENBD was formed and mandated in June 2017 to enforce and oversee the implementation of Electricity Order 2017, particularly in regulating activities in the country's electricity industry. The move to implement such Order is to strengthen the law and safety aspects of electricity in terms of the generation, transmission, distribution and its use to enable the development of a more efficient, competitive and increasingly sustainable power industry in Negara Brunei Darussalam

Department of Electrical Services, Ministry of Energy ([Link](#))

Existing/Planned energy legislation:

Brunei Energy White Paper (2014) is the main energy policy that guides the power sector in Brunei. The Energy White Paper identifies the three strategic goals and four enablers to realise Brunei's energy vision in line with its National Aspiration 2035.

The Electricity Order (2017) is to provide regulation and control of the generation, transmission, distribution, and use of electricity in Brunei.

Brunei National Climate Change Policy (BNCCP) Strategy #4 on Renewable Energy - Increase total share of renewable energy to at least 30% of total capacity in the power generation mix by 2035.

Ensuring smooth transition towards a nationwide adoption and use of renewable energy technologies mainly solar photovoltaic (PV) will be critical to Brunei Darussalam in achieving its NDC. Currently, the renewable energy source comes from a i. 1.2 MW solar PV power plant, Tenaga Suria Brunei ii. 3.3MW Brunei Shell Petroleum Flagship Solar Plan located in Seria, Belait District iii. Various Solar Roof Top Projects statewide and accounting for about 0.55% of the total power generation mix. Solar PV is the most viable option in Brunei Darussalam due to significant solar radiance (sunlight) available throughout the country. The utilisation of renewable energy would further diversify the country's energy mix and reduces reliance on fossil fuels. The Ministry of Energy recently issued a tender for a 30MWp solar installation and are also considering floating solar.

BNCCP Strategy #5 on Power Management - Reduce GHG emissions by at least 10% through better supply and demand management of electricity consumption by 2035.

Reducing GHG emissions contribution from the power sector would be achieved by increasing energy efficiency and conservation at both supply and demand side. Increasing the efficiency in power generation can be done through the reduction of partial load operation, improvement of transmission and distribution losses, implementation of minimum efficiency of 48% for all new power plants, and reduction of gas consumption through the integration of renewable and alternative energy so as to meet domestic power demand. Maximising clean electricity resources to supplement domestic demand encourages an equitable distribution of wealth aid aiming towards a sustainable future.

Source: [Brunei National Climate Change Policy](#), [NDC](#), [Energy White Paper \(2014\)](#) & [Brunei Electricity Order \(2017\)](#)

Environmental legislation for RE:

Brunei has committed to reduce GHG emissions by 20% against business as usual under its NDC.

The BNCCP outlines ten strategies to reduce GHG emissions in Brunei. Among these strategies, Brunei intends to reach a 30% renewable energy penetration in its fuel mix by 2035, impose a carbon price or carbon tax instrument by 2025.

Existing/Planned energy certificate systems: (purpose, extent)

To the knowledge of the authors, there are no national plans to develop a national EAC system.

Extent of engagement with government:

Brunei Shell Petroleum is in communication with the Sustainable Energy Department at the Ministry of Energy to seek support for the establishment of a RECs ecosystem in Brunei. Brunei Shell Petroleum (BSP) is working closely with the I-REC Standard Foundation, including through preparing this report, to ensure national policies on energy and environment are aligned with the I-REC standard.

Response from Government in relation to attribute tracking systems:

A representative from the Ministry of Energy has reviewed the present document. There may be opportunities to engage national entities as a Local Issuer in the future, if installed RE capacity increases and the market grows large enough to justify domestic involvement. However, attribute tracking in Brunei is in early stages, with limited domestic capacity in both the public and private sectors. Issuance will likely be initially carried out by the central issuer, in parallel to capacity building

efforts to define and train a local counterpart to support long-term market growth as peak installed RE capacity grows.

Demand-side market potential or strategic nature of market development:

Anticipated demand for RECs from domestic industries to meet the potential renewable portfolio standard (RPS) or renewable purchase obligation (RPO), and potential appetite from local corporates to use I-RECs for their climate reporting. There are currently no official RPS policies, but national entities have expressed, conversationally, that one may materialize in the future. Brunei is a net exporter of oil and gas with international customers who have committed to net-zero pledges - [Japan](#), [South Korea](#), [India](#). REC is an option to decarbonise Scope 2 emissions in the oil and gas value chain businesses and therefore help reduce the lifecycle emissions associated with the crude or LNG products.

Analysis of political disruptions or market risks:

There are no planned competing systems, and therefore no material risks at this time.

Current environmental reporting in energy:

Voluntary Reporting for Renewable Energy (VRRE): Contractors, Project Owners, Owners are recommended to report their solar PV installations project to the Ministry of Energy. However, reporting is based on installed capacity and not production or consumption volumes, leading to no current risk of double counting with respect to attribute issuance.

Source: [Link](#)

Future Carbon Reporting: Brunei will make it mandatory for industrial greenhouse gas emitters to report their carbon footprint, a move towards combating climate change after the country recorded rising temperatures and the highest number of forest fire incidents in 10 years.

Source: [Link](#)

Analysis of regulatory risks including linkages with carbon markets and support systems:

In the short-term, it is envisaged that the central issuer will perform attribute verification until a suitable domestic counterpart is engaged. In the medium term, the proposed establishment of Carbon Trading mechanism (as per BNCCP [Strategy #6](#)) can support the Brunei REC market for industries.

Local organizations of importance and their opinion on local I-REC market development:

Brunei Shell Petroleum is keen to establish I-REC market in Brunei for own use and to explore further commercially viable applications. Brunei Shell Petroleum has established a renewable energy project (3.3MWp) as part of their Energy Transition journey to support the nation's ambition. This was launched successfully in April 2021.

Any other relevant information:

List of Registered Solar Contractors under the Ministry of Energy: [Link](#)

Guideline on Large Scale Solar PV Connection to Distribution Grid: [Link](#)

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Preparation Date	21 March 2021