Chapter 2

Review of Energy Policies in Surveyed Countries

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Chapter 2

Review of Energy Policies in Surveyed Countries

This report presents the 2022 surveys conducted in Malaysia and Indonesia. This chapter gives background information about the two countries.

1. Malaysia

A previous report (Yoshikawa, 2021) gave an overview of Malaysia's energy and climate situations, but here, for the ease of readers, we present some background materials.

1.1. Energy sector overview

Malaysia is rich in oil, gas, and coal. In 2018, from export of crude oil, liquefied natural gas, and petroleum products, Malaysia earned RM 156,665 million, representing 15.6% of its export economy (Zulkifli, 2020). Malaysia has a significant energy reserve in gas, in terms of energy equivalency measured as four times its crude oil reserves (Zulkifli, 2021). Historically in Malaysia, power generation relied on fossil fuels, namely natural gas and coal.

However, Malaysia also promotes renewable energy, such as hydropower, biomass, and solar (International Renewable Energy Agency (IRENA), 2021b; Zulkifli, 2021), Currently, it is reducing its dependence on fossil fuels and increasing its renewable energy market and infrastructure.

In 2019, Malaysia's electricity generation mix was 42.8% for coal, 40.2% for natural gas, and 0.5% for oil (Suruhanjaya Tenaga (ST), 2020). Renewable energy is mainly hydropower at 14.8%. According to the Energy Commission of Malaysia, four tenders for large-scale solar (LSS) projects were held, in 2016, 2017, 2019, and 2020 (Malaysia Energy Commission, n.d.-a; Richard and Rachel, 2022). In March 202I, the 30 companies of the fourth bidding cycle for LSS were pre-selected. The shortlisted plant capacity was a total of 823.06 MW across two project categories (Malaysia Energy Commission, n.d.-b).

1.2. Government institutions

In 2021, the Ministry of Energy and Natural Resources of Malaysia (KeTSA) adopted the goal of reaching 31% of RE share in the national installed capacity mix by 2025 (Sustainable Energy Development Authority (SEDA) Malaysia, 2021). The Energy Commission and the Sustainable Energy Development Authority (SEDA) are responsible for regulating the implementation of Renewable (Sustainable Energy Development Authority (SEDA) Malaysia, n.d.). The Energy Commission was formed under the Energy Commission Act 2001 (Malaysia Energy Commission, n.d.-c). SEDA came under the Sustainable Energy Development Authority Act 2011 [Act 726](Sustainable Energy Development Authority (SEDA) Malaysia, 2011). Malaysia implemented the SEDA Feed-in Tariff (FiT), and the Energy Commission supports the Net Energy Metering (NEM) schemes, supporting solar photovoltaics as a long-term renewable energy source (Husain et al., 2021).

1.3. Energy sector strategy

As stated in the 12th Malaysia Plan (12MP) (2021–2025), 'The environmental sustainability dimension, amongst others include the blue economy, green technology, renewable energy as well as adaptation and mitigation of climate change'. (Malaysian Administrative Modernization and Management Planning Unit, n.d.) Malaysia aims to achieve 31% renewable energy capacity by 2025 and 40% by 2035 (Malaysian Investment Development Authority, 2021). This target brings Malaysia's global climate commitment to 45% of the 2005 level in 2030, outlining the economy-wide reduction of carbon intensity. This is expected to further drive down the carbon emission intensity in the power sector, to 60% in 2035 (Ministry of Energy and Natural Resources, 2021).

2. Indonesia

2.1. Energy sector overview

Indonesia's population is approximately 250 million people (Damuri, 2017), the fourth largest in the world (Asian Development Bank (ADB), 2020). Thus, Indonesia plays a significant role as a major consumer, as well as a producer, of energy internationally. Indonesia is also the largest economy in ASEAN (Damuri, 2017) and an active member and 2022 chair country of the G20. Indonesia is rich in natural resources. It produces coal, as the fourth-largest producer globally (International Energy Agency, n.d.-b). In Southeast Asia, Indonesia is the

largest gas provider and agriculturally the largest producer of biofuels worldwide (International Energy Agency, n.d.-b). Indonesia's electricity generation by source in 2020 varies by orders of magnitude, starting with coal at 180689.0 GWh, natural gas 50796.0 GWh, hydropower 19454.0 GWh, geothermal 15563.0 Gah, biofuels 13562.0 GWh, oil 7245.0 GWh, wind 473.0 GWh, and waste at 21.0 GWh (International Energy Agency, n.d.-a) (Figure). Indonesia's energy grid generation mix in 2020 (Figure) was 62.81% for coal, 17.64% for natural gas, and 2.52% for oil. Renewable energy amounted to 17.904%, with the breakdown being hydropower at 6.76%, geothermal at 5.40%, and biofuels at 4.71% (Figure). The remainder comprised wind and waste. The national utility, Perusahaan Listrik Negara (PLN), made it a priority to reach 100% electrification by 2024 (Perusahaan Listrik Negara (PLN), 2020). To establish universal access to electricity, Indonesia will extend the existing grid, off-grid, and mini-grid solutions, such as mini hydro and solar technologies, etc. (Asian Development Bank (ADB), 2016).

2.2. Government institutions

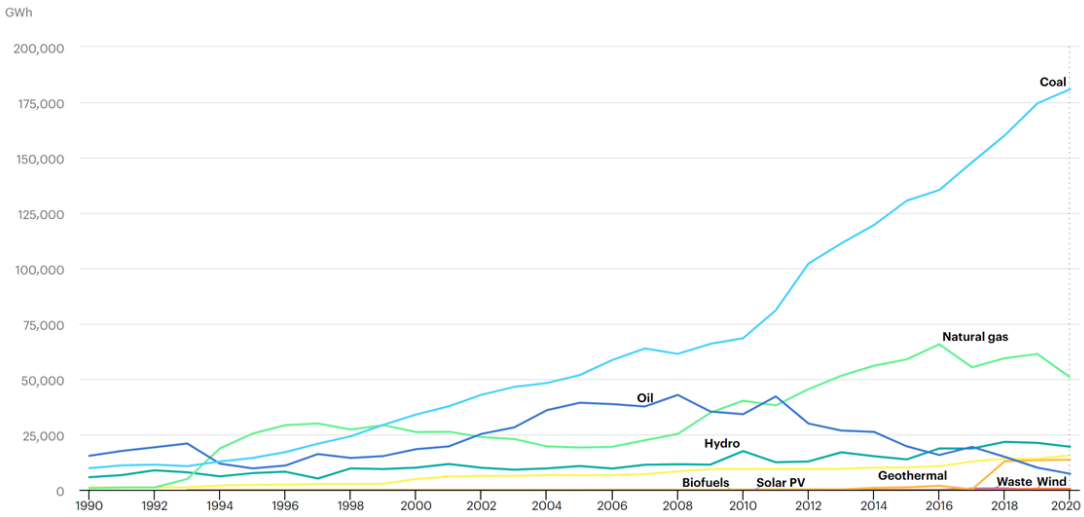
The National Energy Council produces the KEN bringing together seven ministries and energy sector stakeholders. The coordinating body for energy across ministries is the Coordinating Ministry for Maritime and Investment Affairs(Asian Development Bank (ADB), 2020). RPJMN is the guidance of budgetary and government programs in relation to Indonesia's energy policy (Asian Development Bank (ADB), 2020). It is prepared by the Ministry of National Development Planning (BAPPENAS/Badan Perencanaan Pembangunan Nasional).

2.3. Energy sector strategy

The National Energy Policy (KEN/Kebijakan Energi Nasional) (Asian Development Bank (ADB), 2020) 2014 targets a primary energy mix of 23% new and renewable energy by 2025 and 31% by 2050 (Table). The National Medium-Term Development Plan (2015–2019) (RPJMN/Nasional Rencana Pembangunan Jangka Menengah) (Asian Development Bank (ADB), 2020) launched a 35 GW expansion programme (Table), announced in 2015. RPJMN aimed the electrification rate at 81.5% for 2014 and revised it up to 96.6% for 2019 (Table). The Electricity Power Supply Business Plan (2017–2026) (RUPTL, Rencana Usaha Penyediaan Tenaga Listrik) (Asian Development Bank (ADB), 2016) launched by the Indonesian government in conjunction with the state-owned National Electricity Company, PLN, (Asian

Development Bank (ADB), 2020); Organization for Economic Co-operation and Development, 2021) set national targets for 2026, expecting oil to be 0.39%, coal at 50.44%, natural gas at 26.72% and renewable energy at 22.45% (Ministry of Energy and Mineral Resources, 2017) (Table 2.1)). RPJMN (2020–2024) also targets reducing GHG emissions by 27.3% and increasing renewable energy to 23% by 2024 (Table). RUPTL (2021–2030) set the goal for coal to 34%, natural gas to 14% and renewable energy to 51.6 % (Table). RUPTL (2020–2029) set an ambition to achieve a new and renewable energy share of 23% by 2025 and 31% by 2050 (Table 2.2).

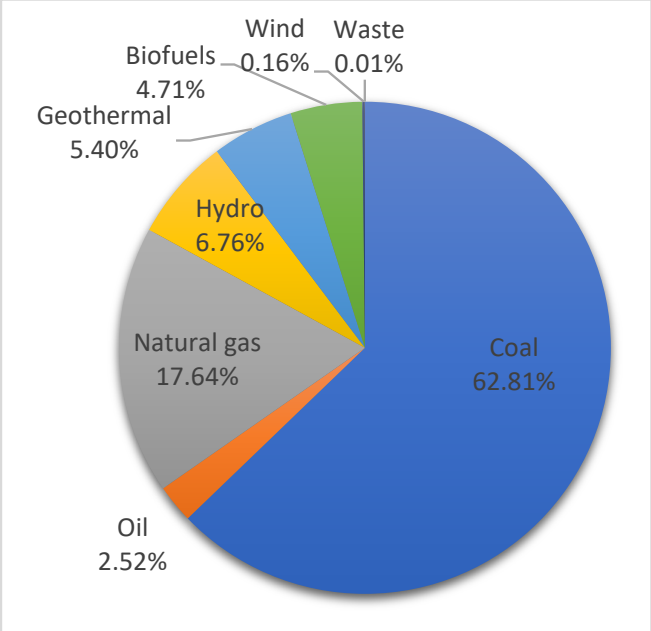
Figure 2.1. Electricity Generation by Source, Indonesia (1990–2020)



PV = photovoltaic.

Source: IEA electricity data browser: (International Energy Agency (IEA), n.d.) (accessed 8 March 2022).

Figure 2.2. Electricity Generation Mix in Indonesia (2020)



Source: charted by the authors based on data from the IEA electricity data browser: (International Energy Agency (IEA), n.d.) (accessed 8 March 2022).

Table 2.1. Renewable Energy Policy Deployment and Development in Indonesia

Plans	Policies, Measures, Targets
National Energy Policy (KEN, 2014)	• Increase share of primary energy from new and renewable sources to 23% by 2025 and 31% by 2050
National Medium-Term Development Plan (RPJMN, 2015–2019)	• Increase generation capacity by approximately 35 GW • Electrification rate from 81.5% (2014) to 96.6% (2019)
Electricity Power Supply Business Plan (RUPTL, 2017–2026)	• Jointly developed annually by Indonesia's central government and state-owned power company, PLN • To 0.39% oil, 50.44% coal, 26.72% natural gas, and 22.45% renewable energy in 2026
National Medium-Term Development Plan (RPJMN, 2020–2024)	• Reduce greenhouse gas emissions by 27.3% by 2024 • Increase share of new and renewable energy from 8.55% (2019) to 23% (2024)
Electricity Power Supply Business Plan (RUPTL, 2021–2030)	• Coal 34%, natural gas 14%, renewable energy 51.6% by 2030

Source: (KYUDENKO, 2019; Ozaki, 2021; PLN, 2021).

Table 2.2. Energy Policies in Indonesia (2019–2020)

Policy Area	Targets	References, Sources
Power	23% share of renewable energy in primary energy supply by 2025 and 31% by 2050 from forthcoming RUPTL 2020–2029.	(International Energy Agency (IEA), 2020)
	The Global Coal to Clean Power Transition Statement; partially excluded the third clause on ceasing issuance of permits and direct government support for, and construction of new unabated coal power plants.	(Kresnawan and Beni, 2022)
	Subsidise household rooftop solar installations as part of its COVID-19 recovery	(UNESCAP, 2021)
Transport	Introduction of the B30 programme to increase biodiesel blends to 30% in gasoil.	(International Energy Agency (IEA), 2020)
	Biofuel blending or incentives as part of its COVID-19 recovery	(International Energy Agency (IEA), 2020)
Nationally Determined Contribution (NDCS)	29% GHG emissions reduction relative to BAU by 2030	(Kresnawan and Beni, 2022)

Source: (International Energy Agency (IEA), 2020), (Kresnawan and Beni, 2022) and (UNESCAP, 2021) ; compiled and edited by the authors.