

Energy priorities in high-performing ASEAN

Context: ASEAN countries are a diverse group of countries at different stages of economic development and with different energy challenges. Some members, like Singapore and Brunei are high electricity consumption markets, while Myanmar and Cambodia are very low consumers and still working to deliver universal access.

Fast economic growth and aggressive electrification efforts will drive higher demand, which is expected to more than double electricity consumption by 2040.¹

The region's current electricity production is over 80% fossil fuels, a trend poised to make ASEAN one of the largest contributors to global warming.² At the same time, ASEAN is also at great risk of the impacts of climate change, with some members poorly equipped to cope with its effects without solving its electrification constraints. Some governments, already faced with financial constraints, will be confronted with additional costs associated with climate change mitigation and adaptation in the future.

The Association of Southeast Asian Nations (ASEAN)

ASEAN is comprised of ten countries in Southeast Asia, is home to over 642 million people and has a combined GDP of US\$ 2.77 trillion. With a robust real GDP growth of 5.3% year-on-year in 2017, the region is an important economic force in Asia and is becoming a driver of global growth.

TABLE 1: ELECTRICITY STATS IN ASEAN³

Country	Access Rate (%)	Consumption (kwh/cap)
Brunei Darussalam	100	8,338
Cambodia	89	424
Indonesia	98	794
Lao PDR	94	714
Malaysia	100	4,714
Myanmar	70	319
Philippines	93	740
Singapore	100	8,664
Thailand	100	2,775
Vietnam	100	1,827

Energy security

All countries seek a secure, continuous and adequate energy supply that is diverse, independent, and self-sufficient. ASEAN faces particular challenges due to limited domestic resources and prevalence of islands, which severely limits grid options.

- Several ASEAN countries are still major producers of coal, oil, or natural gas.
 - Domestic coal will remain available for the next half century, but the depletion of gas reserves is anticipated within the next few decades, and oil reserves will likely be exhausted in an even shorter period.
 - Depletion will increase the exposure of risks to geopolitical uncertainties in securing the supply of energy for the region.
- ASEAN is also rich in renewable energy, particularly solar, wind, hydro and geothermal, although they are unevenly distributed across the region.
 - With its hydro resource, Laos aims to be the battery of Southeast Asia.
 - There is abundant potential for utility scale, land-based wind and solar PV development in many countries such as Thailand and Vietnam, at a range of estimated generation costs.

Energy accessibility

ASEAN made the most progress toward universal electrification of any subregion in Asia-Pacific, but several countries still face significant gaps. Today, only about 10% of the overall ASEAN population remains without access to electricity. However:

- Double that figure remains without access to grid-quality electricity, which constrains economic development.
- Heavily subsidized tariffs complicate efforts to improve access and reliability.
- Geography is a significant challenge. Large portions of the population of Indonesia and the Philippines reside in island communities that are prohibitively costly to connect to a national grid. Mini-grids are required, but they face their own economic and technical challenges.

Energy affordability

Access is only half the battle, because for many even basic subsistence levels of electricity consumption are still unaffordable. Traditionally, subsidies have been the automatic response to ease this burden. As most of the electricity is provided through the fossil fuel power plants, the subsidy is volatile enough, and most of it is also spent on the demand centers in the cities and industries. This has left the poorest and most rural areas with major affordability issues:

- Subsidies are poorly targeted and tend to be channeled to the most advanced regions rather than the population most in need.
- High costs for grid infrastructure development have led to a slow expansion of electrification in remote areas.

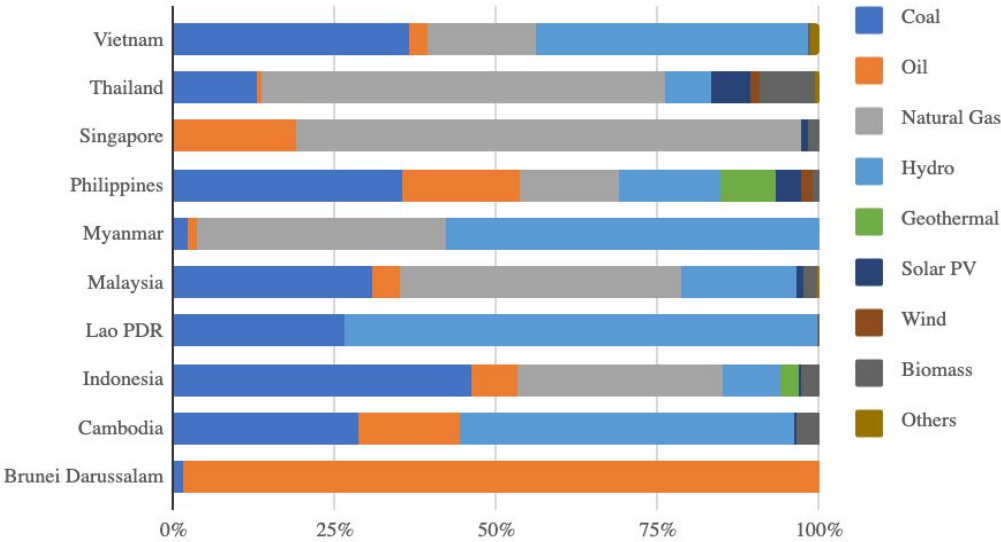
Energy sustainability

The ASEAN Plan of Action for Energy Cooperation (APAEC) for 2016-2025 sets actions on clean energy, including:

1. Reducing energy intensity by 20% by 2020 and 30% by 2025 (based on 2005 level);
2. Increasing renewable energy to 23% of ASEAN's energy mix by 2025;
3. Promoting clean coal technologies;
4. Encouraging civilian nuclear energy.

Conclusion: ASEAN energy priorities reflect the disparate development levels, resources, and geography of its member states. The complexity is further heightened by the coexistence of parallel policy aims relating to different energy types and policy objectives.

FIGURE 1: Power Mix (Installed Capacity) of ASEAN countries in 2017³



Endnotes

1. The ASEAN Centre for Energy (ACE), through the 5th ASEAN Energy Outlook (AEO5) that we released at the 35th ASEAN Ministers' on Energy Meeting (AMEM) in 2017
2. Pathways to Paris: Association of Southeast Asian Nations (ASEAN).
<https://globalchange.mit.edu/sites/default/files/P2P-ASEAN-Report.pdf>
3. ASEAN Electricity Data 2017