

Acceleration of Investment in Optimizing Sustainable Utilization of Agro-industrial Waste and Commodities towards Indonesia's Clean Energy Transition

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Indonesia's G20 Presidency is a symbol of the Indonesian government's firm determination and strong commitment to persistently and consistently accelerate the transition towards cleaner energy by emphasising **"Sustainable Energy Transition"** as one of the three main pillars or priority issues being brought up by the Indonesian Government with global leaders and put as a global effort to achieve a cleaner, greener and brighter future for the global community. The Indonesian government realizes that this clean energy transition requires a very large investment for which G20 member countries share a big responsibility to ensure the sustainability of promoting energy financing, increasing green investment, and developing smart & clean energy technology towards the future of a global green economy.

One of the concrete steps taken by the Indonesian government to accelerate the clean energy transition is that the Indonesian Government through the Directorate General of New and Renewable Energy and Energy Conservation – *Direktorat Jenderal Energi Baru dan Terbarukan dan Konservasi Energi* ("EBTKE") – of the Ministry of Energy and Mineral Resources – *Kementerian Energi dan Sumber Daya Mineral* ("MEMR") recently launched a road test of B40 biodiesel (a type of diesel fuel with a mixture of 40% biodiesel) in July 2022 and a test flight of bioavtur (a type of avtur fuel with a mixture of 2.4% biofuel) with the CN-235 Flying Test Bed plane in October 2021. With the success of these trials, Indonesia has become a pioneering country for biodiesel and bioavtur producers and users and will significantly impact the future of the transportation and aviation industries.

Indonesia has a lot more to offer than just biodiesel and bioavtur, but a bioenergy industry as a whole. As a renewable energy source, bioenergy has great prospects and promises to be developed sustainably as an effort to reduce dependence on non-renewable energy usage such as crude oil, natural gas, and coal. It can be seen from the direction of government policies that breakthroughs are occurring in the form of accelerated energy infrastructure development, increased domestic added value, the development of supporting industries for the energy sector, massive New and Renewable Energy ("NRE") development,

and increased energy conservation efforts as set out in Presidential Regulation Number 22 of 2017 on the General National Energy Plan – *Rencana Umum Energi Nasional* ("RUEN").

Bioenergy Utilization

Bioenergy is a renewable energy derived from organic raw materials. Bioenergy raw materials can be divided into two, depending on the source: (1) Energy-Producing Plants devoted to producing biofuel such as: (i) bioethanol (petrol substitute): cassava, sago, sorghum, sugarcane, nipah, sugar palm, lignocellulose; (ii) biodiesel (diesel substitute): palm oil, coconut, jatropha, calophyllum sp., pecan sunan, algae; and (iii) bioavtur (avtur fuel substitute); and (2) Biomass/ Municipal Solid Waste (by-product of business and domestic activities) such as (i) forest biomass, (ii) agricultural waste, (iii) farm waste, (iv) industrial waste, and (iv) municipal solid waste.

Bioenergy raw materials such as palm oil are spread throughout Indonesia in very abundant quantities. According to the Statistics of National Leading Estate Commodity Crops Book 2019 – 2021 by the Directorate General of Plantations of the Ministry of Agriculture, the total area of palm oil plantations in Indonesia as of 2021 is 15,081,021 hectares with a total production of 49,710,345 tons/year, meaning Indonesia has the largest palm oil plantations area and is the biggest palm oil

producer in the world. Both solid and liquid palm oil waste (palm oil mill effluent (POME)) can be developed and converted into biogas and biomass to produce electrical power with a total potential electrical power of 12,654 MW according to a potential data study by EBTKE.

Clean Energy Electricity

As of 2020, the installed capacity of bioenergy power plants is 1,903.9 MW, consisting of Biomass Power Plants 1,767 MW, Biogas Power Plants 120.4 MW and Waste-to-Energy Power Plants 16.5 MW with an on-grid installed capacity of 185.6 MW (independent power producers and excess power) and an off-grid installed capacity of 1,718.3 MW, which is far from the total 56.9 GW overall bioenergy potential. Bioenergy development for electrical power is projected at 5.5 GW in 2025 and 26.0 GW by 2050 or 60% of the bioenergy potential of 56.9 GW as stipulated under RUEN, so that bioenergy can contribute to development as the fourth largest NRE power producer after hydro, geothermal, and solar energy from the total development and production of NRE power at 45.1 GW in 2025 and 167.6 GW by 2050.

Such potential and targets encourage Indonesia to achieve the NRE development plan of at least 23% of the total primary energy mix in 2025 and at least 31% of the total primary energy mix in 2050 and strengthen the Intended Nationally Determined Contribution (INDC) of Indonesia to the United Nations Framework Convention on Climate Change (UNFCCC) for which Indonesia has pledged to reduce Greenhouse Gas (GHG) emissions (mitigation) by 29% compared to Business as Usual (BAU) and with an additional 12% to 41% with international assistance by 2030 towards Net Zero Emissions in 2060.

Market Potential

Its tremendous bioenergy resources and increasing demand for NRE make Indonesia a perfect and attractive country to develop bioenergy power for a promising domestic and international market.

1. National Electric Power Consumption is Dominated by Smelters and Industrial Estates

According to MEMR Decree Number 143 K/20/MEM/2019 of 2019 on the General National Plan for Electricity 2019 to 2038, the projected national electricity demand in 2019 - 2035 is expected to be dominated by the industrial sector followed by the household, business, public, and transportation sectors. This is in line with the growth trend of (1) Industrial Estates – currently there are 126 existing industrial estates and 19 upcoming industrial estates listed as a National Strategic Project; (2) Special Economic Zones – currently there are 18 registered special economic zones;

(3) Smelters – in 2022 there will be 28 smelters and 22 upcoming smelters for nickel, bauxite, copper, and iron sand & vanadium which are listed as a National Strategic Project for 2024; and (4) Transportation – such as Mass Rapid Transit (MRT), Light Rail Transit (LRT) and electric motorized vehicles for which the electricity demand in the transportation sector is expected to be greater than the public sector starting from 2036.

2. Cross-border Electricity Trade: Harnessing ASEAN Power Grid Opportunity

Cross-border electricity trade is a very interesting and attractive market for big players in power production whether Indonesian or foreign companies, especially in contributing to and getting involved in the ASEAN Power Grid (APG) plan.

The ASEAN Power Grid (APG) is a cross-border interconnection network of electricity transmission that aims to effectively use regional energy resources and meet electricity demand in each of the ASEAN countries while reducing CO₂ emissions and increasing NRE utilization.

The total interconnection capacity of the ASEAN Power Grid (APG) is as follows:

Southern System

- 1) P. Malaysia – Sumatera, 600 MW;
- 2) Batam – Singapore, 600 MW; and
- 3) Singapore – Sumatera, to be confirmed.

Eastern System

- 1) Sarawak – West Kalimantan, 230 MW; and
- 2) East Sabah – East Kalimantan, to be confirmed.

Figure 1. ASEAN Power Grid Interconnection Master Plan



Source: Modelling Low Carbon Electricity Generation of an Integrated ASEAN Power Grid by Asia Pacific Energy Research Centre – June 2021

Additionally, the Energy Market Authority (EMA) of Singapore has stated that it is opening up opportunities to import up to 4 GW of low-carbon

electricity by 2035, as part of efforts to decarbonise Singapore's power sector and enhance energy security by diversifying energy supply sources. This is expected to make up around 30% of Singapore's electricity supply in 2035. The Lao PDR-Thailand-Malaysia-Singapore Power Integration Project (LTMS-PIP), which will import up to 100 megawatts (MW) of renewable hydropower from Lao PDR to Singapore via Thailand and Malaysia using existing interconnections was commenced on 23 June 2022. This marks a historic milestone as the first multilateral cross-border electricity trade involving four ASEAN countries, and the first renewable energy import into Singapore.

In Indonesia, cross-border electricity trade is regulated under Government Regulation Number 42 of 2012 on Cross-Border Electricity Trade and MEMR Regulation Number 11 of 2021 on Implementation of Electricity Business which provides that cross-border electricity trade can only be done by Integrated Public Electricity Supply Business License – *Izin Usaha Penyediaan Tenaga Listrik Umum Terintegrasi* (IUPTLU Terintegrasi) – holders fulfilling the following requirements:

- 1) local and regional electricity demand surroundings have been met;
- 2) the selling price of electricity does not contain subsidies; and
- 3) it does not interfere with the quality and reliability of supply electric power in its business area.

3. NRE Business Opportunities in Recent Laws and Regulations: Incentives and other Fiscal and Non-Fiscal Facilities

According to the June 2022 draft version of the NRE Law, a business entity conducting renewable energy businesses, such as: (1) power generation; (2) support of industrial activities; (3) transportation; and/or other activities which can be carried out through (a) industrial development and/or renewable energy facilities; (b) construction of renewable energy supporting facilities; (c) operation and maintenance of renewable energy facilities; (d) storage facilities; (e) renewable energy distribution facilities; and/or (f) renewable energy waste treatment facilities, will be given and provided with support from the central government and regional governments in the form of incentives for ease of doing business such as: (i) fiscal incentives which may be in the form of tax or import facilities; or (ii) other facilities provided by the state in the form of financing or guarantees through state-owned enterprises assigned by the central government.

The central government and/or regional governments are obliged to seek NRE funds to achieve National Energy Policy – *Kebijakan Energi Nasional* targets. NRE funds can be used for:

1. financing NRE infrastructure;
2. financing NRE incentive;
3. compensation for business entities developing NRE;
4. research and development of NRE;
5. increasing the capacity and quality of human resources in the field of NRE; and
6. subsidies for renewable energy price if prices have not been able to compete with non-renewable energy.

Green Financing and Investment

Investment achievements in the field of bioenergy from 2012 to 2019 amounted to USD 0.966 billion. Of this investment, USD 0.671 billion came from investment by biofuel business entities and 0.295 billion USD came from investment by bioenergy power plant developers. The Indonesian government made efforts to attract investors to invest in the bioenergy sector in order to achieve the total investment needed for bioenergy at USD 39.209 million/ year for bioenergy power generation of 38.2 GW and to meet the total investment target for 2022 – 2024 of USD 2.28 billion as mentioned in the 2020-2024 National Medium-Term Development Plan of EBTKE.

Energy Transition Mechanism (ETM): Accelerating NRE Development through Early Retirement of Coal Power Plants

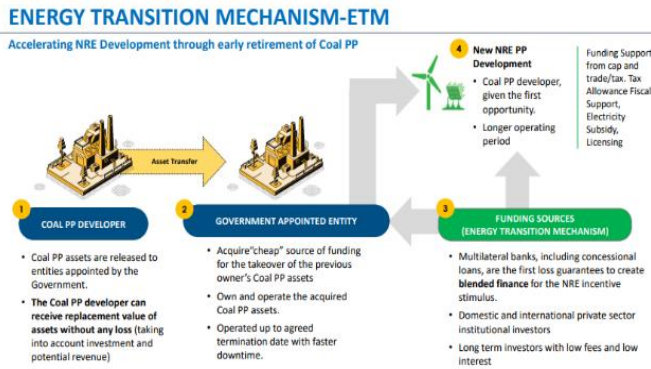
Some Indonesian government efforts to support and facilitate investment acceleration are funding schemes, providing incentives and simplifying licensing, preparing supporting regulations to encourage bioenergy development and technological innovation in the bioenergy sector, including the provision of infrastructure support and fiscal incentives for financing investment.

Additionally, according to the G20 Presidency of Indonesia website, on 15 July 2022, the Indonesian government just recently launched the Energy Transition Mechanism (“ETM”) country platform. ETM itself consists of two schemes. First, the Carbon Reduction Facility (CRF) scheme is used to retire coal-fired power plants (PLTU) in Indonesia early. Meanwhile, the Clean Energy Facility (CEF) scheme is aimed at developing or reinvesting green energy facilities. This mechanism is expected to be a framework that could provide the necessary financing to accelerate the national energy transition by mobilizing commercial and non-commercial funding sources in a sustainable manner.

Indonesia's country platform investment will come from blended finance through PT Sarana Multi Infrastruktur (Persero), a special mission vehicle (SMV) under the Ministry of Finance engaged in

financing and preparing infrastructure projects, including finance from philanthropists, bilateral or multilateral development finance, and climate finance. Some of the sources of financing include the Glasgow Financial Alliance for Net Zero/GFANZ and SDG Indonesia One (SIO) platform.

Figure 2. Energy Transition Mechanism Process



Source: Indonesia's NRE Development in Energy Transition towards Net Zero Emission by Director of Various New Renewable Energy EBTKE – 23 November 2021

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The article above was prepared by Dentons HPRP's lawyers

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