Brunei energy storage for resilience

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Brunei Darussalam is an oil and gas-rich country, with more than 90 percent of the total national export is accounted from these alone. The country is one of the largest producers of oil in Southeast Asia and it produced about 111,500 barrels of oil per day on average (2018). Producing about 935,154 MMBtu of liquefied natural gas in 2018 (Ministry of Finance and Economy, 2019), the country is also the fourth largest-producer of liquefied natural gas in the world, and over 90 percent of LNG is exported.

As of 2017, about 68.6 percent of Brunei Darussalam"s total final energy consumption came from oil, followed by electricity at 29.4 percent and town gas at 2.0 percent (APEC Energy Working Group, 2018). Currently, two public utilities generate electricity nationwide: Department of Electrical Services, Ministry of Energy; and Berakas Power Company. Natural gas power stations (Gadong 1A, Gadong 2, Gadong 3, Berakas, Bukit Panggal, Jerudong, and Lumut) generate about 99 percent of the electricity, while the remaining 1 percent comes from diesel power station (Belingus) and solar photovoltaic plant (Tenaga Suria Brunei).

Fossil fuels will continue to remain as the primary energy source in the next few years. Hence the country recognises the need to ensure energy security, as there is increasing complexity and therefore cost in the production of oil and gas. And at the same time, emerging markets on downstream production and the push towards sustainable energy production are on the rise. Looking at the country"s exemplary credentials of reliability and safety, Brunei Darussalam will continue to become a leading upstream producer and growing the downstream industry.

Renewable energy deployment in Brunei Darussalam is still at its infancy - the country currently has only 1.2 MW solar PV plant, Tenaga Suria Brunei located in Seria in Belait District, in addition to other small-scale grid-connected and off-grid solar projects. To attain a 10 percent renewable energy in the power generation mix is a challenge, despite abundance in sunshine with solar radiation of between 4.83 kWh/m2/month to 5.83 kWh/m2/month. Cost is one of the main challenges as citizens are currently enjoying one of the lowest electricity costs due to the abundance of fossil fuels to generate electricity. Therefore there is yet a policy being set up to incentivise residents to install solar panels of their own as grid parity[1] is yet to be reached.

Hydrogen has also been getting a lot of attention globally. Brunei Darussalam"s Energy White Paper also mentioned hydrogen fuel as the future energy source. A Japanese consortium completed the construction of Brunei Darussalam"s first hydrogenation plant located at Sungai Liang Industrial Park, Belait District, and was officially launched by the Minister of Energy, Yang Berhormat Dato Seri Setia Dr Awang Haji Mat Suny Haji Mohd Hussein in November 2019. Since then the plant, operated by the Advanced Hydrogen Energy Chain Association for Technology Development (AHEAD), has shipped 4.7 metric tonnes of hydrogen to Kawasaki in Japan, to test hydrogen energy transportation through conventional shipping methods, as part of a global hydrogen supply chain demonstration project.

Recently, Brunei Darussalam organised a seminar-roundtable on "The Role of Hydrogen in ASEAN Energy Transition" in February 2020. Supported by the ASEAN Committee on Science, Technology and Innovation (ASEAN-COSTI), the aim is to formulate a proposal for regional activities that would jumpstart large-scale hydrogen-based technologies in the region.

Brunei Darussalam may be small in terms of area, with the initiatives mentioned, it still is in a strong position to support the ASEAN region in achieving a collective 23 percent renewable energy in the energy mix by 2025.

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