INDONESIA ENERGY KALEIDOSCOPE 2020

Purnomo Yusgiantoro Center

The PURNOMO YUSGIANTORO CENTER

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PREFACE

Greetings from Purnomo Yusgiantoro Center (PYC),

PYC is a nonprofit organization working on providing recommendations and solutions on energy issues, especially in energy security, at the local, national and global levels.

The year 2020 is marked by a fair share of major historical events; for example, the wildly spread of Covid-19 pandemic, the hot debated politic for US election, the Australian bush fire and many more. Covid-19 pandemic, inevitably, got the spotlight for this year in Indonesia and around the world as well. Also, there were other notable events in Indonesia's energy sector, and it is essential for us to feature them as a part of our lesson learned.

"Indonesia Energy Kaleidoscope 2020" provides valuable insights on Indonesia's energy sector dynamic. Through this second Indonesia Energy Kaleidoscope issue, PYC research team has selected twelve major events in Indonesia's energy sector throughout 2020. Those events include renewable energy developments, policy and regulation updates, energy infrastructure developments, energy market and investment progresses, as well as international issues that impacted Indonesia's energy sector.

Similar to other sectors, Indonesia's energy sector faced formidable challenges in 2020. However, there are also new opportunities for future development in the energy sector. Several events show that Indonesia has been working more on shifting to a cleaner energy. The highlighted issues in 2020 show the government's commitment to boost renewable energy utilization by promoting several vital projects such as biofuel, floating solar power plant and waste to electricity plant. At the same time, the government is also working to improve governance in the energy sector to continue to increase investment and utilization of the country's energy resources. All of the efforts are expected to help Indonesia achieving energy security in the near future.

It is clear that the energy transition is inevitable; thereby, it is important for us to face the challenges, adapt, and thrive in this ever-changing industry.

We hope you find this report useful to your discussions and thinking.

Jakarta, December 2020

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Expanding Domestic Palm Oil-based Fuel

Overview

Palm oil-based fuel's development has marked their notable event by the commercialization of B30 in Indonesia. Another notable event will be seemingly accomplished soon based on Government of Indonesia's (GoI) commitment to enhance palm oil-based fuel development to be B100 and D100. This commitment will be a significant step to increase domestic palm uptake and to reduce oil imported activity.

The New Chapter of Palm Based Fuel

The national palm oil-based fuel development has reached a new chapter with the commercialization of B30 at the end of 2019. B30 is a mixture of 70% Diesel with 30% of Fatty Acid Methyl Ester (FAME), the main molecule in biodiesel obtained from vegetable oil through a trans-esterification process. President Joko Widodo symbolically inaugurated the B30 Implementation in Jakarta and marked the official implementation of the B30 mandatory. During the inauguration, he was accompanied by Coordinating Minister for Economic Affairs Airlangga Hartarto, Minister of State-owned Enterprise Erick Thohir, Cabinet Secretary Pramono Anung, Minister of Energy and Mineral Resources Arifin Tasrif, President Director of PT Pertamina (Persero) Nicke Widyawati and President Commissioner of PT Pertamina (Persero) Basuki Tjahaja Purnama.[1] This inauguration took place ahead of schedule than the initial plan, which was planned for early 2020.

This milestone is a long-awaited step since the development of the first palm oil-based fuel in the form of B5 a decade ago. B30 is a continuation of the B20 program launched by the government in 2016, with Indonesia being the first country in the world to implement it. The mandatory B30 further demonstrates GoI's commitment to increase the new and renewable energy (NRE) mix and reduce fossil energy dependence. According to President Joko Widodo, B30 mandatory will not only reduce oil and gas import but also reduce the trade balance deficit. If Indonesia consistently applies B30, he estimated that Indonesia will save around IDR 63 trillion.[2] The B30 mandatory is also expected to generate multiplier effects on oil palm industries, especially when palm oil exports have to face import duties from multiple European countries.

Several parties conveyed positive testimonies regarding the use of B30 in motorized vehicles. Prototype and Test Department Head of PT Isuzu Astra Motor Indonesia, Harmoko Setyawan, claimed the cold start-ability test results with B30 in cold temperature areas, such as Dieng, showed good conditions.[3] However, B30's mandatory is not entirely free from various problems. The Association of Indonesian Automotive (Gaikindo) asked biodiesel producers to pay attention to biodiesel's moisture content, around maximum of 200-250 mg/liter.[4] Chairman of the Indonesian Young Autobus Entrepreneurs

[1] Katadata. Jokowi Resmi Implementasikan B30 Hari Ini. 23 December 2019.
[2] Katadata. Jokowi Sebut Implementasi B30 Bisa Hemat Devisa Hingga Rp 63 Triliun. 23 December 2019.
[3] Katadata. Berbagai Klaim dan Masalah Pemakaian Bahan Bakar B30. 13 February 2020.
[4] Katadata. Gaikindo Minta Produsen Biodiesel Turunkan Kadar Air dalam B30. 5 December 2019

Association (IPOMI), Kurnia Lesani Adnan, also mentioned that the biodiesel's characteristic, which can turn into a gel or coagulate, has not been resolved.[5]

The Next Chapter of Palm Oil-based Fuel

The utilization of palm oil-based fuel in Indonesia is still a noteworthy development object in the future. This development is reflected in GoI's commitment to producing B40, B50, B100 to D100. The terminology B40, B50 and B100 reflect the percentage of FAME mixed with diesel (B50 is a mixture of 50% FAME with 50% Diesel). Even though they came from the same source, D100 is not the same as B100 due to the difference in the formation process (Figure 1).

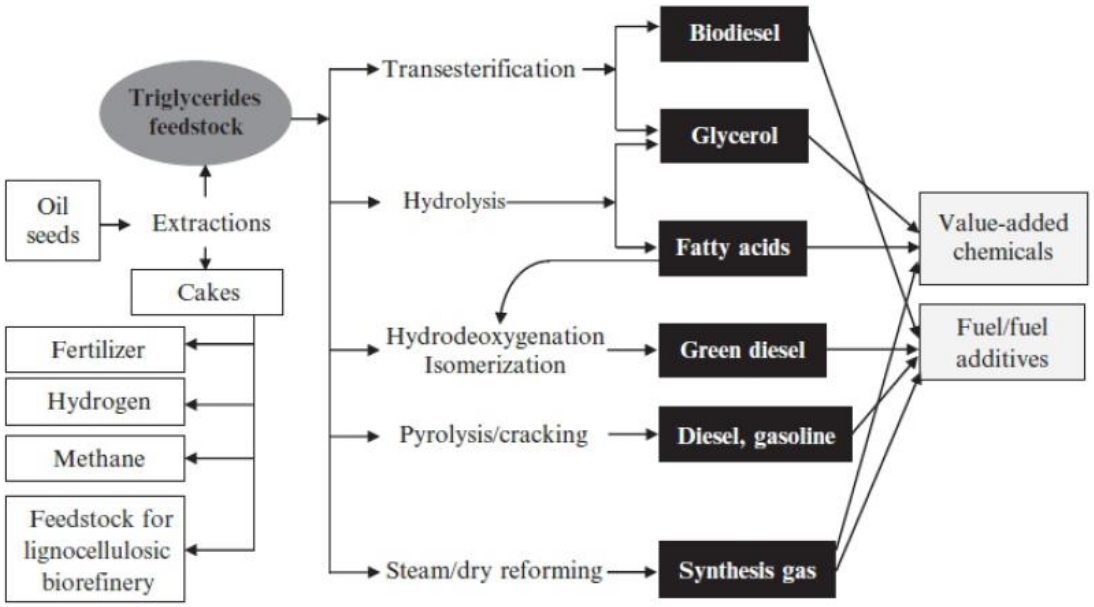

Figure 1. Processing scheme to obtain biofuel and green fuel.[6]

In 2018, PT Pertamina (Persero) had successfully utilized Refined, Bleached and Deodorized Palm Oil (RBDPO), a palm oil derivative product. RBDPO must be processed in Residue Fluid Catalytic Crack Unit (RFCCU) by converting high boiling and high molecular weight of hydrocarbon fraction. This process will produce valuable products such as green gasoline (G100), green diesel (D100), green LPG and green jet fuel (J100).[7] This process is what distinguishes green fuel from biofuel. The number 100 indicates the percentage of RBDPO used to produce these green fuels. Practically, these can be mixed with biofuel and fossil fuel in a respective amount. For example, B20D25 means this fuel is a mixture between 20% biodiesel, 25% green diesel and 55% diesel. Another example, G25, means this fuel is a mixture between 25% green gasoline and 75% gasoline.

GoI has designed the commercialization of B40, B50, B100 and D100. GoI has targeted that the commercialization of B40 and B50 will take place in 2020 and 2021, respectively. The development of B100 also shows promising progress with PT Pertamina (Persero) targeting B100 production to start in 2021.[8] It is in line with the crude palm oil (CPO) processing facility's operation at the Cilacap refinery that has been improved by adding a biodiesel processing facility with a production capacity of 3,000

[5] Katadata. Loc. cit. 13 February 2020.
[6] Kumar, P., Varkolu, M., Mailaram, S., Kunamalla, A., & Maity, S. K. (2018). Biorefinery Polyutilization Systems: Production of Green Transportation Fuels From Biomass. In Polygeneration with Polystorage for Chemical and Energy Hubs.
[7] Margenta. Green Fuel for Green Indonesia. 27 June 2019
[8] Katadata. Baru Implementasi B30, Pemerintah Tancap Gas Terapkan B40 Tahun Depan. 23 December 2019

barrels of oil per day (BOPD).[9] The development of the D100 should also be highlighted. This product, which is a result of a collaboration between PT Pertamina (Persero) and Institut Teknologi Bandung, has completed the trial of 100% RBDPO processing and produced 1,000 barrels of D100 per day. This trial was carried out at the existing Dumai Refinery facility. PT Pertamina (Persero) then targets 20,000 BOPD of D100 production at the Plaju Refinery.[10] Furthermore, PT Pertamina (Persero) also targets the production of green gasoline and green jet fuel. The D100 development is targeted to absorb up to a minimum of 1 million tonnes of palm.[11]

In realizing this target, PT Pertamina (Persero) expects the implementation of Domestic Market Obligation (DMO) of palm to guarantee its availability at an affordable price. It is based on the future projection of palm oil demand that is likely to rise. Currently, GoI is still considering the opportunities for implementing the DMO. The palm oil DMO policy must be carefully calculated as it potentially reduces the national income from CPO exports. The GoI also needs to conduct supply chain analysis to maintain CPO price stability before the palm oil DMO policy is enacted.[12]

The Challenge on Palm Oil-based Fuel Expansion?

The development of palm oil-based fuel is inseparable from various obstacles, both internally and externally. The COVID-19 outbreak that hit the entire world, including Indonesia, impacted the reduction of FAME absorption rate and biodiesel consumption. The Director-General of Renewable Energy and Energy Conservation, Ministry of Energy and Mineral Resources (MEMR), FX Sujiastoto, explained that the government initially targeted the absorption volume of FAME to reach 9.6 million kiloliters. When the pandemic hit, the absorption target was reduced to 8.3 million kiloliters.[13] The application of large social distancing also signified reducing transportation intensity, impacting the lowering of biodiesel consumption by up to 8%.[14]

The COVID-19 pandemic also hindered the trial of the B40 program. In August 2020, the B40 study successfully entered the 1,000-hour engine endurance test phase on the engine test bench. The Head of Research and Development of MEMR, Dadan Kusdiana, explained that this research continues the successful application of B30. However, he highlighted the B40 test run was still delayed due to the COVID-19 pandemic. He also predicted that all series of endurance tests will be completed in November.[15]

Future expansion of palm oil-based fuel also establishes additional rejection from environmentalists who believe the forestry sector will be harmed at greater level. Greenpeace reported that 30% of Indonesia's land fires occured in industrial plantation forest concessions and oil palm plantations. Greenpeace's released data showed that 4.4 million hectares of land had been burned during the 2015-2019 period, with an area of 1.3 million hectares in concession areas for industrial plantations and palm plantations.[16] If this condition worsens, Indonesia's air quality will be in danger and generate more significant damage to health and social life. Apart from the environmental impact, the D100's

[9] Katadata. Pertamina Produksi B100 di Kilang Cilacap Mulai Tahun Depan. 1 July 2020
[10] Kontan. Uji Coba Sukses, Pertamina Rencanakan Produksi Green Diesel. 15 July 2020
[11] Kontan. Kembangkan B100, Jokowi pastikan akan serap 1 juta ton sawit. 14 August 2020
[12] Kontan. Kementerian ESDM Masih Kaji Beberapa Aspek Terkait Rencana Penerapan DMO Kelapa Sawit. 27 October 2020.
[13] Katadata. Terimbas Covid-19, Target Serapan FAME Turun Jadi 8,3 Juta kiloliter. 28 July 2020.
[14] CNBCIndonesia. Dihantam Pandemi Covid-19, Konsumsi Biodiesel Lesu. 30 July 2020.
[15] Detik. Biodiesel B40 Masuk Uji Teknis, Target Rampung Akhir 2020. 27 August 2020.
[16] Kontan. Greenpeace: 30% Kebakaran Lahan Indonesia Terjadi di Hutan Industri dan Kebun Sawit. 22 October 2020.

development has yet to find a breakthrough regarding its economic value due to high production cost and production complexity.

Despite the COVID-19 pandemic that has struck the entire world, the GoI needs to be committed to palm oil-based fuel development. The development of palm-oil based fuel holds great potential to reduce oil imports activity and save national income. The government also needs sustainable planning that considers growth in supply, growth in demand and the impact on the environment. Emphasizing the oil palm moratorium should be urged. A further and firm action is also needed against businesses that violate the moratorium. GoI also needs to consider enacting supporting policy, which will encourage both economic aspect and sustainable development.

Indonesia's First and Largest Floating Solar Power Plant PPA

Overview

In January 2020, PT Pembangkitan Jawa Bali Investasi (PJBI), a subsidiary of PT PLN, and Masdar, an United Arab Emirate (UAE) energy company, signed a historical Power Purchase Agreement (PPA) to develop Indonesia's first floating solar power plant (FSPP). PT PJBI claimed that the power plant will be the largest floating power plant (PP) in Southeast Asia once fully operated.[1] It will have a total capacity of 145 MW. The FSPP will be installed on Cirata Reservoir in West Java, as in the same location as Cirata Hydro Power Plant.

The Chronology of Cirata FSPP Initial Development

The Cirata FSPP is a part of UAE's interest to put more investment in Indonesia. In 2017, Indonesia and UAE held a bilateral meeting to explore investment possibilities in Indonesia. In the meeting, UAE highlighted that solar energy is one of the UAE's investment interests, besides oil & gas, ports, real estate, food, and agriculture.[2] UAE has significantly expanded its solar energy portfolio, both in domestic and international solar energy investment, in the last few years.[3] Those UAE's interest and portfolio in solar investments match with Indonesia's ambitious target to increase renewable energy (RE) contribution to 23% by 2025.

Following from the bilateral meeting, Masdar and PJBI sealed a partnership commitment with a Memorandum of Understanding (MoU) on the Development of Renewable Large Scale Power Projects in Indonesia. The initial plan was to develop a 200 MW FSPP with a total investment of USD 180 million.[4] Feasibility and grid-connection studies were conducted and finished by the end of 2017.[5]

Masdar had to undergo a direct selection process for solar PP development tender, as regulated by the MEMR regulations No. 50/2017. Until 2019, eight Independent Power Producers (IPPs), including Masdar, submitted a tender proposal.[6] However, Masdar had a "right-to-match" privilege to match the winning bid for winning the tender. The right-to-match privilege was given because Masdar joined the tender as a part of a government-to-government (G2G) partnership.

In 2020, Masdar, PJBI, and PT PLN signed a power purchase agreement (PPA). PT PLN will pay 5.8 USD cent/kWh for the electricity from Cirata FSPP.[7] In the PPA signing event, PLN strategic procurement 1 Director, Sripeni Inten Cahyani, expected to have a financial close in 2020 and start the construction in 2021. Financial closing is a challenging step for IPPs because many RE IPPs failed to reach financial close even after two years.[8] Meanwhile, the planning for Cirata FSPP's development will take two construction stages. The first stage will have a 50 MW capacity. The second stage will

[1] PJBI. PPA signing PLTS Apung Cirata (145 MWAC). January 2020.
[2] TheJakartaPost. UAE wants to invest more in Indonesia. 19 May 2017.
[3] IRENA. Renewable Energy Market Analysis GCC. PV Magazine. Masdar to Build 145 MW of Floating PV in Indonesia.
[4] InsiderStories. Masdar, PLN Ink Deal to develop 200 MW floating solar power. 29 November 2017.
[5] Liputan6. Pembangunan PLTS Cirata Melambat. 9 November 2018.
[6] Kontan. Delapan IPP bersaing kembangkan PLTS Cirata. 4 July 2019.
[7] TheJakartaPost. UAE's Masdar to support development of Indonesia's largest solar power plant. 8 January 2020.
[8] TheJakartaPost. Dozens of renewable energy projects yet to receive financing. 15 July 2019.

increase its capacity to 145 MW by 2022 in the second stage. In July 2020, a consortium of Masdar and PJBI made a special purpose company, PT Pembangkitan Jawa-Bali Masdar Solar Energi (PT PMSE), for the Cirata FSPP project.[9]

Potential and Trend of SFPP in Southeast Asia and Indonesia

Institute for Energy Economics and Financial Analysis (IEEFA) found a growing trend of large-scale FSPP installations in the Asia-Pacific region. In ASEAN countries, the number grew dramatically from under 1 MW before 2019 to almost 900 MW FSPP installed and planned in July 2020 as seen in Figure 1.[10] The number in 2020 includes the 145 MW planned capacity of Cirata FSPP. According to the IIEFA report, the prime reason for the growth is FSPP's advantages to tackle the land scarcity issue and to connect to the existing grid.

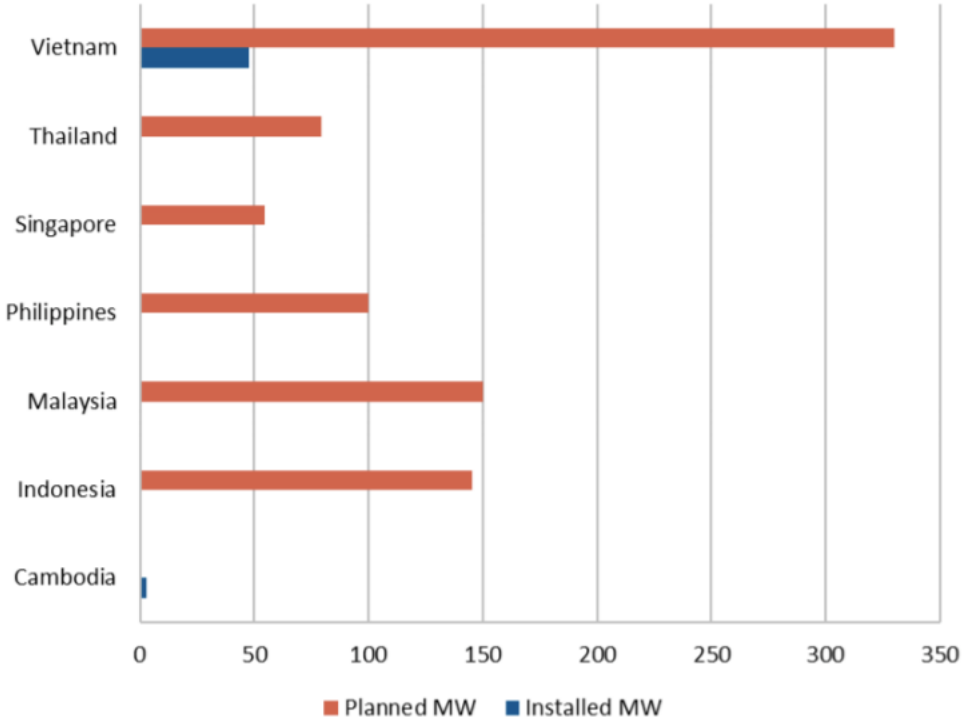

Figure 1. Planned and installed FSPP capacity in ASEAN countries.[11]

Meanwhile, Indonesia's MEMR also sees FSPP as one of the keys to boost solar energy utilization and to achieve Indonesia's 23% RE contribution by 2025. As seen in Table 1, MEMR predicts a potential of 2 GWp from FSPP in Indonesia.[12] Moreover, MEMR currently observes at least six reservoirs and one lake for a potential capacity of 857 MWp FSPP.[13]

[9] Kontan. Cari pendanaan, PLTS Cirata targetkan financial closing kelar pada Mei 2021. 22 Agustus 2020.
[10] IEEFA. Volts from the Blue—Is Combined Floating Solar and Hydro the Energy Solution for ASEAN? 2020.
[11] Ibid.
[12] Ministry of Energy and Mineral Resources. Kebijakan, Regulasi dan Inisiatif Pengembangan Energi Surya di Indonesia. 2019.
[13] MEMR. Pengembangan Energi Baru Terbarukan. 2020.

Table 1. Solar power plant potential per cluster in Indonesia.[14]

No.	Cluster	Potential (MWp)
1	Electricity Supply Business Plan (RUPTL)	904.00
2	Mining	89.00
3	Oil and Gas	6.50
4	Capture Fishery	721.26
5	Fishery	983.50
6	Tourism	385.00
7	Solar Rooftop	2,981.50
8	Operating Area, Special Economic Zone, Industry Zone	1,508.00
9	Floating Solar PP	2,207.30
10	Lagged Region (Daerah Tertinggal)	1,042.31
11	Transportation	104.75
12	Telecommunication	2.42
13	Health	13.40
Total		**10,948.94**

A Regulation Barrier to Install FSPP on the Reservoir has been Eliminated

One of the critical enablers for developing FSPP in Indonesia is enacting the new Ministry of Public Works and Public Housing (MPWH) Regulation No. 6/2020.[15] This regulation amended previous MPWH Regulation No. 27/2015 on Reservoir. Previously, the MPWH Regulation No. 27/2015 limited reservoir activities to tourism activities, sports activities, and aquaculture.[16] Meanwhile, its amendment gives a clear statement to eliminate legal ambiguity on the installation of FSPP on a reservoir, and thereby, the MPWH Regulation No. 6/2020 permits the installation of FSPP in a reservoir.

Table 2. Comparisons of old and new MPWH regulation on reservoir (processed by PYC)

Content	MPWH Regulation No. 27/2015	MPWH Regulation No. 6/2020
Utilization limit of reservoir water surface	a. tourism activities b. sports activities c. aquaculture	a. tourism activities b. sports activities c. aquaculture d. FSPP
Maximum area for FSPP	not specified	Maximum 5% of the Reservoir's surface area at a normal level
FSPP Location and design	not specified	should support water quality management
FSPP Layout	not specified	• not disturb outflow and intake buildings • should consider the bathymetry measurement path.

Table 2 above highlights the differences between MPWH Regulation No. 27/2015 and the new MPWH Regulation No. 6/2020. The MPWH Regulation No. 6/2020 allows only a maximum of 5% of the

[14] Ministry of Energy and Mineral Resources. loc. cit. 2019.
[15] Ministry of Public Works and Public Housing (MPWH) Regulation No. 6/2020.
[16] Ministry of Public Works and Public Housing (MPWH) Regulation No. 27/2015.

Reservoir's surface area at a normal level to be utilized for FSPP. Data from PT PLN, the development of Cirata SFPP will only occupy an area of 2.74% of the Cirata reservoir. Thus, the design for Cirata SPFPP is still under the limit stated in the MPWH Regulation No. 6/2020.

Untaping the Potential of FSPP in Indonesia

The enactment of MPWH Regulation No. 6/2020 and historical Cirata FSPP's PPA signing created a momentum to untapped the FSPP potential in Indonesia.

FSPP reduces the land scarcity issue in developing a large-scale power plant. Moreover, Cirata FSPP, which combines hydro PP and solar PP, provides a technical advantage. The combination cuts the need to build a new transmission line.[17] A combination of hydro-solar PP could be replicated to exploit FSPP potential on the other reservoir in Indonesia. However, FSPP installation on a water surface, including a reservoir, lake, or river, should consider the ecosystem in and on the water.

Finally, the enactment of the new presidential regulation and law to revise the current renewable PP pricing scheme needs to be accelerated to boost Indonesia's future renewable investments.

[17] IEEFA. loc. cit.

Elimination of BOOT Accelerates Renewable Energy Development and Utilization

Overview

In 2017, Government of Indonesia (GoI) enacted MEMR Regulation No. 50/2017 on Utilization of Renewable Energy for Power Supply,[1] which regulated the tariff regime for renewable energy (RE). The MEMR Regulation No. 50/2017 was then amended with MEMR No. 53/2018[2] and again, this year, for the second time with MEMR Regulation No. 4/2020. On 24 February 2020. The key highlight in this new regulation is elimination of the build, own, operate and transfer (BOOT) scheme, which received many criticisms from the RE power plant developers in Indonesia. The BOOT elimination gives positive signals for the RE investment and development in Indonesia in the future.

Changes in the New Regulation

MEMR Regulation No. 50/2017 served as the basis for RE selling price in Indonesia. It regulates the selling price of RE based on the cost of generation (BPP), including the build, own, operate and transfer scheme for the independent power producers (IPP). The following Table 1 summarizes key information on MEMR Regulation No. 50/2017.

Table 1. Renewable energy pricing regulated in MEMR Regulation No. 50/2017.[3]

<table>
<tr><th rowspan="2">Renewable Energy Resource</th><th rowspan="2">Procurement Mechanism</th><th colspan="2">Areas where</th><th rowspan="2">Form of Investment</th></tr>
<tr><th>Regional BPP < National BPP</th><th>Regional BPP > National BPP</th></tr>
<tr><td>Solar & Wind</td><td>Direct selection with capacity quota</td><td rowspan="4">Negotiated between IPP and PLN</td><td>Maximum 85% of regional BPP</td><td>BOOT</td></tr>
<tr><td>Hydro, Biomass, Biogas, & Ocean Energy</td><td>Direct selection</td><td rowspan="3">Maximum 100% of regional BPP</td><td>BOOT</td></tr>
<tr><td>Waste to Energy[a]</td><td>Direct appointment by the local government</td><td>Not specified</td></tr>
<tr><td>Geothermal</td><td>Direct appointment where resources are proven</td><td>BOOT</td></tr>
</table>

[1] Minister of Energy and Mineral Resources No. 50/2017.
[2] Minister of Energy and Mineral Resources No. 53/2018.
[3] ADB. Renewable Energy Tariffs and Incentives in Indonesia: Review and Recommendations. September 2020.

Biofuel PP	Direct selection		Negotiated between IPP and PLN	**BOOT**

BOOT = build–own–operate–transfer, BPP = production cost, IPP = independent power producer. a Presidential Regulation (PR) No. 35/2018 stipulates feed-in tariffs for 12 cities, some of which are higher than BPP. ·The BOOT scheme has been replaced with BOO scheme in MEMR Regulation No. 4/2020.

The enactment of MEMR Regulation No. 4/2020[4] receives many positive comments from the stakeholders, on how it can potentially accelerate the RE development in Indonesia. In principle, there are five main updates to MEMR Regulation No. 50/2017[5]:

- **The possibility for direct assignment with specific requirements.** This option for the direct appointment can be done if there is (a) an emergency in local electricity supply, (b) excess power, (c) addition of power plant capacity, (d) only one available supplier, or (e) PLTA that has received a location permit from the local government.
- **The adjustment of BOOT into BOO scheme.** Since the enactment of MEMR Regulation No. 4/2020, the cooperation scheme in a power purchase agreement (PPA) is in accordance with an agreement between parties, referring to the agrarian law. Whereas, PPA that was signed before the enactment of MEMR Regulation No. 4/2020 using the BOOT scheme can be adjusted to the BOO scheme.
- **Arrangement of PLTA from reservoir/irrigation built by the Ministry of Public Works and Public Housing (MPWPH).** The direct appointment for assignment to purchase the power from the PLTA from reservoir/irrigation built by MPWPH is regulated.
- **Assignment for PT PLN from the Minister of Energy and Mineral Resources to purchase power from PLTSA developed by IPPs appointed by the local government.** The IPPs are apart from the 12 cities that were appointed according to PR No. 35/2018.
- **Assignment for PT PLN to purchase power from RE power plants that are partly/fully financed by grants/government's funds, except the MEMR budget.** Decision-makers of institutions/governors/regents/mayors propose to the Minister of Energy and Mineral Resources to assign this power purchase.

Even though there are many substantial updates in the new regulation, the regulation does not mention RE pricing mechanism. The RE selling price is still based on BPP. Therefore, a more specific regulation regarding RE pricing is needed. This is because there are three key drawbacks from using BPP as the benchmark price: 1) BPP does not reflect the true cost; 2) BPP is based on the past record and does not necessarily reflect the future cost; 3) BPP neglects the positive externalities obtained true RE utilization, such as cleaner air.[6]

Therefore, after the enactment of the new MEMR Regulation No. 4/2020, following draft of Presidential Regulation (PR) on RE pricing is formulated. The PR will regulate the pricing mechanism for the RE specifically, depending on the RE source and its capacity. There are four RE selling price schemes governed in this PR on RE pricing. The following Table 2 summarizes the planned four pricing schemes for the RE formulated in the PR for RE.[7]

[4] Minister of Energy and Mineral Resources Regulation No. 4/2020.
[5] Ditjen EBTKE. KESDM. Lima Pokok Perubahan Kedua Permen ESDM Nomor 50 Tahun 2017. 18 March 2020.
[6] ADB. Loc.cit.
[7] Katadata. Perpres EBT Terus Digodok, Pemerintah Pilih Empat Skema Harga Listrik. 13 July 2020.

Table 2. Four pricing schemes for the RE in the new regulation.[8]

Pricing Schemes for RE	RE sources*
Feed-in-tariff (FiT)	• PLTA, PLTS, PLTB and PLTS, as well as PLTB expansion of which maximum capacity is 20 MW • PLTBm and PLTBg including expansion projects or excess power with a maximum capacity of 10 MW
Offering price	• PLTS and PLTB with capacity more than 20 MW • PLTBm and PLTBg with capacity more than 10 MW
Highest benchmarked price	The highest benchmarked price is only applicable for PLTP
Agreed price	• PLTA, PTLS, and PLTB with capacity more than 20 MW • PLTA peaker or expansion project and excess power selling for all contracted capacity • Expansion project dan excess power of PLTBm and PLTBg with capacity more than 10 MW • Biofuel-based power plant and ocean energy

*PLTA = hydropower plant; PLTS = solar power plant; PLTB = wind power plant; PLTBm = biomass power plant; PLTBg = biogas power plant; PLTP = geothermal power plant

In addition to the RE source types and capacity, the selling price of RE also considers the power plant's location. This location factor is divided into nine groups with a value ranging from one to two. A higher location factor value is given for the more eastern part of Indonesia and small remote islands.[9]

Furthermore, electricity generated from RE is sold at a higher price in the early stage of the power plant operation, within 12-15 years. Then, the selling price will be lower until the end of the contract, of which the length of contract is usually around 30 years.[10]

Moving Forward after the Enactment of MEMR Regulation No. 4/2020

GoI is lagging in its aim to increase RE in the national energy mix. One key reason is that Indonesia needs more investments from the IPPs, and yet, they are reluctant as it is unattractive from the IPPs' financial perspective.[11]

To this end, some policies are formulated and enacted to foster RE utilization and to decrease carbon emissions.

The shifting from BOOT to BOO is a plausible step to attract more investment. The obligation to transfer in the previous MEMR regulation No. 50/2017 hampered the IPPs from gaining access to a

[8] Ibid.
[9] Ibid.
[10] Ibid.
[11] Tempo. Pengusaha Energi Terbarukan Keluhkan Skema BOOT ke JK, Kenapa? 22 December 2017.

loan for developing their project, as the project was deemed unbankable with BOOT scheme. Hence, now IPP could gain better access to a loan for developing RE projects with the BOO scheme.

GoI also targets to change all the diesel power plants (PLTD) in the next three years. One strategy that will be adopted is through biomass co-firing.[12]

Nonetheless, even with the enactment of MEMR Regulation No. 4/2020, it cannot guarantee that the selling price of electricity produced from RE developers fit the PLN's willingness and/or capability to pay considering the PLN's financial health.

To this end, taking into consideration RE developer's and PLN's financial health, affordability of tariff electricity, when there is a gap between RE's supply cost and PLN's purchase price, the most feasible option is through subsidy. The subsidy itself could take many forms: subsidized loans, fiscal incentives, indirect subsidies, direct subsidies to individual RE projects, or direct subsidies to PLN. These subsidies can be considered based upon their effectiveness scaling-up potential and feasibility. The subsidy can be adopted to close the gap between RE's cost and PLN's purchase price.[13]

Overall, the RE development in Indonesia is progressing in a better direction. However, there is still lots of room for improvement, especially related to the pricing mechanism, to boost IPP's investment in the RE power plant. The support and appropriate policies from GoI is urgently needed to ease the transition towards the development and utilization of more RE.

[12] Ibid.
[13] Katadata. Perpres EBT Terus Digodok, Pemerintah Pilih Empat Skema Harga Listrik. 13 July 2020.

Potential State Losses from the Government's PLTSa Projects

Overview

Indonesia is currently experiencing a waste emergency, with an estimated waste volume of 64 million tons per year.[1] Moreover, the government is now trying to increase the share of new and renewable energy (NRE) in the energy mix to 23% by 2025. As a solution for these two issues, the government planned to build a waste-to-electricity plant (PLTSa) in Indonesia's 12 major cities. However, the Corruption Eradication Commission (KPK) found indications of state losses over the PLTSa project. Therefore, the KPK advised the government to revise Presidential Regulation No. 35/2018[2] to allow the waste being processed into other energy products.

What is PLTSa?

PLTSa produces electricity by burning the municipal solid waste (MSW), often called garbage or trash, to produce steam that is used to rotate the turbine.[3] MSW contains 1) Biomass or biogenic (plant or animal products) materials such as paper, cardboard, food waste, leaves, wood and leather products. 2) Nonbiomass combustible materials such as plastics and other synthetic materials made from petroleum. 3) Noncombustible materials such as glass and metals.[4] The electricity generation process is quite similar to how a coal power plant (PLTU) works. PLTSa also produces side products such as fly ash and bottom ash that need to be treated to minimize pollution (Figure 1).

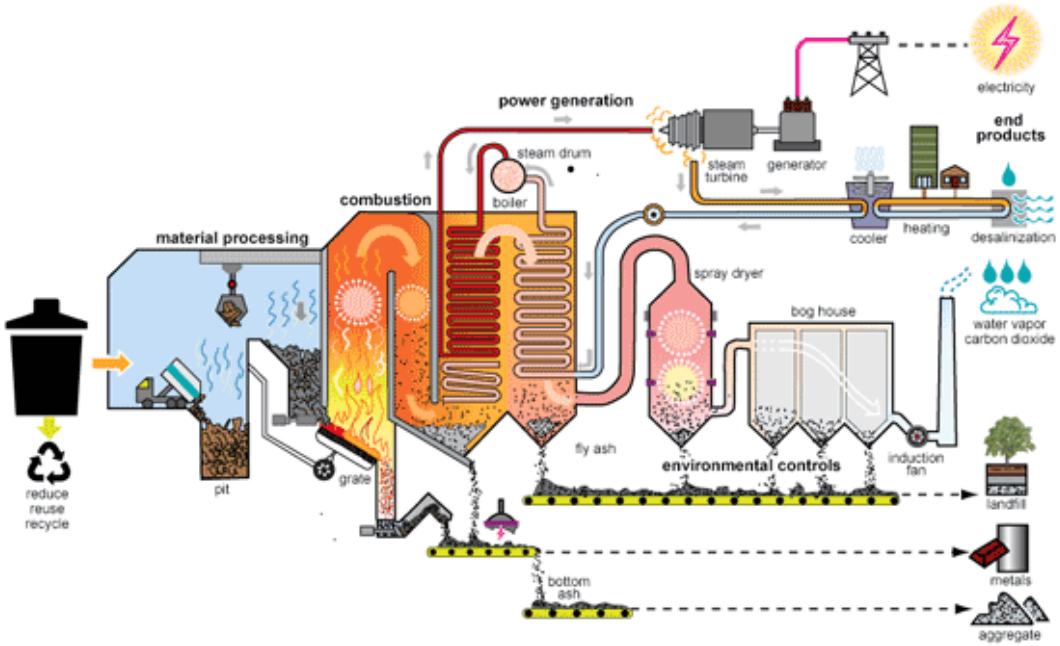

Figure 1. Working principle of a PLTSa.[5]

[1] KPK. KPK Bahas Kajian PLTSa dengan Kementerian ESDM. 6 March 2020.
[2] Presidential Regulation No. 35/2018.
[3] EIA. Biomass explained Waste-to-energy (Municipal Solid Waste). 6 February 2020.
[4] Ibid.
[5] Ibid.

Indonesia classifies PLTSa as NRE, which means that PLTSa plays a role in achieving the country's 23% NRE target in the 2025 energy mix. However, some still argue about categorizing PLTSa as an NRE due to the presence of fossil-based carbon in the waste, such as plastic, in PLTSa's process. Regardless, PLTSa is one of the solutions for waste management that has been used in many countries since many years ago.

Why PLTSa?

As mentioned before, PLTSa is one of the solutions for waste management. Many countries use PLTSa to burn waste to reduce the amount of material that would probably be buried in landfills while, at the same time, they harvest energy from the burning process. Burning MSW reduces the volume of waste by about 87%.[6] PLTSa is widely used in Japan and some European countries due to the limited open space for landfills in those countries (Figure 2).

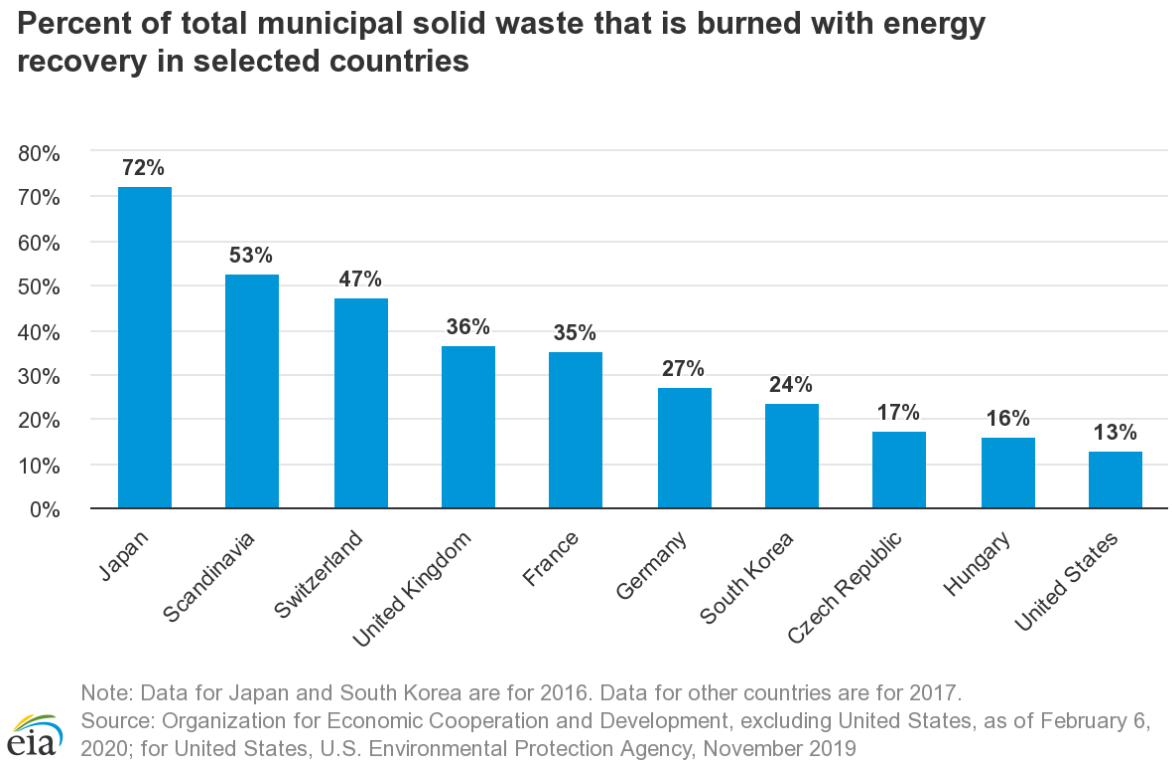

Figure 2. Percent of total MSW used in PLTSa in selected countries.[7]

Waste management through PLTSa reduces methane emissions (a potent greenhouse gas that has 25 times greater impact on climate than carbon dioxide CO2) from landfilling. Furthermore, emissions from PLTSa have been significantly reduced during the past 25 years due to the sophisticated filters. The environmentally harmful side products, such as bottom ash and fly ash, are treated to produce other useful products or safely disposed to hazardous landfill sites with a much less volume.[8]

[6] Ibid.
[7] Ibid.
[8] Cewep. What is Waste-to-energy.

KPK's Findings

In March 2020, the KPK found a number of problems in the PLTSa projects, which are being promoted by the government.[9] According to the KPK study, the state has a burden to pay IDR 3.6 trillion every year for the projects.[10] The burden comes from the tipping fee or waste processing service fee of IDR 2.03 trillion, paid to business entities. In addition, the government must pay around IDR 1.6 trillion to PLN for subsidizing the high tariff of PLTSa's electricity production. Furthermore, the risk of the state's financial losses would become more significant, given the long PLTSa contract period of 25 years.

Besides, the KPK also found an issue in the implementation of Public-Private Partnership (PPP) used in PLTSa projects. The business contract is separated between the Local Government - developer and developer - PLN. This issue might cause a long and complicated bureaucratic process and potentially lead to unfair business practices. Moreover, according to Presidential Regulation No. 35/2018, Local Government must pay a tipping fee to the developer at a maximum fee of IDR 500 thousand per ton. Meanwhile, PLN must buy electricity from PLTSa with a feed-in tariff[11] scheme for 25 years. The electricity tariff from PLTSa is set at USD 13.35 cents per kWh for PLTSa with a maximum capacity of 20 MW and around USD 14.54 cents for a capacity of more than 20 MW. This electricity tariff is much higher than the electricity tariff from a PLTU at around USD 4 to 5 cents per kWh. In addition, PLN also potentially got additional burden by the take-or-pay[12] scheme. In take-or-pay scheme, if the electricity generated from PLTSa is less than the agreed capacity, then PLN will be still obligated to pay according to the capacity promised by the PLTSa developer.

Moreover, there is currently an excess of electricity supply in the Java-Bali system, so there is no urgency to add new electricity supplies in the Java and Bali regions. The PLTSa projects are also considered to not have a significant impact on achieving the 23% NRE mix target. All PLTSa projects are estimated to only add a capacity of around 234 MW.[13] Currently, NRE power plants' installed capacity is still about 10,400 MW or only 15% of the total installed capacity at 69,000 MW.

Recommended Solution

Therefore, the KPK asked the government to revise Presidential Regulation No. 35/2018 on the Accelerated Development of Waste Processing Installation into Electricity Based on Eco-Friendly Technology. KPK recommends opening up other options for waste management, not only to convert it into electricity but rather to other energy products, such as briquette.[14] It could be more beneficial to produce briquette and use it in the co-firing plants since it can partially substitute coal for electricity generation. The co-firing plants use the mixing of waste briquette and coal as the fuel, which has been tested in several PLTUs in Indonesia.

The issue is many local governments have a very minimal budget for waste management. The mentioned tipping fee, however, is an inevitable cost for waste management, regardless of the type of waste management. There will always be an amount of fee needed to do the operation. Therefore, considering the waste emergency condition in Indonesia, waste management budget/funds need to be

[9] Katadata. Soroti Pembangkit Listrik Tenaga Sampah, KPK: Ada Pemborosan Rp 3,6 T. 6 March 2020.
[10] Ibid.
[11] Energypedia. Feed-in Tariffs (FIT).
[12] Investopedia. Take or Pay.
[13] Kontan. KPK: Proyek PLTSa di 12 daerah bakal bebani anggaran pemda dan PLN selama 25 tahun. 4 November 2020.
[14] Ibid.

increased. The source of funds for waste management can come from the State Budget (APBN), Regional Budget (APBD) or monthly fee from the community.

Finally, waste management through PLTSa can be continued with some considerations, namely 1) The PLTSa's fuel comes from waste that cannot be recycled; 2) The technology of the PLTSa must be environmentally friendly and produce far less pollution than if the waste is buried in the landfill; 3) The PLTSa project is more profitable than processing waste into briquettes, which can be used for co-firing plants.

Government Slashed Gas Price for Indonesia's Domestic Industry

Overview

The initiative for regulating gas prices has been going back and forth since 2016. In 2016, President Joko Widodo issued Presidential Regulation (PR) No. 40/2016 on "Determination of Gas Prices" to cap the price at USD 6/MMBTU for certain industries. However, the regulation could not be fully implemented. In April 2020, the Government of Indonesia (GoI) took another step to slash gas prices for the industry with a new approach. However, regulating gas prices for the industry is still a complex task and will disrupt the oil and gas industry.

Role of Gas for Indonesia's Domestic Industry

Gas supply and gas price are influential factors for the industry. The domestic industry is the primary consumer of Indonesia's gas. According to the Ministry of Energy and Mineral Resource (MEMR) 's data, in 2019, almost 40% of Indonesia's gas supply flowed to industry, including fertilizer production (Figure 1).[1] Fertilizer and petrochemical industries have the highest gas consumption in Indonesia. Moreover, gas purchase contributes to 70% of the cost structure in fertilizer and petrochemical industries.[2] Thus, a change in gas prices could significantly impact the production cost of those industries.

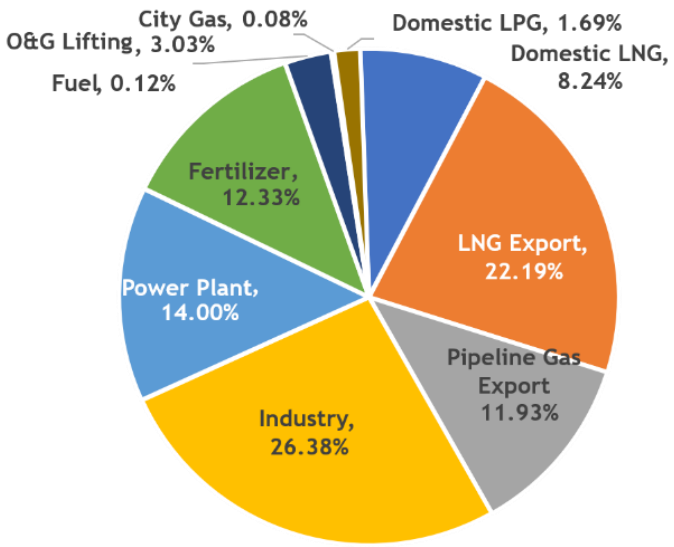

Figure 1. Allocation of Indonesia's domestic gas.[3]

Moreover, increasing domestic industry competitiveness has been one of Widodo's focus in his presidency. Currently, Indonesia's gas price is higher than in other Southeast Asia countries.[4] Lower

[1] Ministry of Energy and Mineral Resources. Ketersediaan Gas untuk Industri. 2020.
[2] Kemenperin. Menperin: Penurunan Harga Gas Industri Topang Daya Saing Manufaktur. 2020.
[3] Ministry of Energy and Mineral Resources. Loc. cit.
[4] TheJakartaPost. Frustatingly high gas prices. 14 January 2020.

gas prices could lower the industry's production cost and increase their product competitiveness to the imported product.

The benefit of a lower gas price could also impact government spending. Lower gas prices could also potentially reduce government spending for fertilizer subsidy. Lower gas prices will lower fertilizer production costs and, eventually, a lower fertilizer price.

Chronology

In 2016, Widodo took the initiative to reduce gas prices for the industry sector by issuing PR No. 40/2016.[5] The regulation targeted seven industries: fertilizer, petrochemical, oleochemical, steel, ceramic, glass and rubber glove industry. However, the initiative could only be successfully implemented for some industries, namely steel, fertilizer and petrochemical.[6] Then, in early 2020, Widodo offered three options to reduce gas prices for the industry sector.[7] The first option was reducing government revenue from gas sales. Secondly, he offered to implement a domestic market obligation (DMO) to maintain the price. The third option was easing the process of importing cheap gas for a particular area.

Finally, in April 2020, MEMR issued MEMR Regulation No. 8/2020 to cap the gas price to USD 6/MMBTU for the industry at the plant gate, at the same level as PR No. 40/2016.[8] The MEMR regulation targets the same industries as PR No. 40/2016: fertilizer, petrochemical, oleochemical, steel, ceramic, glass and rubber glove industry. The new regulation will focus on the industry within those categories that buy gas at a higher price than USD 6/MMBTU.

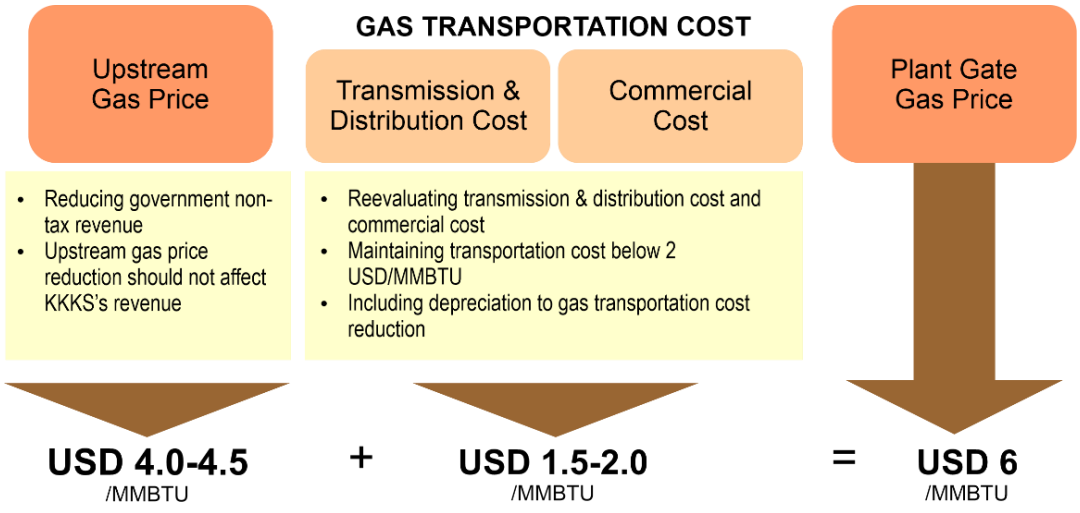

Figure 2. Gas price reduction scheme based on MEMR regulation No. 8/2020.[9]

In the regulation, two schemes are proposed to reduce the gas price to USD 6/MMBTU at the plant gate (Figure 2). The first scheme is to reduce gas selling prices from the upstream gas producer/Kontraktor

[5] Setkab. Perpres No. 40/2016: Inilah Skema Pemerintah Jika Harga Gas Bumi Lebih 6 Dollar AS/MMBTU. 18 May 2020; Presidential Regulation No. 40/2016
[6] TheJakartaPost. Industries seek government commitment to lower gas prices. 11 February 2019
[7] TheJakartaPost. Jokowi considers three solutions to lower industrial gas prices. 6 January 2020
[8] Minister of Energy and Mineral Resource Regulation No. 8/2020.
[9] Ministry of Energy and Mineral Resources. Loc. cit.

Kontrak Kerja Sama (KKKS). However, according to MEMR Regulation No. 8/2020, KKKS's gas price reduction should not affect the KKKS's revenue. However, without compensation, cutting gas selling prices will make KKKS lose its revenue. Therefore, the government chooses to compensate for the KKKS's revenue loss to reduce the gas price by cutting the government's non-tax revenue from the government share. The compensation, however, should not be higher than annual government revenue.

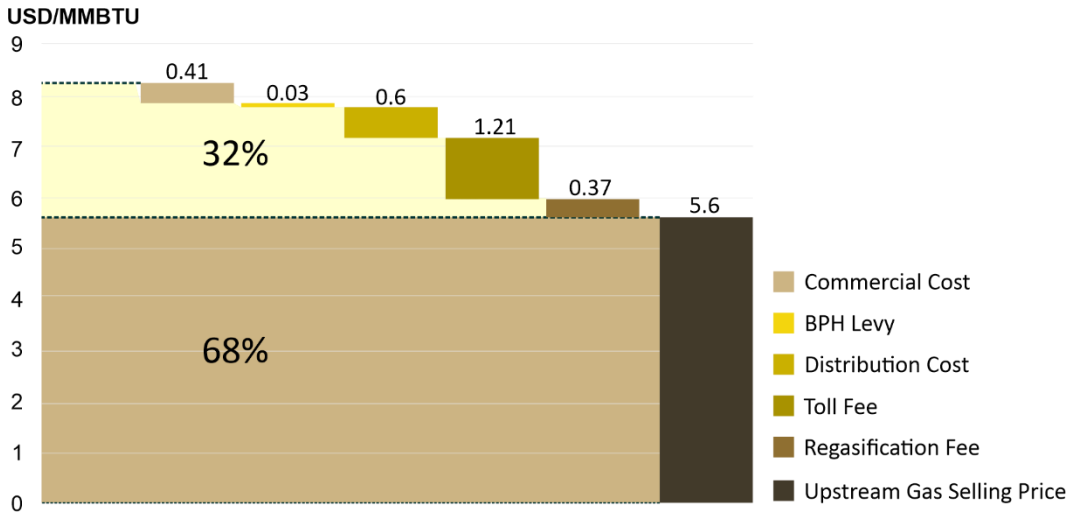

Figure 3. Structure of gas selling price (weighted average price).[10]

The second scheme is to reduce the gas transportation price. Toll fee contributes to gas transportation price significantly and needs to be adjusted to meet the USD 6/MMBTU (Figure 3). According to MEMR Regulation No. 8/2020, an incentive could be given to the gas transportation company, which transports the gas to the targeted industry. However, until the Q4 of 2020, MEMR has not issued the incentive mechanism.

Then, MEMR issued MEMR Decree No. 89/2020 on User and Price for Certain Natural Gas in the Industrial Sector.[11] The MEMR Decree No. 89/2020 sets the volume and price for each targeted industry from 2020 to 2024. Based on the MEMR Decree, the lowest upstream gas price could reach as low as USD 4/MMBTU. Moreover, the upstream gas price could drop as deep as 44% compared to the price before the enactment of MEMR Decree No. 89/2020. The MEMR Decree also keeps the gas transportation price below USD 2/MMBTU.

Regulation Implementation and Homework

The initiative to reduce gas prices for the industry will burden the government with revenue reduction and incentive provision. However, the government will expect a tax revenue gain from industry, dividend increase from gas-consumer SOE, and reduce fertilizer subsidy. The reduced gas price also aims to increase industry productivity, push the industry to grow and expand, and create more jobs.

On the other side, implementing the MEMR Regulation No. 8/2020 is a challenging and disruptive task. The challenge on the oil & gas upstream side is that the government's annual non-tax revenue limits the

[10] Ministry of Energy and Mineral Resources. Loc. Cit.
[11] Minister of Energy and Mineral Resource No. 89/2020.

maximum compensation.[12] The limit will be a problem if KKKS's revenue loss is higher than the government's annual non-tax revenue.

Meanwhile, on the oil & gas midstream side, the government still has homework to establish an incentive mechanism for the gas transportation company. The incentive is needed to compensate for the gas transportation company's revenue loss to cut the gas transportation price. Loss of revenue could reduce the company's financial strength to invest in new gas infrastructure and expand its business. If this is the case, future gas infrastructure development would be hampered.

Evaluation of the industry's performance will be an essential element in the implementation of MEMR Regulation No. 8/2020. The government needs to track and evaluate the industry's performance after giving a reduced gas price to them. The industry should maintain its business efficiency. Otherwise, the reduced gas price regulation will not give the expected outcome for the government.

[12] Cindy. MEMR Regulation No. 8/2020: How to Achieve the Win-Win Solution. 2020.

First Time in History: Crude Oil for Free?

Overview

The oil price fluctuations can be provoked by various causes such as geopolitics and unbalanced supply-demand. In the history of oil prices between 1860 - 2020, the lowest oil price was recorded in 1931 as the Great Depression hit, which reduced the oil demand and caused the oil price to drop below USD 20/barrel. However, in 2020, the global oil industry was shocked by the new price record, where it dropped to below USD 0/barrel. Several issues are believed to play important roles in accumulating the problems, which finally caused the oil price to reach a negative point in the USA.

The History

Oil has been one of the most precious commodities globally since the Spindletop geyser discoveries in 1901.[1] Since then, oil has become the most dominant fuel and it was one of the major factors that triggered the industrial revolution. The global oil demand has always been increasing along with the rise of industry and transportation sectors. Most countries have a high dependency on oil to support their economic activities. Meanwhile, the oil supply is limited and the business itself is considered very risky and possesses a high level of uncertainty. As a result, oil is classified as a high priced commodity.

The oil price fluctuations can be provoked by various causes such as geopolitics and unbalanced supply-demand. For example, several geopolitics events such as wars and embargoes, which often occurred in the Middle East, the major oil-producing region, led to the global oil crisis that ramped up the oil price up to USD 100/barrel. Global oil oversupply due to the USA Shale gas & oil production in 2014 also significantly fluctuated oil price as it dropped around USD 30-40/barrel. In the history of oil prices between 1860 - 2020, the lowest oil price was recorded in 1931 as the Great Depression hit, which reduced the oil demand and caused the oil price to drop below USD 20/barrel.[2] However, it was not the lowest recorded price before the COVID-19 pandemic hit.

A Pile of Problems

The global oil industry was shocked by the latest price record in 2020, that dropped to below USD 0/barrel. On 20 April 2020, the USA oil benchmark, WTI, was dragged from USD 17/barrel to USD -37/barrel in just one day.[3] The negative oil price means that oil producers were willing to pay buyers if they took their oil as the USA oil producers predicted their oil storage capacity would run out in May 2020. This USD -37/barrel oil price was marked as the lowest oil price in history and broke the recorded lowest oil price. The COVID-19 pandemic has significantly dropped the oil demand and was accused as the main cause of this low oil price. However, it should be acknowledged that several issues also played roles in the problem of negative oil price in the USA.

[1] History. Oil Industry. August 2018.
[2] PurnomoYusgiantoroCenter. The World's Oil Market and OPEC. January 2018.
[3] BBCNews. US oil prices turn negative as demand dries up. April 2020.

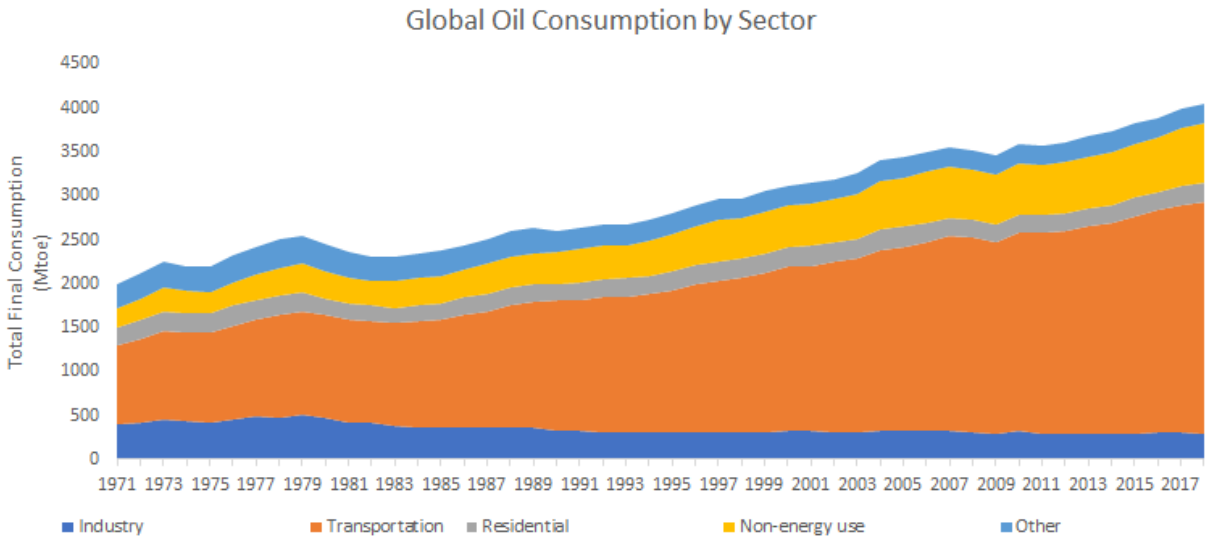

Figure 1. Global oil consumption by sector.[4]

First, as previously mentioned, the COVID-19 pandemic in early 2020 has undoubtedly dropped the oil demand. According to IEA (Figure 1), the transportation sector, including road, aviation, rail and navigation, shares 70% of the worldwide oil consumption in 2018. The global travel restrictions, both overseas and within the country to prevent the spreading of the virus, have harmed the transportation industries and dropped the oil demand. The IEA report in March 2020 stated that compared to 2019, oil consumption in road transportation dropped between 50-75%, while oil consumption in aviation activity dropped by 60%. This decline in consumption has caused the global oil demand in April 2020 to drop around 29 million barrels per day compared to the same period in April 2019. This number is equal to global oil demand in 1995.[5]

Second, oil producer countries have failed to reduce significant amounts of oil products to balance the oil market. Theoretically, the significant drop in oil demand should quickly be responded with reducing oil production in order to maintain the price. However, the realizations were contradicted as the Oil Price War between Russia and Saudi Arabia emerged. On 6 March 2020, Russia refused to slash oil production during the OPEC meeting in Vienna. Shortly after the meeting, Saudi Arabia responded to Russia's rejection by increasing oil production up to 25% and gave more discounts to the already low oil price to punish Russia. Russia struck back by adding an additional 500,000 barrels of oil supply to the oil market. Finally, OPEC members and its allies, including the US and Russia, agreed to slash the oil production by 10% or about 9.7 million barrels a day in early April 2020. Although this is the largest cutback in oil market history, it was still far from enough to keep up with the decrease in oil demand.[6]

Third, the USA storage has reached 77% of its capacity on 17 April 2020 and was predicted to surpass its capacity in the first week of May 2020. The USA's SPR (Strategic Petroleum Reserves) was built in 1975 as underground storage caverns created in salt domes along the Texas and Louisiana Gulf Coasts. The storage has a capacity of more than 720 million barrels of oil. It is the most extensive backup of emergency oil supply in the world. Still, it was unable to absorb domestic oil production, which has

[4] Processed by PYC from IEA Oil Total Final Consumption by Sector, 1971-2018.
[5] IEA. Global Energy Review 2020. July 2020.
[6] TheNewYorkTimes. The Big Deal to Cut Oil Production May Not Be Big Enough. April 2020.

been rapidly increased due to the shale oil discoveries. Thus, many US oil companies have to rent tankers to store oil supplies elsewhere.

The combination of significant drops in global oil demand, late responses to oil production cuts and oil storage limitations have contributed to a complicated situation for the US oil market. This combination made WTI price fall to a negative price as nobody was willing to take a future contract for oil supply in May 2020. Meanwhile, the WTI future contract for June 2020 was still able to hold the market price around USD 22/barrel.

How Has It Affected Indonesia's Oil Price?

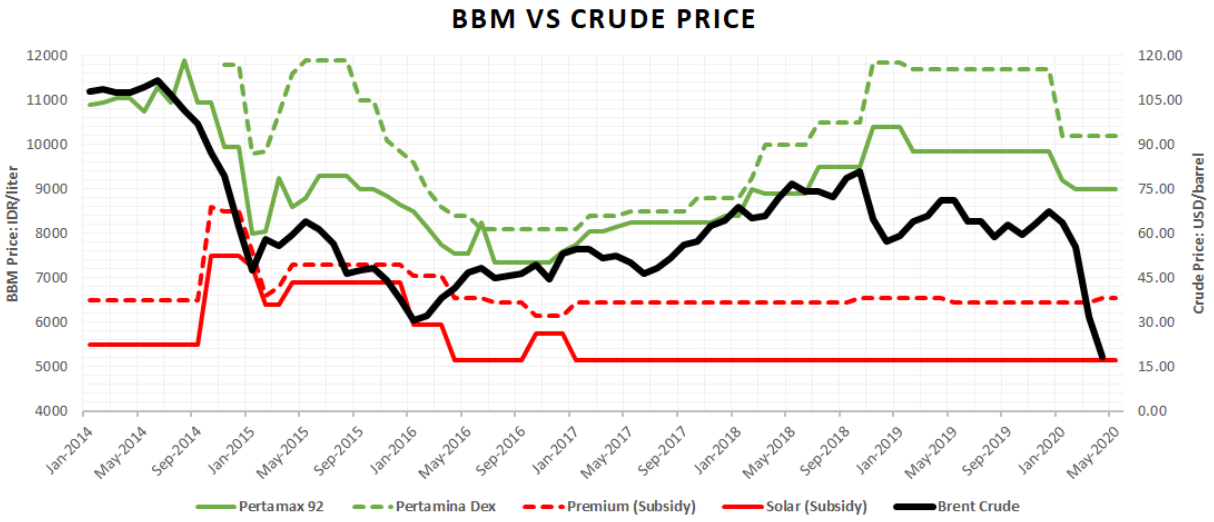

Figure 2. The comparisons between Indonesia's fuel oil vs. brent crude price.[7]

According to MEMR Decree No.138 K/12/MEM/2019, the Indonesia Crude Price (ICP) shall be formulated according to the Dated Brent±Alpha publications. This reference is still relevant as the amended regulation, MEMR Decree No 71 K/12/MEM/2020, is using a similar oil price benchmark. It should be understood that ICP prefers Brent crude for the market trade, while the WTI crude experienced the negative oil price. Brent crude is the standard benchmark in Africa, Europe and Middle Eastern crude oil trade; it dictates roughly two-thirds of the world's crude oil market trade. Most of the time, the price fluctuation between WTI crude and Brent crude was almost similar, but the price gap could be significantly different in several circumstances. While WTI fell into a negative price, Brent crude still managed to stay around USD 21/barrel.[8]

In terms of fuel oil price, Indonesia uses MOPS (Mean of Platts Singapore) and Argus as the benchmark price. Both benchmark prices are benchmarks for Singapore's local fuel products, Indonesia's BBM leading importer country. It means that BBM prices are not directly related to the crude oil price fluctuations. Although Indonesia's government is mandated to evaluate BBM prices regularly and adjust it if necessary, there are significant differences between subsidized BBM (red) and non-subsidized BBM (green) prices compared to the Brent crude price as shown in Figure 2. The non-subsidized BBM prices have shown similarity with the Brent crude, meaning that any fluctuation in the Brent crude price

[7] PurnomoYusgiantoroCenter. Indonesia's BBM Price Formulation. May 2020.
[8] Market Insider. Oil Brent.

will likely impact non-subsidized BBM prices. By contrast, the Brent crude price fluctuations have little to no effect on the subsidized BBM prices, with the government usually covering the gap price.

In conclusion, WTI negative price has brought an indirect benefit for Indonesia's oil sector. However, the benefit level is not notably high as WTI itself is not the benchmark for Indonesia's oil market and the negative price only occurred in a very short period of time. Nevertheless, the WTI negative oil price phenomenon should be marked as one of the most notable global oil market history events.

Domestic Mining Sector after New Law Enactment

Overview

The new Mining Law (Law No. 4/2020) becomes the most remarkable event in Indonesia's mining sector in 2020. This law is an amendment of the previous law (Law No. 3/2009). This amendment is expected to raise the state's revenue and strengthen business certainty in the mining sector. However, it also raises concerns from multiple civil groups on its impacts for the environment and society.

The Long and Winding Road of the Amendment

Indonesia's government (GoI) finally established the amendment of Mining Law since its first enactment more than a decade ago. This amendment offers bigger concessions and easier permits for mining companies to raise Indonesia's state revenue, thus enabling the government to finance more public services.[1] This amendment had passed a long and winding road before it was finally passed in June 2020 (Figure 1).

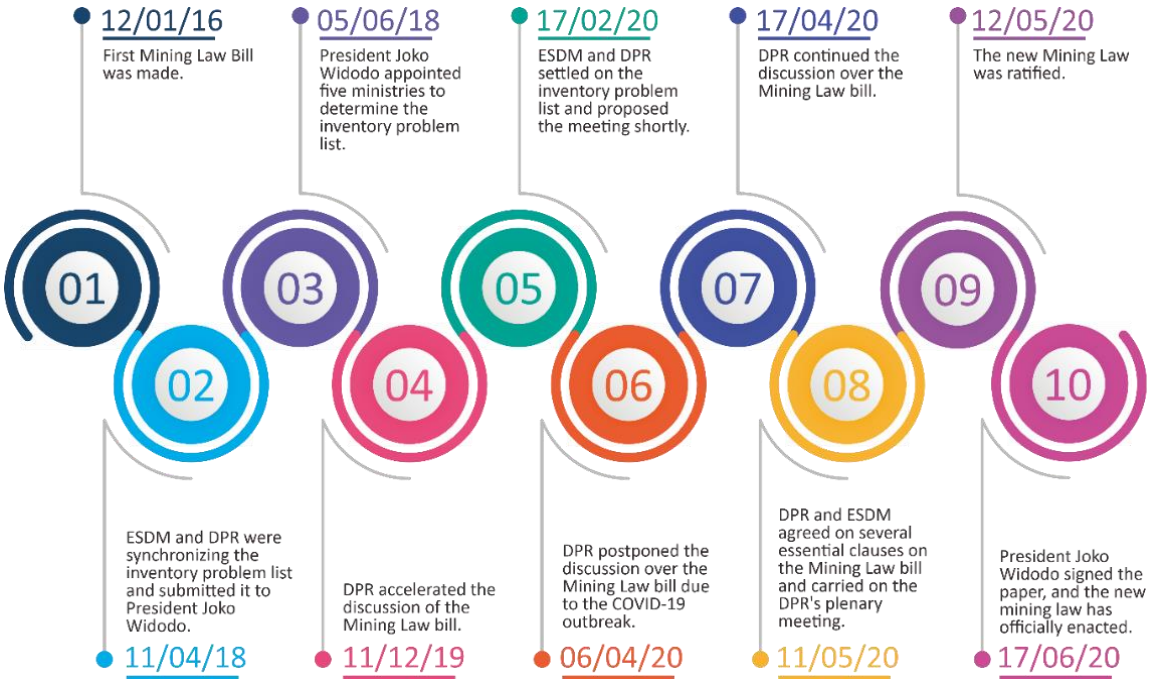

Figure 1. Timeline of new mining law.[2]

The journey started in 2016, when the first focus group discussion (FGD) was held by the Ministry of Energy and Mineral Resources (MEMR). It was concluded that several issues needed to be sorted out, such as the regional government's authority, concessions area and mining permit. The other notable event was in 2018 when President Joko Widodo pointed five ministries (MEMR, Ministry of Industry, Ministry of Finance, Ministry of Internal Affairs and Ministry of Law and Human Rights) to prepare a

[1] TheJakartaPost. Civil Society Brings New Mining Law To Court Over Transparency Issues. 28 July 2020.
[2] Processed by PYC Research Team from Various Sources.

problem inventory list. This topic was warmed up again at the end of 2019 when the House of Representatives (DPR) accelerated the draft bill's discussion considering the contracts of seven coal companies would soon expire. However, the discussion had to be postponed in early April 2020 due to COVID-19's outbreak in Indonesia. Shortly after the announcement, the DPR agreed to continue discussing the draft bill. In May 2020, an agreement was reached between the DPR and the GoI, and then it was continued at the DPR plenary meeting for the ratification process. Finally, President Joko Widodo signed the ratified bill on 17 June 2020 and it officially indicated that the new Mining Law is applied in Indonesia.

A few crucial points regulated in the new Mining Law should be noticed. Licensing authority and extension, regulation of Community Mining Permits (IPR) and environmental aspects, downstream industry, divestment and arrangements claimed to strengthen State-owned enterprise (BUMN)[3] are several of them. In the current law, the licensing authority is carried out by the central government, no longer ruled out by the regional authority. The central government also has the authority to determine the amount of production, sales and prices of metallic minerals, certain types of non-metallic minerals and coal. This new law also guarantees the continuation of the Contract of Work (KK) and Coal Contracts of Work (PKP2B) holders' operation by changing their permit into Special Mining Permits (IUPK) as consideration efforts to increase state revenue. Then, foreign holders of Mining Permits (IUP) or IUPK at the production operation stage are obligated to divest 51% of shares to the central government, regional governments, BUMN, Regional State-owned enterprises (BUMD), and/or national private business entities.

The Two Perspectives

The issuance of this new law invited various opinions.[4] Hendra Sinadia, Executive Director of the Indonesian Coal Mining Association (APBI), argued that the new mining law is a GoI's commitment to ensuring the coal mining sector's business. As a result, coal mining companies will plan their future business amidst the uncertainty in the commodity industry due to the COVID-19 pandemic. Executive Director of the Reforminer Institute, Komaidi Notonegoro, has a similar standpoint that new Mining Law can guarantee the absorption of coal products, especially in the downstream industry. Moreover, the coal market is caught between a rock and a hard place because many countries started shifting to cleaner energy sources. This new mining law also helps maintain state revenue from the mining sector amid the pandemic's sluggishness.

An opposite opinion was delivered from the Institute for Development of Economics and Finance (INDEF) Researcher Abra Talattov. He thought the guarantee of the contract extension without going through an auction would create disparities between contractors. Only KK and PKP2B holders will benefit from having significant control over a large concession area. An analogous view was also expressed by the Auriga Nusantara Foundation researcher, Iqbal Damanik. He stated the rush to ratify the Mining Law provides a bailout and facilitates protection for mining companies.[5] The Mining Advocacy Network (JATAM) also assessed that the new Mining Law has a potency to further exacerbate the reclamation issue. Additionally, the Governor of Bangka Belitung, Erzaldi Rosman

[3] Kompas. Ini Poin-poin Penting dalam UU Minerba yang Baru Disahkan. 13 May 2020
[4] Katadata. Polemik RUU Minerba dan Angin Segar bagi Pengusaha Batu Bara. 14 May 2020
[5] Katadata. Pegiat Lingkungan Kritik UU Minerba Cerminan Dukungan Pada Investor. 13 May 2020

Djohan, also questioned the central government's authority regarding mining permits, which is considered contrary to the Constitution and the spirit of regional autonomy.[6]

In their response to the opposite parties, the GoI and the DPR agreed that the New Mining Law is necessary to cope with the economic crisis caused by the COVID-19 pandemic. Therefore, its enactment will maintain the investment climate and avoid layoffs of employees. The coal supply for power plants will also be secured with this new law.[7] Regarding its impact on the environment, the GoI has assured post-mining reclamation will be carried out according to the regulations, given the existence of stricter regulations.[8] In the new regulation, IUP and IUPK holders are required to complete reclamation according to the plan approved by the GoI. In article 160, the holders can be sentenced to a maximum of five years in prison and a maximum fine of IDR 100 billion if the reclamation is not entirely executed. Also, IUP and IUPK holders can be subject to additional penalties in the context of carrying out their reclamation and/or post-mining obligations. This penalty was not stated in the previous law.

The Fate of PKP2B Companies

New Mining Law holds the key to the fate of several first generations of PKP2B holders whose contracts will expire soon. Seven first-generation PKP2B holders whose contracts will expire are PT Arutmin Indonesia (Exp 2020), PT Kendilo Coal Indonesia (Exp 2021), PT Kaltim Prima Coal (Exp 2021), PT Adaro Energy Tbk (Exp 2022), PT Multi Harapan Utama (Exp 2022), PT Kideco Jaya Agung (Exp 2023) and PT Berau Coal (Exp 2025). After the new Mining Law was officially enacted in Indonesia, three coal companies requested contract extensions. The three companies are PT Arutmin Indonesia, PT Kaltim Prima Coal, and PT Multi Harapan Utama.

The thing that grabs the most attention is the fate of PT Arutmin Indonesia, whose contract will expire on 1 November 2020. PT Arutmin Indonesia has submitted a contract extension to MEMR on 24 October 2019.[9] However, the proposed contract extension has not been approved until the due date. The reason is that three draft government regulations regarding the implementation of mineral and coal mining activities, concession areas and monitoring of reclamation and post-mining activities are still up in the air. On 2 November 2020, GoI finally granted a ten years extension contract for PT Arutmin Indonesia by enacting MEMR Decree No. 221K/33/MEM/2020, which converted PKP2B into IUPK.[10] The enactment of this decision drew the pros and cons of its legality.[11] On the one hand, there are doubts about the MEMR decree's legality because the Government Regulations have not yet been issued. On the other hand, this MEMR Decree issued has definite legal force considering that the contract extension's guarantee is regulated in the new Mining Law, which has a higher legal force than Government Regulation.

The Afterward

The domestic mining sector still has an exciting story to look forward to. After the new Mining Law issuance, mining industry players are still waiting for certainty from this law's derivative products. Three derivative products are being awaited, namely the implementation of mineral and coal mining activities, concession areas and monitoring of reclamation and post-mining activities. Until now, the

[6] Katadata. Gubernur Babel & DPD Gugat Raibnya Wewenang Daerah di UU Minerba ke MK. 10 July 2020.
[7] Katadata. Bantah Pro Korporasi, DPR Beberkan Alasan Sahkan UU Minerba. 28 July 2020.
[8] Katadata. Ada UU Minerba, Kementerian ESDM Optimistis Reklamasi Tambang Sukses. 22 June 2020.
[9] Katadata. Nasib Samar Kontrak Tambang Grup Bakrie setelah Melewati Tenggat. 2 November 2020.
[10] Tirto. Izin Tambang Arutmin Berlaku 10 Tahun Dinilai Janggal. 5 November 2020.
[11] Katadata. Perpanjangan Kontrak Tambang Grup Bakrie Dipertanyakan Legalitasnya. 4 November 2020.

discussion of these bills is still ongoing. According to the recently appointed Director General of Mineral and Coal, Ridwan Djamalludin, MEMR works to ensure that the legal product can be completed shortly. The three regulations will decide the direction of mining industries development, especially in the coal sector, which has abundant potential. Also, GoI's commitment to ensure that mining activities in the future will be environmentally friendly is worth the wait.

The mining sector is undoubtedly one of the main contributors for the state revenue, which is essential for national development purposes. The emergence of new Mining Law will add a new color to the mining sector that expects an increase in state revenues. However, GoI is required to ensure and monitor the implementation of the new Mining Law and its derivative products. As a result, it will positively impact our society and support a sustainable environment.

Pertamina Subholding: New Face & Strategies

Overview

Although PT Pertamina (Persero) has announced itself as an energy company, to this date, many people are still labelling PT Pertamina (Persero) as an O&G company in which the main businesses were only producing O&G and distributing fuel oil through SPBU Pertamina (gas station). Thus, in order to maximize the project's performance as well as to speed up business diversification, PT Pertamina (Persero) restructured the company by creating five sub-holding.

Evolution of Pertamina

Since it was first established as a state company (Perusahaan Negara, PN) in 1968, Pertamina was already specifically mandated to manage Indonesia's oil and gas sector. Back then, according to Law No. 8/1971 on the State Oil and Gas Mining Company, Pertamina's responsibilities were not only to be a state oil and gas (O&G) company as we know of today, but also to organize the overall O&G sector. This would include controlling and monitoring the O&G private investments that came to Indonesia.

The full authority of Indonesia's O&G sector made Pertamina too independent and turned it into a "state within a state". Under Oil and Gas Law No. 22/2001, Pertamina was then obligated to hand over the power of organizing the O&G upstream industry to BP Migas which later became SKK Migas and downstream industry to BPH Migas. Meanwhile, Pertamina was mandated to perform the public service obligation (PSO) function in the O&G sector. In 2003, Pertamina was finally turned into PT Pertamina (Persero) that allowed them to manage their own assets as an independent company. Then, another huge transformation occurred in 2006 when PT Pertamina (Persero) broadened their business activities from O&G into the overall energy sector by creating Pertamina Geothermal Energy (PGE). Today, PT Pertamina (Persero) is one of the biggest state-owned companies (BUMN) and also the only Indonesia's company in 2019 that was listed in The Fortune Global which ranks 500 companies based on the total income in the previous year.[1]

O&G vs Energy Company

Even though PT Pertamina (Persero) has announced itself as an energy company, to this date, many people are still labelling PT Pertamina (Persero) as an O&G company with the main businesses are only producing O&G and distributing fuel oil through SPBU Pertamina (gas station). This might be because these two business activities are the most fundamental business aspect of the company.

In 2019, PT Pertamina (Persero) held 41% of total oil productions and 43% of total natural gas productions.[2] In 2021, after the Rokan Block is fully transferred to PT Pertamina (Persero), the company's oil production share will increase dramatically to become about 70% of total national oil production. In the O&G downstream sector, the domination of PT Pertamina (Persero) could be easily

[1] Pertamina. Recorded Revenue of USD 54.58 Billion, Pertamina Write a Letter to Fortune Global. August 2020.
[2] Pertamina. Pertamina Kelola 40 Persen Produksi Migas Nasional. September 2019.

noticed with the number of SPBU across the country which accounted for more than 6,000 distribution points.[3]

The domination of PT Pertamina (Persero) in Indonesia's upstream and downstream O&G sector has given the company a huge benefit in growing its O&G business. On the contrary, other business activities such as refineries construction and renewable energy development are often overlooked and stagnated. This problem should be ironed out as the global O&G market has weakened while the risk and uncertainty are getting higher in the last couple of years.

New Business Pillars

PT Pertamina (Persero) is undertaking several projects to diversify its business activities and adapt to the trend of the energy transition.

First, there are mega projects related to refinery and petrochemical which consist of two programs, refinery development master plan (RDMP) and grass root refinery (GRR). RDMP is a program to revitalize and increase the capacity of existing refineries, while GRR is a program to construct a new refinery. Currently, PT Pertamina (Persero) does RDMP in Cilacap, Balikpapan, Dumai and Balongan. For GRR, PT Pertamina (Persero) constructs new refineries in Bontang and Tuban. Even though the demand for fuel oil is high, Indonesia has not developed any new refinery since 1995. This makes the country very dependent on fuel oil import from Singapore. The RDMP and GRR are projected to increase national oil refineries production capacity to 2 million BOPD by 2025.[4] Furthermore, some of the refinery projects such as GRR Tuban are also planned to be integrated with Trans Pacific Petrochemical Indotama (TPPI), a petrochemical industry in which PT Pertamina (Persero) is the major shareholder. This also shows PT Pertamina (Persero) commitment to include the petrochemical industry as one of their business pillars.

Second, in parallel with the refineries mega projects and petrochemical industry, the company also started to develop biofuel in several refineries. In mid-2020, PT Pertamina (Persero) announced its achievement in producing 100% biofuel called green diesel in the Dumai Refinery. Following the success of green diesel, the company is in the process of developing bio-refinery to produce the green diesel in Plaju and Cilacap with a capacity of 20,000 and 6,000 BOPD, respectively.[5] These projects will support the government's program to transform fossil fuel to green fuel.

Third, involvement of PT Pertamina (Persero) as one of the PT Indonesia Battery Holding (IBH) companies along with PT PLN and Mining and Industry Indonesia (MIND ID). Initiated by the (state-owned enterprises) SOEs Ministry, IBH is one of the state holding companies to compete in the global battery market. The holding company is planning GWh worth of nickel-based battery blends every year for the domestic market. PT Pertamina (Persero) will run the midstream supply chain that includes developing battery cell and battery pack manufacturing plants.

[3] Ministry of Energy and Mineral Resources. Penyalur BBM Badan Usaha Niaga Migas Untuk Kegiatan Usaha Niaga Umum BBM.
[4] Pertamina. Megaproject Refinery and Petrochemical.
[5] InvestorDaily. Tahun Depan, Pertamina Mulai Produksi Biodiesel 100%. July 2020.

New Face & Strategies

To maximize the project's performance as well as to speed up business diversification, PT Pertamina (Persero) once again restructured the company by creating sub-holding. Sub-holding is not a new business strategy in O&G. Some O&G multinational companies such as Petronas, BP, PTT, and Exxon Mobil have implemented sub-holding in order to survive in a weakening O&G industry. Then, in June 2020, the company finally inaugurated five sub-holdings,[6] consisting of:

1. **Upstream**
   This subholding is responsible for conducting business in the upstream O&G such as exploration, drilling, O&G field development and geothermal. The upstream sub-holding is led by Pertamina Hulu Energi with subsidiary companies including PT Pertamina EP, PT Pertamina EP Cepu, PT Pertamina EP Cepu Alas Dara Kemuning, PT Pertamina Internasional Eksplorasi Produksi, PT Pertamina Geothermal Energi, PT Pertamina Drilling Services Indonesia, PT Pertamina Hulu Indonesia, PT Elnusa Tbk and PT Pertamina Hulu Rokan.

2. **Refining & Petrochemical**
   This subholding carries out business activities that include refinery and petrochemical refinery management. The refining & petrochemical subholding is coordinated by PT Kilang Pertamina Internasional and responsible to maintain six existing refineries and monitor the refineries mega projects of RDMP and GRR.

3. **Commercial & Trading**
   Commercial & Trading subholding conducts various business activities which are directly linked to the end-users. This sub-holding is run under the PT Patra Niaga with subsidiaries including PT Patra Trading, PT Patra Badak Arun Solusi, PT Patra Logistik, PT Indo Thai Trading, PT Patra SK and PT Pertamina International Timor SA.

4. **Power & NRE**
   The Power & NRE sub-holding is run under PT Pertamina Power Indonesia. The responsibilities of this sub-holding would include running, controlling and managing activities in the areas of electricity provision especially from new and renewable energy (NRE). Some projects that have been completed by PT Pertamina Power Indonesia are Badak 4 MW Solar Power Plant, Sei Mangke 2.4 MW Bio-Gas Power Plant, and CCGT Jawa-1 1,760 MW.

5. **Shipping Company**
   This sub-holding manages a shipping business line under PT Pertamina International Shipping. It operates sea transportation to distribute various products such as crude oil, fuel oil and non-fuel to internal and external customers. This subholding also manages maritime underwater services, docking, mooring master, vetting and shipping agency. In 2016, PT Pertamina (Persero) operated 59 owned ships, 60 chartered ships, 107 special terminals (Tersus) and internal purpose terminals (TUKS), 30 EP & KKKS ports, 167 docks, 13 Single Point Moorings (SPM), 6 Ship to Ship (STS) transfers and 10 Central Buoy Moorings (CBM).

[6] Pertamina. Nama - nama BOD Subholding Pertamina Pengukuhan. 13 June 2020.

Every sub-holding represents one of the PT Pertamina (Persero) business pillars to make sure it is not affected by other companies business activities. It is hoped that these sub-holdings will guide PT Pertamina (Persero) in pursuing its vision as a World-Class National Energy Company.[7]

[7] Pertamina. Providing Energy for The Nation.

Shell Oil Company Plans to Leave the Masela Block Oil and Gas Project

Overview

Shell Upstream Overseas Services Ltd., a subsidiary of Royal Dutch Shell Plc (Shell) is in the process of leaving the Masela Block oil and gas (O&G) Project. At the end of July 2020, Shell submitted a request to the Directorate General of Oil and Gas, Ministry of Energy and Mineral Resources (MEMR) and the Investment Coordinating Board (BKPM) to open the Masela data for other potential investors.[1] This data includes the seismic and wells data or other commercial geological data.

In August 2020, MEMR and BKPM approved Shell's request. This process is a step for Shell to transfer its participating interest (PI) to other potential investors. Currently, the Masela Block O&G Project's PI holders are Inpex Corporation (Japan) at 65% and Shell at 35%. SKK Migas estimated that the divestment process would take around 18 months since Shell submitted the open data request. It means that Shell share divestment would be completed by the end of 2021.[2]

Project Overview

Figure 1. The location of Masela Block O&G Project.[3]

[1] Kontan. SKK Migas: Pengalihan hak partisipasi Shell harus dengan persetujuan menteri ESDM. 7 July 2020.
[2] Katadata. SKK Migas Proyeksi Divestasi Shell di Blok Masela Selesai pada 2021. 17 July 2020.
[3] PurnomoYusgiantoroCenter. How Are You Masela Project? July 2020.

The Masela Block O&G Project is located in the Arafura Sea (Figure 1), about 650 km from Maluku Island and 400-800 m below sea level. The closest islands are Babar and Tanimbar at around 170 km from the project location. Masela's working area is approximately 2,503 km2 and is estimated to have 10.37 trillion cubic feet (TCF) proven gas reserves, with an investment value around USD 18 – 20 billion. The contract period of the project is from 16 November 1998 – 15 November 2055 (57 years).[4]

Project Timeline

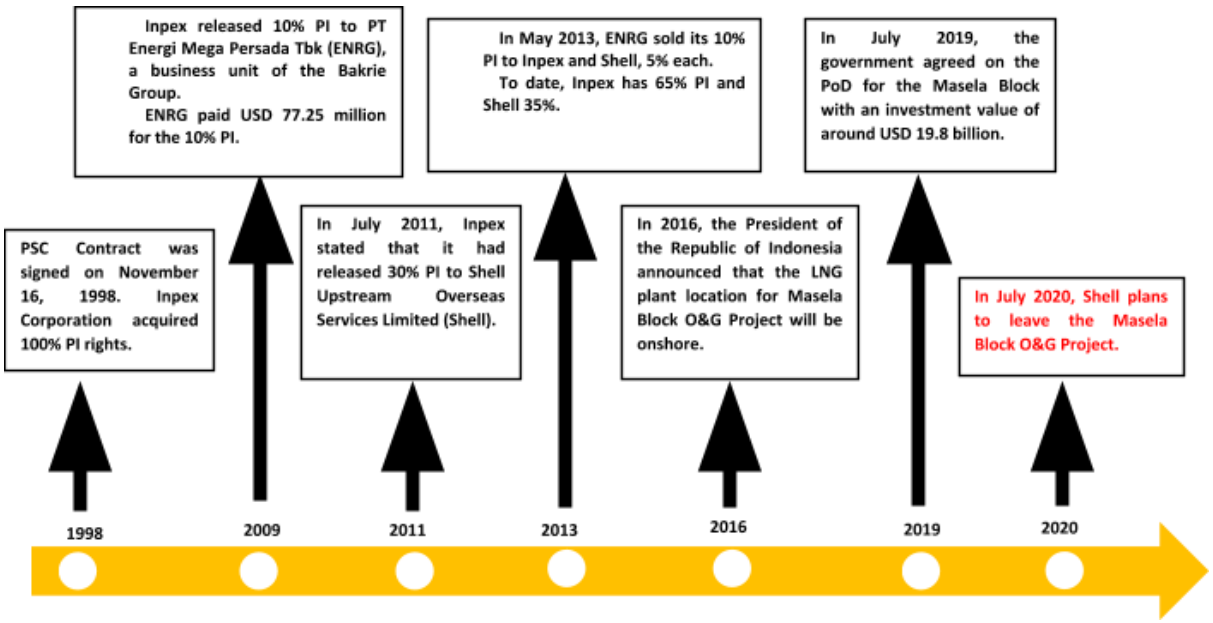

Figure 2. Timeline of the Masela Block O&G Project development (processed by PYC).

Shell became one of the PI holders after Inpex Corporation released a 30% PI to Shell in July 2011. At the time, the composition of PI holders was Inpex Corporation (60%), Shell (30%) and PT Energi Mega Persada (10%). Afterward, PT Energi Mega Persada sold its PI to Shell and Inpex, 5% each in May 2013. Therefore, PI composition became Inpex (65%) and Shell (35%).[5]

In 2016, the President of the Republic of Indonesia announced that the LNG plant for Masela Block O&G Project would use an onshore scheme (Figure 2). Thus, the Maluku region could get a positive economic impact from the development of the Masela Block O&G Project (multiplier effect). Moreover, the onshore scheme cost is around USD 6 – 7 per barrels of oil equivalent (BOE), 20% cheaper than the offshore scheme at about USD 8-9 per BOE.[6] Therefore, Inpex and Shell, which previously wanted to use Floating Liquefied Natural Gas (FLNG) plant, agreed to choose the onshore option.[7]

In November 2019, the government signed a revised Plan of Development (PoD) for the Masela Block O&G Project. In the revised PoD, the construction will be completed in 2022 and will start production in 2027. Furthermore, SKK Migas estimated that the gas production will be around 9.5 million tonnes per year (MTPA) of LNG and 150 MMSCD of pipeline gas. SKK Migas also estimated that the Masela Block Project will increase the gross domestic product (GDP) to RP 2,150.4 trillion and provide 73,195

[4] Katadata. Prahara Blok Masela, Dari Polemik Kilang hingga Shell Hengkang. 6 July 2020.
[5] Kontan. Ikhtiar Mencari Pengganti Shell di Blok Masela. 7 July 2020.
[6] Katadata. Jalan Panjang Blok Masela, Kontroversi Kilang Hingga Investasi Jumbo. 30 May 2019.
[7] Ibid.

employments per year.[8] In July 2020, Shell as the holder of a 35% PI in the Masela Block O&G Project, plans to leave. It is because investment in other countries was more profitable than in Indonesia.[9] It was also worsened by the current low oil price and unattractive LNG market, which heavily affected the economics of the O&G projects.

The Importance of Masela Block O&G Project

The development of the Masela Block O&G Project is very important for Indonesia to overcome the gas balance deficit that is projected to occur in 2025. The deficit is estimated at 206.5 MMSCFD. The Indonesian government hopes that the Masela Block O&G Project can increase natural gas production to 10.5 MTPA.[10] Besides, the Masela Block O&G Project development is expected to create a multiplier effect for improving the Maluku region's economy, supporting domestic derivative industries and enhancing the national economy.[11]

The government hopes that Shell is still fully committed to supporting the Masela Block O&G Project's development before releasing all of its shares to other investors. Until July 2020, the actual development process was only at 2.2%, far from the 10.5% target.[12] Some of the problems causing the delay are the COVID-19 pandemic and low oil prices, so there is a need to recalculate the project's economy.

If Shell officially leaves the Masela Block, there will be an opportunity for state-owned PT Pertamina (Persero) to join the Masela Block O&G Project.[13] We know that the Masela Block O&G project location is offshore and is full of risks and uncertainties. Therefore, PT Pertamina (Persero) must carefully evaluate its economic value before joining the project so that it would not burden the company's cash flow. Finally, the government is still committed to keeping the Masela Block O&G Project development target on schedule to be operational by 2027.

[8] SKK Migas. Mengawal Proyek Strategis Migas Nasional Mendukung Pembangunan Ekonomi. 2018.
[9] Katadata. Inpex Beberkan Alasan Shell Hengkang dari Blok Masela. 24 August 2020.
[10] Katadata. Prahara Blok Masela, Dari Polemik Kilang hingga Shell Hengkang. 6 July 2020.
[11] DPR RI. Polemik Pelik Model Pengembangan Blok Masela. March 2016.
[12] Ibid.
[13] Detik. Shell Cabut dari Blok Masela, Pertamina Bisa Masuk. 24 August 2020.

Longest 2D Seismic Survey: A Step Towards 1 Million BOPD

Overview

Exploration plays an important role to achieve the government target of 1 million barrels oil per day (BOPD) oil production by 2030. It is estimated that exploration activities will contribute around 300 thousand BOPD or 25% of total oil production in 2030-2040 (Figure 1). In August 2020, Indonesia successfully completed a 2D seismic survey, which is part of exploration activities. In fact, the survey is the longest in the Asia-Pacific in the past ten years. Hopefully, the success of this survey will increase the national oil and gas reserves and contribute to achieving the oil production target of 1 million BOPD.

The 1 Million BOPD Target

Since the end of 2019, the government has been vigorously promoting the 1 million BOPD target by 2030. Achieving this target is essential because Indonesia's oil demand gradually grew while domestic supply steadily decreased to 745 thousand BOPD in 2019.[1] The increasing gap between production and demand makes Indonesia increasingly dependent on oil imports. Therefore, boosting domestic oil production is crucial in order to enhance national energy security.

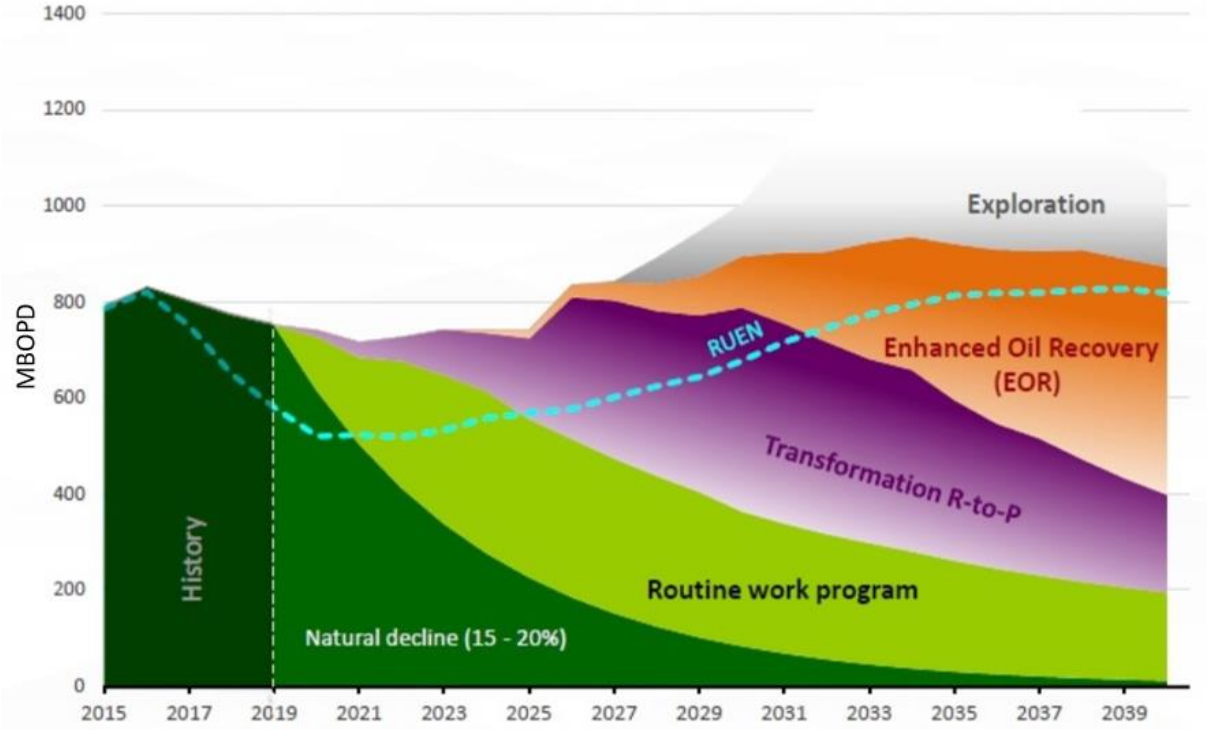

Figure 1. The projection of Indonesia's oil production from 2015-2040.[2]

Special Task Force for Upstream Business of Activities Republic of Indonesia (SKK Migas) has set four strategies to deliver the 1 million BOPD production target. These strategies are illustrated in Figure

[1] Directorate General of Oil and Gas. Minister of Energy and Mineral Resources.
[2] Petrominer. Ini Strategi SKK Migas Kawal Rencana Jangka Panjang. 25 October 2020.

1, which includes: 1) Routine work program; 2) Transformation from reserve to production (R-to-P); 3) Enhanced oil recovery (EOR); and 4) Exploration. In addition, Figure 1 also shows a domestic oil production scenario by the National Energy Council (DEN), listed in General Plan on National Energy (RUEN).[3] Of the two scenarios, the SKK Migas scenario is more optimistic than the estimation in RUEN. The RUEN scenario shows that Indonesia's oil production profile will never reach 1 million BOPD even until 2040.

The 1 million BOPD target poses formidable challenges. The exploration strategy that is expected to contribute significantly to the oil production profile carries high risks and uncertainties. It also requires a long-time process since the contract is signed, to start the field exploration activities and finally discover the oil and gas reserves. Furthermore, the recent exploration success ratio in Indonesia is relatively low and there is a possibility that exploration will not find anything (dry holes). The exploration activities that require high costs are also highly dependent on global oil prices. With the relatively low oil price in the past six years, the government needs to formulate a supporting policy to attract investors to explore other potential areas in Indonesia.

In addition, the other strategies, routine work program, transformation R-to-P, and EOR, are facing various challenges such as the application of technology, economic aspect, a number of laws and regulations, and regional autonomy. Therefore, to further increase the success possibility of achieving 1 million BOPD, the government also needs to study other alternative options such as developing unconventional oil (MNK), oil mining and coal liquefaction into synthetic oil.

The 2D Seismic Survey Achievements

The success of the 2D seismic survey by Pertamina Hulu Energi (PHE) Jambi Merang and Elnusa is certainly a positive catalyst for upstream oil and gas activities. This seismic survey does not only support the government's efforts to achieve the 1 million BOPD target but also a vital step in overcoming the depleting national oil reserves. The remaining national oil reserves are down to around 3.79 billion barrels[4] and are estimated to be drained in the next nine years.[5] Therefore, this seismic survey is an urgently needed action and a significant achievement for Indonesia's upstream oil and gas sector.

The 2D seismic survey by PHE Jambi Merang and Elnusa is the longest in the Asia-Pacific in the past ten years.[6] The seismic survey has a length of 32,200 km2 from Seram Sea to Natuna Sea (Figure 2) and was completed in just 261 days. This seismic survey was also accomplished beyond the original target of 30,000 km2 with zero accidents.

The seismic survey covers 35 basins from 128 basins in Indonesia. It consists of six producing basins, seven discovery basins, five explored basins and 17 unexplored basins. This 2D seismic survey is part of the Jambi Merang working commitment (KKP) until 2024, with an investment value of USD 239.3 million.[7] In particular, the KKP has allocated USD 196.5 million for exploration activities to increase the discovery of oil and gas reserves. The survey results will be processed and evaluated by Pertamina and are targeted to finish in November 2020. Afterwards, the survey results will become open data

[3] Presidential Regulation No. 22/2017.
[4] Datacenter-pyc. Oil Reserves. 2 October 2020.
[5] Kompas. Jika Tak Ada Penemuan Baru, Minyak Bumi Indonesia Akan Habis dalam 9 Tahun. 21 October 2020.
[6] Kompas. Indonesia Berhasil Selesaikan Survei Seismik 2D Terpanjang di Asia Pasifik. 5 August 2020.
[7] Ibid.

within the next year. SKK Migas hopes that after the completion of data processing and evaluation, the government can immediately transform it to an active working area through a joint study or open auction.

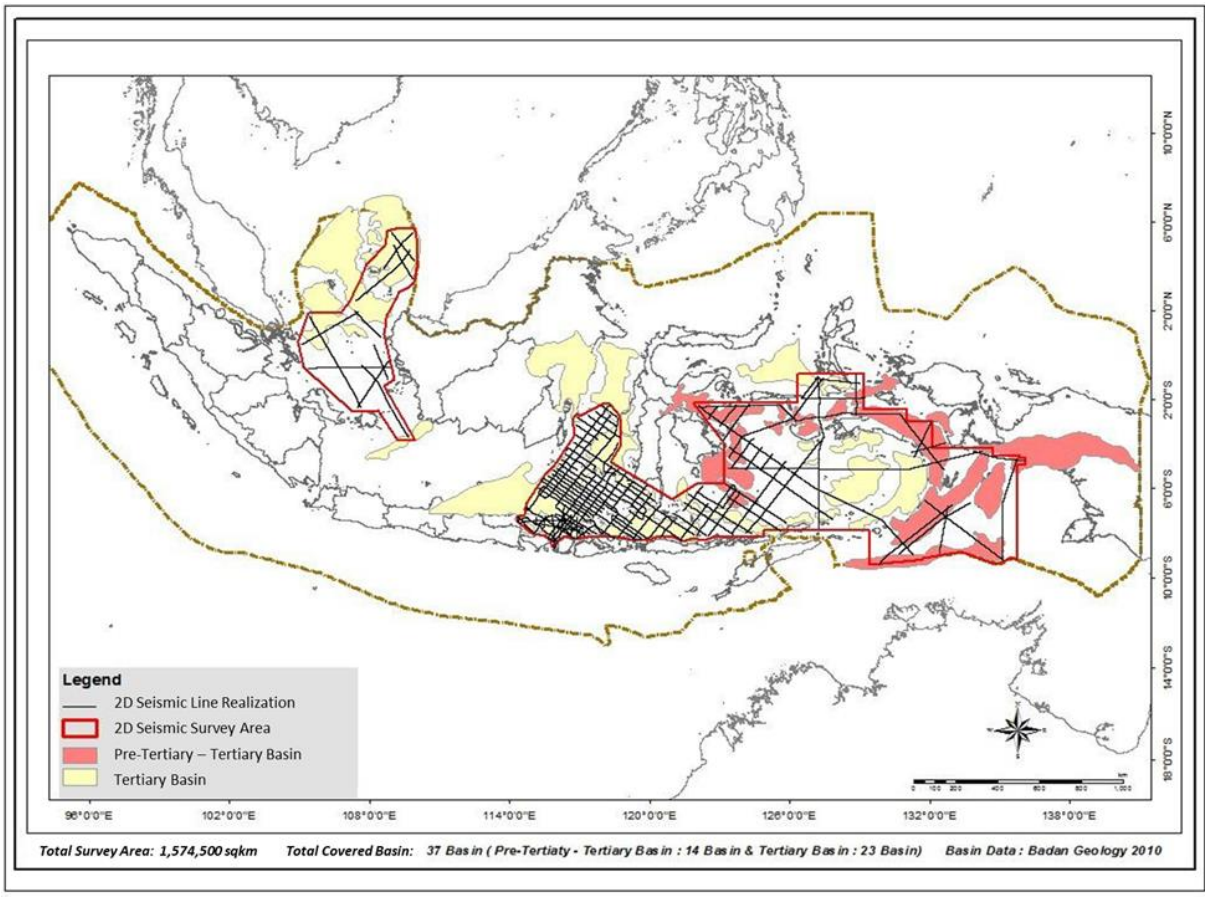

Figure 2. PHE Jambi Merang and Elnusa 2D seismic survey areas.[8]

Moving Forward

The continuous decline of domestic oil production and reserves makes exploration activities become crucial to be carried out. Of the 128 basins, there are still 74 basins that have not been explored.[9] Thus, there is still a possibility of giant discoveries if exploration activities are continued to expand, especially for the unexplored basins.

Appreciation should be conveyed to Pertamina and SKK Migas, who successfully completed the 2D seismic survey in a relatively short time, even in the COVID-19 pandemic situation. The government has also revised the gross split contract system, which is considered one of the causes of sluggish investment in the upstream oil and gas sector. The open data policy is also expected to boost investment, especially for exploration activities. In the future, the plan on changing the contract system to licensing in the oil and gas bill also needs to be carefully evaluated. Thus, it would not be just another regulation change but rather a long-term solution for simplifying bureaucratic affairs in the oil and gas sector.

[8] Ibid.
[9] CNBCIndonesia. Kementerian ESDM: 74 Cekungan Migas Belum Dieksplorasi. 21 October 2019.

Omnibus Law: Impact on the Energy Sector

Overview

The Government of Indonesia (GoI) has issued an Omnibus Law, which amended several regulations at once. The regulations aim to create new jobs and increase foreign (FDI) and domestic investments (DDI). Omnibus Law is a solution to problems caused by too many existing and overlapping regulations. Specifically, for the energy sector, the Omnibus Law only includes a few amendments to the previous regulations and emphasizes the ease of licensing energy sector businesses. It is hoped that in the future, the Omnibus Law will be able to increase investments in the energy sector so that it will have an impact on increasing state revenue.

Introduction

The Job Creation Act, known as the Omnibus Law, was officially passed in a plenary meeting of the House of Representatives (DPR) on 5 October 2020. Although there were some pros and cons in the society, on 2 November 2020, the President of the Republic of Indonesia finally signed the Omnibus Law. It became Law No. 11/2020 on Job Creation with a total of 1,187 pages.[1] Based on Article 1 of the Omnibus Law, Job Creation is an effort to create job through the convenience, protection and empowerment of cooperatives and micro, small and medium enterprises, improving the investment ecosystem and ease of doing businesses, central government investments and accelerating of the national strategic projects.[2]

In the energy and mineral resources sector, the Omnibus Law only contains minor changes, especially in the Electricity, Mineral and Coal, and Geothermal sub-sectors. However, the oil and gas (O&G) sub-sector generally still refers to Law No. 22/2001 on Oil and Gas. The Ministry of Energy and Mineral Resources (MEMR) is currently preparing a Draft Government Regulation (RPP) on implementing the Omnibus Law related to the energy sector.[3]

Regulatory Changes on Omnibus Law

In terms of convenience for businesses in obtaining permits sought from the MEMR sector, Omnibus Law adjusts a new arrangement that had previously been set in:[4]

1. Law No. 3/2020 on Amendments to Law No. 4 of 2009 on Mineral and Coal Mining (Mineral and Coal Mining Law)
2. Law No. 22/2001 on Oil and Gas (O & G Law)
3. Law No. 21/2014 on Geothermal (Geothermal Law)
4. Law No. 30/2009 on Electricity (Electricity Law)

[1] Detik. Perjalanan UU Cipta Kerja: Disahkan DPR hingga Diteken Jokowi. November 2020.
[2] Setneg. Undang-Undang No. 11 tahun 2020 tentang Cipta Kerja. November 2020.
[3] Katadata. Kementerian ESDM Masih Menyusun RPP pelaksanaan UU Cipta Kerja. November 2020.
[4] Ibid.

In the Mineral and Coal sub-sector, the Omnibus Law adds one article, namely Article 128A and amending Article 162 Mineral and Coal Mining Law. Article 128A, in essence, is that business actors who increase the added value of coal are given a certain treatment of the imposition of 0% royalty. Meanwhile, Article 162 contains criminal provisions for disturbing mining business activities. The changes in the Omnibus Law are intended to support the Mineral and Coal Downstream program.

In the O&G subsector, there is no fundamental change in the Omnibus Law regulations. Article 1 in item 23 of the O&G Law governing the implementing agency for controlling upstream business activities in the oil and gas sector is abolished. Because in fact, the agency is a Special Task Force for Upstream O&G Business Activities (SKK Migas), but SKK Migas is currently based on Presidential Regulation No.9/2013. Other changes include articles 5, 23, 25, 52, 53, 55, and the addition of article 23A. Overall, the amendment's contents in the O&G sector, highlighted the simplification of business permits and sanction implementation to prevent casualties and damage to health, safety, and/or the environment.

In the geothermal subsector, there are some crucial changes. First, previously, the Geothermal Law article 14, regarding the energy price of geothermal for direct use was regulated by the government. Meanwhile, in the Omnibus Law, article 14 is deleted. Furthermore, in the amendments of Omnibus Law in Article 15, it is stated that a Government Regulation shall regulate further provisions regarding norms, standards, procedures and the criteria for Geothermal exploitation for direct use including the energy price.

Second, the government also simplifies geothermal exploitation business licensing for indirect use in article 24 of the Omnibus Law. Then, the Omnibus Law also abolished Article 25 of Geothermal Law related to exploitation of indirect geothermal utilization in conservation waters, which formerly had to obtain permission from the minister of maritime affairs.[5]

The Omnibus Law made some significant changes in the electricity regulations. First, Omnibus Law deleted local government permits in granting business permits and the authority to set electricity rates. Second, the authority of local governments to set the selling price of electricity was also removed. Third, Omnibus Law declared that the President takes over the role of the Minister of MEMR in establishing the National Electricity General Plan (RUKN). Lastly, the Omnibus Law changes the Electricity Law Article 7, that the government regulations stipulate the RUKN. The RUKN determination was previously stated in the MEMR Decree No. 2682 K/21/MEM/2008.[6]

Regarding the RUKN document, the Minister of MEMR also signed the document of Electricity Supply Business Plan (RUPTL) that has been drafted by PT PLN (Persero) every year for the next 10 years. At the time, Indonesia already has RUPTL through the MEMR Decree No.39 K/20/MEM/2019 on the Ratification of the 2019-2028 PT PLN (Persero) Electricity Supply Business Plan.[7]

Indonesian Energy Sector Investment

Based on investment data from the MEMR sector, in the 2015-2019 period, the investment value of the energy sector experienced a decline from the realization in 2015 of USD 33.5 billion to USD 33.2 billion

[5] CNBCIndonesia. UU Ciptaker Pangkas Perizinan Panas Bumi? Ini Faktanya. October 2020.
[6] CNBCIndonesia. Omnibus Law: Presiden Ambil Alih Rencana Umum Kelistrikan RI. October 2020.
[7] Ibid.

in 2019 (Figure 1).[8] This investment value fell due to the drop of oil price and the unattractive investment climate in Indonesia. Besides, Indonesia should also accelerate economic recovery due to the COVID-19 pandemic. So that in the future, Indonesia requires high investment, especially foreign direct investment (FDI) in the energy sector, with the value of it to be more significant than domestic direct investment (DDI). With the existence of the Omnibus Law, it is hoped that it will help increase investments, especially in terms of licensing policies.

Figure 1. MEMR sector investment 2015 – 2019.[9]

The Impact on Energy Sector

In general, the purpose of the Omnibus Law is to facilitate licensing and increase investment in Indonesia. There are no significant changes in the energy sector. In the O & G sub-sector, there has been very little change in the Omnibus Law. The government's plan will be carried out in the O & G Law amendment draft, which will be starting in 2021. Likewise, there are only a few changes regarding geothermal licensing arrangements for new and renewable energy sub-sector. The government is currently preparing and discussing with the DPR on the New and Renewable Energy Bill, especially for the new and renewable energy sub-sector.

Although the Omnibus Law exempts the obligation to pay royalties in the mineral and coal subsector in one clause, MEMR hopes the Omnibus Law can increase state revenue. According to the government's opinion, the Omnibus Law can attract large investments and positively impact the absorption of labor in the energy and mineral resources subsector. The Omnibus Law is also expected to accelerate the development of new and renewable energy and increase its share in the national energy mix.[10]

[8] Minister of Energy and Mineral Resources No. 16/2020.
[9] Ministry of Energy and Mineral Resources. Rencana Strategis Kementerian ESDM 2020 – 2024. November 2020.
[10] Okezone. UU Cipta Kerja Bisa Tarik Investasi di Sektor Energi. October 2020.

Finally, we believe that the Omnibus Law will be a solution and approach in simplifying existing regulations to increase investment in the energy sector. With an increase in energy investment, it will increase O&G lifting, encourage the energy infrastructures such as refineries and gas pipelines, accelerate the utilization of new and renewable energy as well as electric vehicles. Above all, Omnibus Law could be a policy that supports the increase of energy independence and security in Indonesia.

Indonesia Battery Holding Could Accelerate Electric Vehicles Development

Overview

Indonesia is focusing on decreasing its carbon emissions following the Paris Agreement. There are several strategies adopted to achieve this, such as increasing renewable energy (RE) in the national energy mix, including promotion of electric vehicle (EV) utilization.

To attract more investments, recently, GoI announced its plan to establish Indonesian Battery Holding (IBH) — a consortium for developing the EV battery industries, from the upstream to downstream sector. The establishment of IBH shows that GoI is serious to develop its EVs industries and therefore provides certainty for investors to invest in the EVs industry.[1]

The formation of IBH can revitalize the EVs ecosystem in Indonesia and its supporting industries. It can also help accelerate the EVs development and utilization in Indonesia.

Indonesia Battery Holding

After the enactment of PR No. 55/2019 on Acceleration of Battery Electric Vehicles Program for Road Transportation,[2] the Ministry of Energy and Mineral Resources (MEMR) prepared and formulated the derivative regulations to support the BEVs adoption. They are: 1) price of the electricity, 2) regulations for the SPKLU business, and 3) standard of physical components and charging parts of EVs.[3]

Next, this year, GoI mobilized its mining holding and company (MIND.ID and Antam), national oil and gas company (Pertamina), and electricity state company (PLN) to form IBH that will act as the backbone for the EVs battery industry in Indonesia. Each of these state-owned enterprises has a specific task and role.[4,5]

MIND.ID will focus on the upstream part of this EVs battery supply chain development. The upstream part will be related to the mineral processing facilities development, such as nickel smelters. Recently, CEO of MIND.ID, Orias Petrus Moedak, stated that to support the EVs battery development, nickel processing factories using high-pressure acid leaching (HPAL) and rotary kiln electric furnace (RKEF) are planned to be built in North Maluku or North Konawe, with the investment reaching USD 3 billion USD.[6] Having the nickel reserves of almost 4.5 billion tons, Indonesia is likely to become the world's top battery producer in the future.[7]

[1] InvestorDaily. Holding BUMN Indonesia Baterai Segera Terbentuk. 14 October 2020.
[2] Presidential's Regulation No. 55/2019.
[3] Kumparan. 3 Regulasi Kendaraan Listrik Masih Disusun Kementerian ESDM. 9 October 2019.
[4] TheJakartaPost. State holding to be Indonesia's battering ram into global battery market. 16 October 2020.
[5] KoranJakarta. MIND ID segera Bentuk "Sub Holding" Industri Baterai. 8 December 2020.
[6] Kompas. Bulan Ini Akan Lahir Holding Indonesia Battery, Apa Itu? 16 October 2020.
[7] CNBCIndonesia. Cadangan Nikel RI Bisa 39 Tahun, Selangkah Jadi Raja Baterai! 28 October 2020.

On the other hand, the Indonesia giant oil and gas company Pertamina will manage the midstream part, which is the development of the manufacturing plant for the EVs battery.[8]

And lastly, downstream of the EVs battery supply chain is left to PLN. PLN will be responsible to develop the battery sets that can be used in the remote areas or for solar-powered buildings.[9]

In addition, Minister of State-Owned Enterprises (SOE), Erick Thohir, stated that there are two investors so far that are interested to invest in the IBH project of up to USD 20 billion in developing the nickel supply chain in Indonesia. This battery will not only be used for vehicles but also for households items.– Contemporary Amperex Technology Co. Ltd. (CATL) from China and LG Chem Ltd. From South Korea. The Coordinating Minister for Maritime and Investment Affairs said that CATL had signed an agreement with PT Inalum to create a lithium battery.[10]

Besides CATL and LG Chem Ltd., other potential investors are Tesla from America; Automotive Energy Supply Corporation (AESC) and Panasonic from Japan; Samsung SDI and SK Innovation from South Korea; and Bosch from Germany.[11] Recently, Antam has signed the MoU with CATL, in which Indonesia asks that 60% of the supplied nickel to be processed domestically.[12]

What Does the Future Look Like for Electric Vehicles in Indonesia?

Given the current trend that is shifting towards EVs utilization, EVs' future in Indonesia is promising. Given that the number of vehicle sales increases annually and also the GoI plans to shift towards a low carbon society, the EVs utilization are highly likely to be phenomenal. The following Figure 1 from MEMR projected that the number of EVs, both two-wheeled and three-wheeled, will keep growing from around 2.7 million in 2021 until around 7.5 million in 2030.

In addition to the huge market for EVs, Indonesia could utilize this as a momentum to shift to a more EVs local manufacturing industry. Obviously, Indonesia should not only provide enough mineral resources for creating the EVs battery or energy storage and manufacturing the battery itself, but we should be able to manufacture the EVs ourselves in the future. The key highlight is that Indonesia does not want to become an importer of EVs and would like to participate as producers in the future. When President Jokowi expected that Indonesia could export 200,000 electric cars by 2025, it accounts for 20% of the total exported cars.[13]

In addition to the PR No. 55/2019 that became the key enabler for accelerating the EVs development in Indonesia, many regulations have been enacted to develop an investment-friendly environment to attract investors as to build the required infrastructure for massive EVs utilization. The following Table 1 compiles some regulations that are related and/or supporting the EVs development in Indonesia.

[8] TheJakartaPost. Loc. cit.
[9] TheJakartaPost. Loc. cit.
[10] Bisnis. LG Chem Tanda Tangan Pekan Ini, Saham Antam (ANTM) Diborong Lewat Mansek. 17 November 2020.
[11] TheJakartaPost. Indonesia to develop circular economy for EVs, boost battery industry. 10 November 2020.
[12] Bisnis. CATL Pastikan 60 Persen Nikel Diolah Jadi Baterai Diproduksi di Indonesia. 15 December 2020.
[13] JakartaGlobe. Indonesia's Automotive Industry Won't Hit the Brakes Anytime Soon. 3 March 2020.

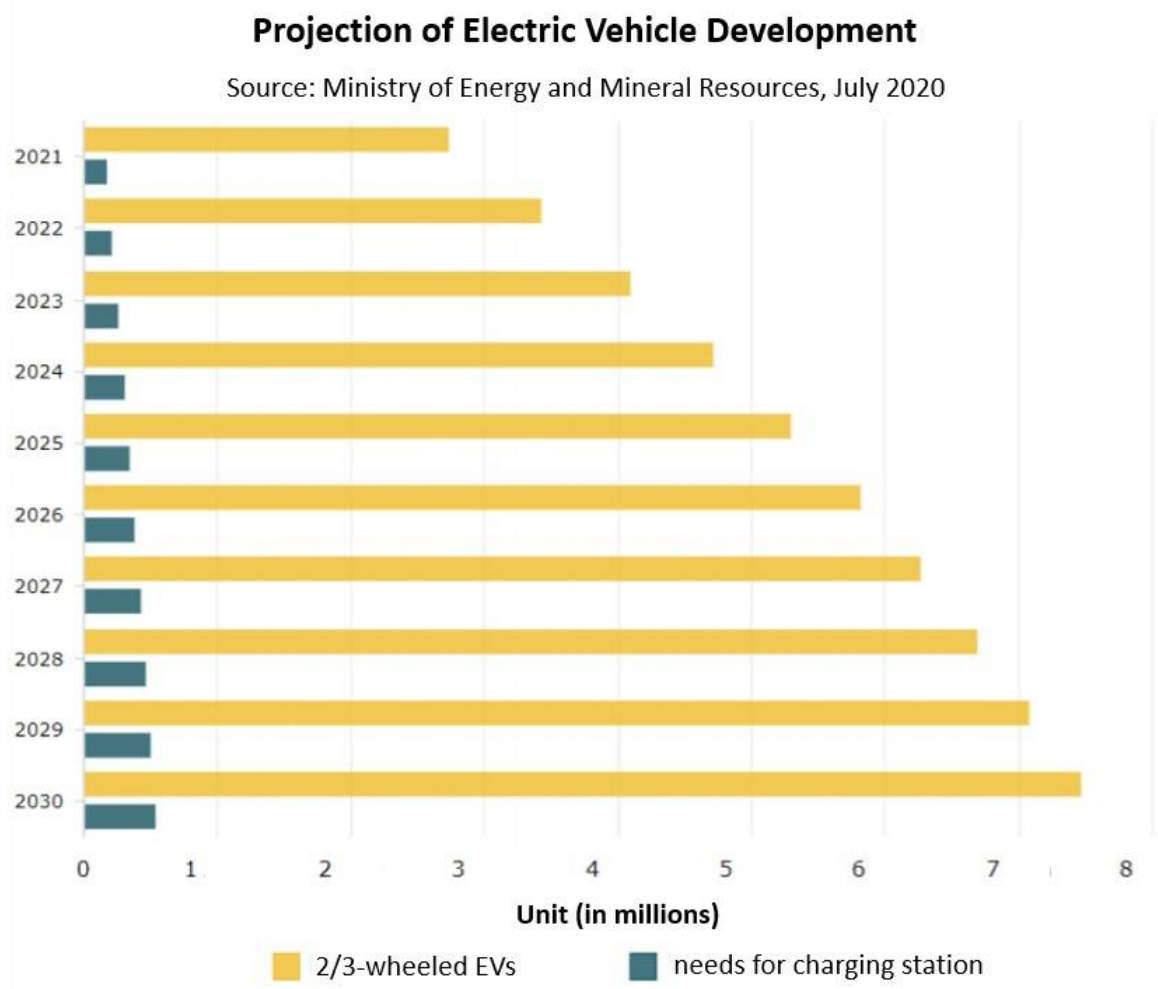

Figure 1. Projection of electric vehicles development in Indonesia, 2021–2030.[14]

Table 1. Compilation of regulations that foster the acceleration of the EVs ecosystem in Indonesia.[15]

Regulations	Things that are regulated
Government's Regulation No. 73/2019	Taxable Goods Classified as Luxurious in the form of Motor Vehicles which are Subject to Sales Tax on Luxury Goods (LGST)
Presidential's Regulation No. 55/2019	Acceleration of Battery Electric Vehicles Program for Road Transportation
Minister of Energy and Mineral Resources Regulation No. 13/2020	Provision of electric charging infrastructure for battery electric vehicle
Minister of Transportation Regulation No. 45/2020	Certain Vehicles Using Electric Engines
Minister of Home Affairs Regulation No. 8/ 2020	Basic Calculation of Vehicle Tax Imposition and Ownership Transfer Cost in 2020
Minister of Industry Regulation No. 27/2020	Specifications, Roadmap and Calculation Procedure for Local Content of Battery Electric Vehicles
Minister of Industry Regulation Nomor 28 Tahun 2020	Battery Electric Vehicle in a Completely Knocked Down and Incompletely Knocked Down State

[14] Katadata. Proyeksi Jumlah Kendaraan Listrik di Indonesia Hingga 2030. 30 July 2020.
[15] CNNIndonesia. 7 Regulasi yang Bikin Kendaraan Listrik 'Ngebut' di Indonesia. 22 October 2020.

It can be seen that many regulations have been enacted to foster the EVs development. The EVs industry is a strategic industry that involves many ministries, from MEMR, MOI, Ministry of Transportation as well as private institutions. Coordination and synergy among these institutions will become key factors in executing the grand scheme to develop Indonesia's EVs.

Thus far, the progress of EVs and development in Indonesia are going well. Nevertheless, there are still many challenges that need to be tackled and also some opportunities that can be taken. Moving forward, some factors should be maintained closely by the GoI:

- **Implementation of circular economy, for example by recovering lithium from the electronic waste, i.e. battery.** Apart from nickel, lithium is also a key element in making batteries. However, Indonesia does not have sufficient natural lithium reserves to produce the battery despite having abundant amounts of nickel reserves. Therefore, MOI initiated the urban mining program, which is an effort to recycle the used battery to recover the lithium. Ultimately, this program can also reduce Indonesia's reliance on imports.[16,17]
- **Readiness of infrastructure for the EVs utilization in the future.** One key consideration for the public to shift towards the EVs is the availability of EVs charging stations. According to the PLN estimation, Indonesia would need 31,000 EVs charging stations by 2030.[18] To date, there are 7,149 units EV charging stations (SPLU) spread out across 3,348 locations.[19] Therefore, infrastructure development must be pushed and supervised carefully to ensure the transition towards EVs utilization can run smoothly.
- **Incentives for the EVs producers and consumers.** Currently, electric cars are priced at around 600 million IDR — higher than the car price of the biggest market segment in Indonesia — of which battery accounts as the highest part for production cost. Given this situation, it is logical that people would still buy and use regular cars. Incentives such as reduced import tariffs for EVs manufacturers or lower luxury taxes are good starting points. However, additional incentives such as special parking areas and dedicated lanes are still needed.[20]
- **Opportunities for transfer of technology.** Investors' intention to build EVs manufacturing plants in Indonesia is an amazing opportunity for Indonesia to study from. The technology brought by the foreign multinationals should be studied extensively by the Indonesian. To this end, GoI can play an active role by facilitating this, which could be in the form of involving the local universities or government agencies related to research and development. Especially, considering Indonesia's goal to become independent in the future.

[16] TheJakartaPost. Loc. cit.
[17] Tempo. Kembangkan Baterai Mobil Listrik, Kemenperin Dorong Daur Ulang Baterai Bekas. 27 August 2020.
[18] TheJakartaPost. State holding to be Indonesia's battering ram into global battery market. 16 October 2020.
[19] Katadata. Loc. cit.
[20] OxfordBusinessGroup. Opportunities in Indonesia's electric vehicle segment.

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