



Indonesia's Energy Support Measures:

An inventory of incentives
impacting the energy transition

GSI REPORT



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Indonesia's Energy Support Measures: An inventory of incentives impacting the energy transition

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Executive Summary

Access to affordable, reliable, and clean energy is critical for economic and social development. Most governments—including Indonesia's—therefore provide financial support and incentives for energy production and consumption. Careful scrutiny of these policies is necessary to determine whether they are helping or hindering the government's objectives to expand energy access, improve energy security, and promote the transition to clean energy.

The Government of Indonesia (the “government” or the “GoI”) provides a range of energy support measures, incentives, and interventions that stimulate energy production and consumption, some of which are directed to support and protect the vulnerable segments of the population (e.g., poor households and small businesses). The COVID-19 National Economic Recovery Program is one such support measure that, like many others provided to the energy sector, disproportionately benefited the fossil fuels sector. There are also other measures aiming to promote a transition toward clean and renewable energy, although today, government support is still predominantly addressed to the fossil fuel sector.

This first-of-a-kind report has been developed to identify all the support measures and incentives that are available and have been given to the Indonesian energy sector by the GoI. This stocktaking report takes into account support provided for six types of energy: 1) oil and gas, 2) coal, 3) electricity, 4) renewable energy,¹ 5) biofuels, and 6) electric vehicles (EVs) and batteries for EV (EV and batteries). A substantial amount of support was provided for the fossil fuels sector, comprising oil and gas, coal, and electricity.²

The definition of “**support measure**” used in this report is based on the definition of “subsidy” from the Agreement of Subsidies and Countervailing Measures of the World Trade Organization (WTO) (1994), while the estimation methods were based on the [Methodology for SDG Indicator 12.c.1](#) (Wooders et al., 2019).

The report covers the period from FY 2016 to FY 2020.³ Throughout the time period observed, a total of 78 measures were identified. Out of those measures, 37% (29 measures) were estimated, representing at least IDR 1,225 trillion (~USD 83.7 billion)⁴ of support to the energy sector, distributed as follows (see Figure ES1):

- 94.1% of the total value estimated or IDR 1,153 trillion (~ USD 79 billion) has been given to support the production and consumption of fossil fuels—oil and gas (38.8%), coal (18%), and electricity (37.3%).

¹ Indonesia defines clean, renewable energy as Energi Baru Terbarukan (EBT) or New and Renewable Energy (MEMR, 2008), but the definition of what constitutes “Baru” (or “new”) is unclear (i.e., specific types or sources of energy). In this report, the term renewable energy includes energy from hydro, geothermal, solar, wind, biomass, biogas, and other clean and renewable forms of energy generation.

² In Indonesia, over 90% of electricity consumed is sourced from fossil fuels. Therefore, measures supporting the electricity sector are considered fossil fuel support.

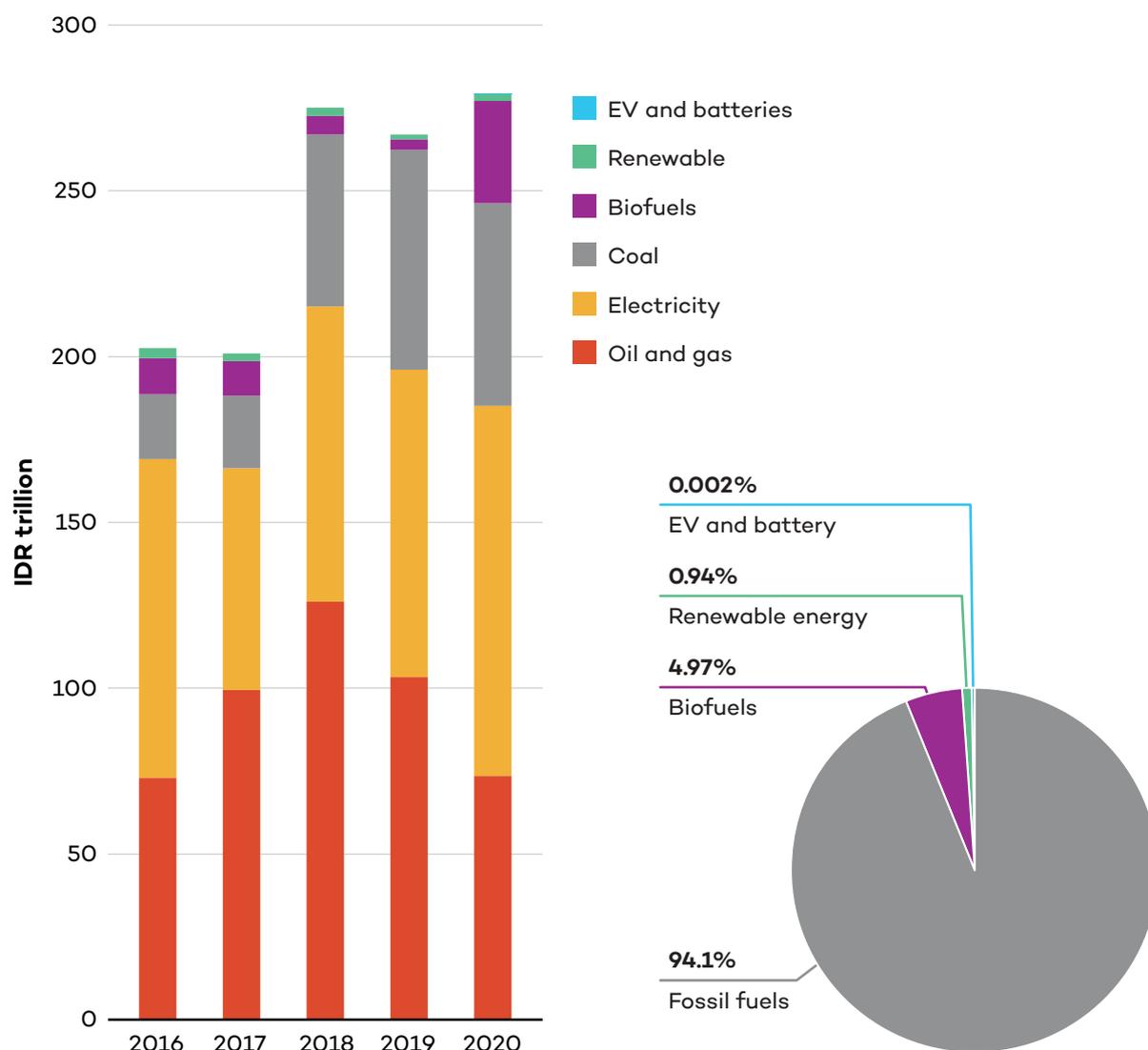
³ The fiscal year for the State Budget of the Government of Indonesia starts in January and ends in December. The State Budget for the following year is usually ratified before November of the previous year.

⁴ IDR to USD Exchange Rate is based on the rate published by the Indonesian Central Bank, Bank Indonesia, as of May 20, 2022.



- Less than 1% of the total value of support measures estimated (0.94%) has been provided to incentivize the renewable energy sector.
- 5% of estimated support, IDR 61 trillion (~ USD 4.2 billion), went to the biofuels industry, most of which (97%) was derived from a levy on crude palm oil export allocated to a dedicated fund known as the Crude Palm Oil Supporting Fund.
- 0.002% of estimated support or IDR 19 billion (USD 1.3 million) went to the emerging but growing EV and EV battery industries.

Figure ES1. Support measures provided to the energy sector in Indonesia, FY 2016 to FY 2020



Source: Authors' calculations.



These figures are likely to be an underestimation since many of the support measures could not be quantified due to data limitations (data not available, data cannot be verified, or identified support or incentive has yet to be disbursed). Whenever available, official government data were used to provide quantitative estimates.

Most of the support measures 77% identified (60 measures out of 78) were for the benefit of energy producers. Only 20% of all measures were given to support consumers, and the rest of the measures (three) were provided to benefit both producers and consumers.

Over the 5-year period observed, the number of support measures given to the Indonesian energy sector has steadily increased throughout the years, with a particularly sharp increase in 2020. This is largely attributed to the economic recovery packages that were given mostly to the fossil fuel sector through state-owned enterprises bailouts (Energy Policy Tracker, 2020).

Indonesia is a net oil importer, and under the current context of high international oil prices, the risk of a price increase would impact the retail prices in Indonesia. In turn, this could translate into the GoI increasing the amount of support to protect purchasing power and control inflation. As this report is being published, the GoI announced an increase in fossil fuels subsidies in response to the record-high international oil prices (Anggela, 2022; Antara, 2022; Ulya, 2022).

Given its nationally determined contribution (NDC) and renewable energy targets, it would be reasonable for Indonesia to focus more on creating effective incentive mechanisms to further promote the adoption and development of renewable energy. Shifting or reallocating support from fossil fuels to renewable energy would be a good start.

Key Findings From Our Research



Government support for fossil fuels and fossil fuel-generated electricity remains substantially higher than for renewable energy, undermining the effort to achieve 23% of renewable sources in the energy mix by 2025 and net-zero carbon emissions by 2060. This support also serves to lock in fossil fuel production and consumption. Switching support from fossil fuels to clean energy would help Indonesia accelerate its energy transition and reach its renewable energy targets.



Support measures for oil and gas have been fluctuating rather significantly. Based on the total quantified measures, the amount provided increased from IDR 73 trillion (USD 5.4 billion) in FY 2016 to its peak of IDR 126 trillion (USD 8.7 billion) in FY 2018, before tapering off to IDR 73.5 trillion (USD 5 billion) in FY 2020. Most of the support for oil and gas was in the form of tax exemptions or relaxations (government revenue foregone) intended to encourage exploration activities, therefore mainly benefiting producers. A total of 23 support measures have been identified for oil and gas, but only seven were quantified.



Support for coal has also risen considerably and is likely to continue to rise. In real terms, total quantified support measures for coal increased between FY 2016 and FY 2020, from IDR 19.5 trillion (USD 1.5 billion) to IDR 61.04



trillion (USD 4.2 billion). Support for coal was also mostly in the form of tax exemptions or relaxations (government revenue foregone), mainly benefiting coal producers. In total, 12 support measures were identified for coal, but only three were quantified. In the future, the number of coal support measures will most likely increase, as new measures to encourage the coal derivatives industry, such as dimethyl ether, are anticipated.



PT Perusahaan Listrik Negara, the state-owned electricity provider, continues to benefit from government support. The most important support received was in the form of direct transfers from the government to compensate for the below-market pricing of the retail tariff. This compensation accounted for between 65% and 80% of all the quantified spending to support the electricity sector between FY 2016 and FY 2019 and about 82% in FY 2020. The sector also benefits from several tax exemptions and relaxations for producers of electricity (non-renewable), most of which could not be quantified. Most electricity in Indonesia (~91%) is generated using fossil fuels, notably coal, thus support for electricity can be considered to be supporting fossil fuels. In total, 12 support measures were identified for fossil fuel-based electricity, but only seven were quantified.



Incentives for renewable energy are undermined by the support given to fossil fuels, despite geothermal enjoying most of the related funding from the government. Renewable energy received less than 1% of all support provided to the energy sector over the past 6 years, despite the target of achieving 23% renewable mix by 2030. The high potential for capturing solar energy is not reflected in government support. More support for renewables to mobilize at least IDR 500 trillion (USD 30 billion) in additional investment is required (Pribadi, 2019) if Indonesia is to meet its NDC and renewable energy targets. A total of 16 support measures were identified for renewable energy: only five were quantified, and some of them (like the feed-in tariff) were phased out within the period considered.



Support for biodiesel from the Crude Palm Oil (CPO) export levy accounted for the majority of subsidies for biofuels. The total quantified subsidies received from FY 2016 to FY 2020 increased from IDR 10.8 trillion (USD 740 million) to IDR 31 trillion (USD 2.1 billion). Since incentives for biofuel given to biodiesel producers are dependent on the fluctuating CPO market price, the amount of incentives going forward might fluctuate. Three support measures were identified for biofuels.



Since both the EV and EV battery industries are emerging sectors, most of the identified measures are relatively new, and they were not readily quantifiable. For the most part, the GoI has only supported the EV and EV battery industries since 2019, when Bali became the first provincial government to implement electric bus regulations (Thorn, 2021). A total of 12 support measures were identified for EV and EV batteries, but only three were quantified. Most of these measures were government revenue foregone in the form of tax breaks or special taxes that benefit the consumers.



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Introduction

The *Indonesia's Energy Support Measures: An Inventory of Incentives Impacting the Energy Transition* report is the first of its kind. It is a report—an inventory—designed to identify all support measures available for the energy sector in Indonesia from FY 2016 to FY 2020. The report includes support measures given to various types or sources of energy, and it serves as a starting point for the Government of Indonesia (GoI), as well as all stakeholders, concerned citizens, and the wider public to allow them to “follow the money”: to track the flow of public funding and to understand how public money is being spent on different types of energy. Through data visualization of the flow and allocation of the support measures throughout the period observed, this report also aims to shed light on government spending for fossil fuels vis-à-vis renewable energy and clean technology.

This stocktaking report takes into account support provided over 5 years, from FY 2016 to FY 2020, for six energy sources: 1) oil and gas, 2) coal; 3) electricity; 4) renewable energy⁵; 5) biofuels; and 6) electric vehicles (EVs) and battery for EV (EV and batteries).

This report has three parts:

1. This companion brief.
2. A catalogue of all the support measures identified during the period observed, FY 2016 to FY 2020, presented in a table format in Appendix 2: Indonesia Energy Support Measures by Energy Source.
3. A data visualization of all support measures that is available and can be accessed through the following [link](#).

The support measures identified in this report benefit mostly energy producers rather than consumers. The report defines “support measure” following the definition of “subsidy” from the Agreement of Subsidies and Countervailing Measures (ASCM) of the World Trade Organization (WTO) (1994). Thus, “support” refers to a government policy or program that creates a financial contribution or infers a policy advantage to non-government actors, and the report finds that support measures for the Indonesian energy sector come in many different kinds or forms, including incentives, interventions, loan and credit guarantees, as well as measures that are not clearly and/or consistently outlined in the state budget.

In all, 78 support measures were identified as having been provided by the GoI through the following types of mechanisms:

- 55 in the form of government revenue foregone
- 16 in the form of direct and indirect transfer of funds
- 6 in the form of income or price support
- One in the form of provision of goods or services below market value.

⁵ Indonesia defines clean, renewable energy as Energi Baru Terbarukan (EBT) or New and Renewable Energy (MEMR, 2008), but the definition of what constitutes “Baru” or “new” is unclear (i.e., specific types or sources of energy). In this report, the term “renewable energy” includes energy from hydro, geothermal, solar, wind, biomass, biogas, and other renewables.



Due to data limitations (e.g., data not available, source of data could not be verified, and/or measures are not yet applicable), only 29 support measures identified were quantified (37%), while the rest (63%) were not quantified. Data availability and transparency would be critical to arrive at a more comprehensive understanding of the size and number of support measures available for the energy sector in Indonesia.

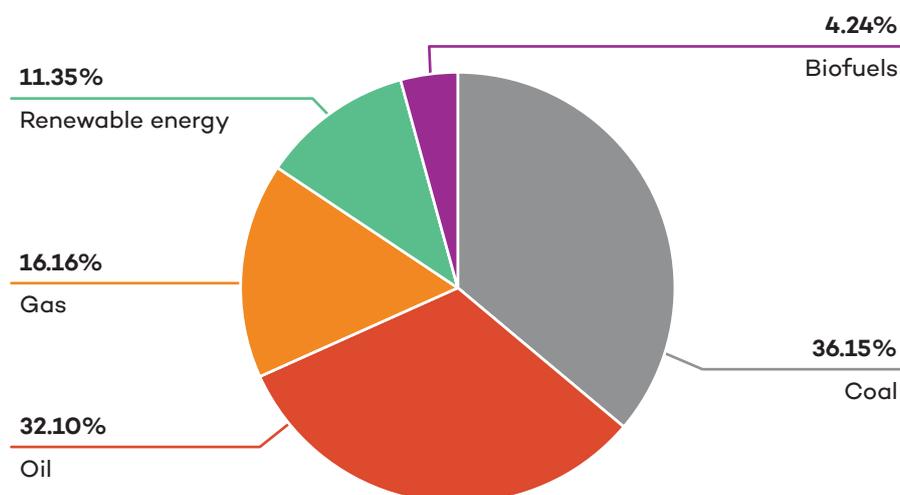
It is anticipated that this report would encourage further research and a more in-depth analysis of the size and types of support measures, prioritization of the different support measures and energy sources, as well as the socio-economic and policy implications of such measures going forward.

The Energy Landscape in Indonesia

Indonesia is a vast archipelago with over 17,000 islands (Badan Perencanaan Pembangunan Nasional - BAPPENAS, 2022; Ministry of Trade, n.d.) and more than 270 million people (World Bank, n.d.). It is the largest member of the Association of Southeast Asian Nations and accounts for 40% of energy consumption in the region. Energy demand in Indonesia is predicted to increase by 80%, while electricity demand is anticipated to triple by 2030 (Badan Koordinasi Penanaman Modal (Indonesian Investment Coordinating Board) [BKPM], 2021). The Indonesian economy is based on agriculture and crude oil production, and the energy sector is the second highest contributor of greenhouse gas emissions after agriculture (BKPM, 2021).

According to a recent energy sector assessment by the Asian Development Bank (2020), energy production in 2019 was based mostly on fossil fuels, comprising 616 million metric tons of coal, 2.8 million standard cubic feet of natural gas, and 272 million barrels of oil. Fossil fuels also remain the main source of energy, with coal, gas, and oil accounting for the largest share of primary energy supply by source (see Figure 1)—approximately 84% for 2021 (Ministry of Energy and Mineral Resources [MEMR], 2022).

Figure 1. Indonesia's primary energy supply by source, 2021



Source: Authors' diagram based on MEMR, 2022.



The GoI has recognized the need to move toward clean, sustainable energy (Asian Development Bank, 2020; BKPM, 2021), and to that effect it has committed to achieve 23% of renewable energy mix by 2025 and net-zero by 2060. In 2020, total electricity consumption was about 265 TWh, down from 271 TWh in 2019 (International Energy Agency, 2020), but the electricity mix in Indonesia remains dominated by oil and coal (BP, 2021; Enerdata, 2022).

With Indonesia holding the G20 Presidency in 2022, this is a momentous opportunity for the government to show that Indonesia has an important role to play in ensuring that public money is being used appropriately and effectively to achieve a sustainable recovery and clean energy transition, which are the priority issues for the Indonesia G20 Presidency (G20 Indonesia 2022, n.d.).

Indonesia has announced its commitment to reach net-zero by 2060 and to prioritize the clean energy transition (Ministry of Finance, 2021); as such, this report will be relevant to see whether Indonesia's policy settings are helping achieve this goal.

Approach and Scope

The report defines “support measure” following the definition of “subsidy” from the WTO ASCM, which includes the following features (WTO, 1994):

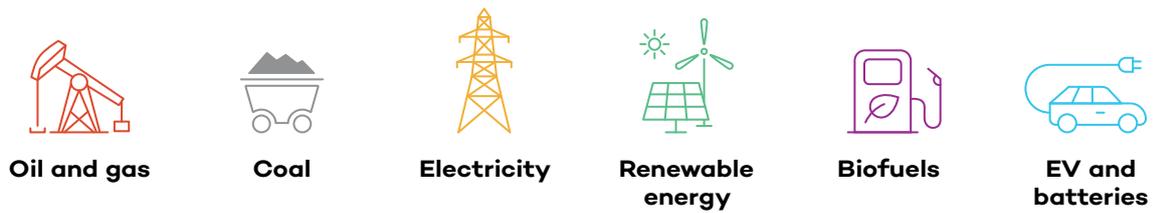
1. Direct and indirect transfers of funds and liabilities, or the potential transfer of funds and liabilities (such as budget outlays, loans, and credit guarantees).
2. Government revenue foregone (reduced tax rates and tax exemptions).
3. Provision of goods or services below market value (such as land or water).
4. Income and price support through market regulations (including non-enforcement).

For the purpose of this report, the term “support measure” has a slightly wider scope than the WTO ASCM subsidy definition. For example, we also include Domestic Market Obligation (DMO) and the Crude Palm Oil (CPO) Fund for biofuels. Therefore, “support” refers to a government policy or program that creates a financial contribution or confers a policy advantage to non-government actors that could include direct budgetary transfers, tax expenditures, loans from public institutions, credit guarantees, spending by state-owned enterprises, and certain forms of government debt.

To calculate the monetary value of the support provided, the [Methodology for SDG Indicator 12.c.1](#) (Wooders et al., 2019) has been used to arrive at an estimate for all six types of energy that serve as the primary sources of electricity in Indonesia, as illustrated in Figure 2:



Figure 2. Energy sectors observed



Whenever available, official government data were used to provide quantitative estimates. Based on data availability, 29 of the identified support measures were quantified (37%), while the rest (63%) were not quantified.

A support measure is considered quantified if there is data available for any given year. When data are not available for a quantified measure, the value of the support measure is noted as N/A (not available) for the relevant year. When not yet applicable, which can be due to the support measure not being provided for the particular year or the measure being for future implementation (i.e., approved but to be implemented in the following year), it is indicated as N/P (not applicable).

A detailed explanation of the methods by which the various support measures have been calculated and categorized is provided in Appendix 1: Approach and Methodology.

Appendix 2: Indonesia's Energy Support Measures by Energy Source provides a comprehensive listing of all 78 support measures identified.



1.0
Oil and Gas



Crude oil production in Indonesia has been declining since 2009. The production decline is mainly caused by mature oil wells, while the growth of new wells is relatively limited. Since then, Indonesia has mainly been relying on crude oil imports to meet domestic demand (Dewan Energi Nasional, 2019). As a consequence, the GoI has provided various incentives and support measures to promote investment in the oil and gas upstream sector through tax deductions in the exploration and exploitation phases, as well as new schemes for upstream oil and gas contracts. Most of the support measures are in the form of government revenue foregone and aim to encourage exploration activities, therefore mainly benefiting the producers.

A total of 23 support measures for the oil and gas sector from FY 2016 through FY 2020 have been identified. Of these, four are for the benefit of the consumers and the rest are for the benefit of the producers. These measures can be classified as follows:

1. 19 measures represent government revenue foregone (tax exemptions and reductions).
2. Two are in the form of income or price support.
3. One is in the form of direct and indirect transfer of funds.
4. One is in the form of the provision of goods or services below market value.

The total quantified support measures for oil and gas in FY 2020 reached IDR 73.5 trillion (USD 5 billion). The overall amount of support provided has been fluctuating, with an upward trend between FY 2016 and FY 2018, from IDR 73 trillion (USD 5.4 billion) in FY 2016 to IDR 126 trillion (USD 8.7 billion) in FY 2018, and then a downward trend from FY 2019. The lower amount of support provided in FY 2020 was caused by lower oil prices and also lower demand due to the COVID-19 pandemic. Only 30% (seven out of 23) of the subsidies could be quantified due to the lack of necessary data.

Table 1 summarizes the total estimates between FY 2016 and FY 2020, while details on the different support measures for oil and gas can be found in Appendix 2. A: Oil and Gas Support Measures.

Measures Quantified

Out of the 23 oil and gas support measures that were identified, only seven were quantified.

The top two quantified measures in order of magnitude are:

- Total Reimbursement for PT Pertamina (both already paid and still due⁶). The number throughout FY 2016–FY 2020 reached IDR 432 trillion (USD 30.8 billion).
- Value-added tax (VAT) exemption for crude oil and natural gas sales, totalling IDR 27 trillion (USD 1.94 billion) throughout FY 2016–FY 2020, with the largest amount distributed in 2017.

⁶ The amount for Total Reimbursement for PT Pertamina is taken from their Annual Report, where it includes the number for paid and due reimbursement from the GoI. As of the end of 2021, the GoI still owes PT Pertamina IDR 109 trillion (USD 7.6 billion) in unpaid support throughout the year. The amount of support measure that is still due is recorded separately for each financial year.



The reimbursement for PT Pertamina is for below-market pricing of certain fuels for consumers. The GoI has set retail prices for certain types of gasoline, diesel fuel (“Solar”), and kerosene below market since 1967. Three-kg liquefied petroleum gas (LPG) canisters are also subsidized.

In 2015, following a decline in oil prices, the subsidies for gasoline (Premium) were entirely removed, and diesel was set at IDR 1,000/litre. Given the unfavourable market conditions at the time, this temporary removal saved the GoI around IDR 211 trillion. The compensation from the GoI for Pertamina’s losses as the result of the lower selling price is recorded as a support measure for fuel, with the 3-kg LPG canister as the highest item subsidized. The amount recorded for the item “VAT exemption for crude oil, coal and natural gas” was estimated based on the foregone revenue (10% VAT) from the annual sales value for the commodities.

Table 1. Quantified government support for oil and gas in Indonesia by mechanism (in IDR trillion)

Mechanism	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Direct and indirect transfer of funds and liabilities	54.51	90.76	120.03	98.34	68.58
Government revenue foregone (tax exemptions and reductions)	18.47	8.71	6.03	4.99	4.93
Total volume of quantified support measures (in IDR trillion)	72.98	99.47	126.06	103.33	73.52

Source: Authors’ calculations.

Measures not Quantified

Due to the lack of available data, 16 of the identified support measures were not quantified: they were in the form of government revenue foregone, where no official government data were available to facilitate quantification. These incentives were given to the oil and gas sector in the form of tax deductions or relaxations, such as import duty exemptions and income tax Article 22 exemptions, where these items are not recorded in the state budget, nor is there any requirement for the beneficiaries to declare them. Information on the effective tax rate or the extent to which the tax deduction was utilized by the oil and gas companies was also not available. Unlike quantified tax subsidies, such as the VAT exemption, it was also not possible to identify an appropriate benchmark to use as a reference to estimate the tax exemptions.



Future Trends

The total reimbursement for PT Pertamina for under-pricing the retail price of fuel has been the largest form of support for all the years observed and remains so to date (see Appendix 2. A: Oil and Gas Support Measures). There have been several plans to reform the support provided for retail fuel, including the request from PT Pertamina to eliminate Premium RON 88 (Asmarini, 2021), a subsidized fuel. In addition to eliminating Premium, PT Pertamina has also suggested the reformation of the distribution method, from reimbursing Pertamina to giving out targeted support measures directly to eligible individuals, according to the Integrated Social Welfare Database (Data Terpadu Kesejahteraan Sosial/DTKS). This targeting method would be in line with the incentive reform for 3-kg LPG canisters already approved by the Parliament (Putri, 2021), in which the support measures have already been distributed directly to the targeted individuals. This move is expected to reduce the amount of government support for oil and gas.

However, with Indonesia being a net oil importer, the risk of increasingly high oil prices would eventually impact the retail prices in Indonesia. This could, in turn, translate into the government increasing the amount of support measures to protect purchasing power and control inflation.



2.0
Coal



Coal plays an important role in the Indonesian economy. Indonesia became a major coal-producing and -consuming country after the coal mining sector was reopened to foreign investment in the 1990s (Indonesia-Investments, 2018). In the first half of 2021, the coal industry contributed around USD 38 billion in export earnings for the country (Nangoy & Suroyo, 2021). Coal is an important source of electricity in Indonesia. It is considered crucial to economic growth and, therefore, heavily subsidized (Suharsono & Gençsü, 2019).

Twelve coal support measures provided from FY 2016 through FY 2020 have been identified, four of which have been quantified. All of the identified coal support measures are provided for coal producers in the form of tax benefits that improve production margins.

Details on the different support measures for coal can be found in Appendix 2. B: Coal Support Measures.

In real terms, the total quantified support measures for coal increased significantly throughout the period observed, from IDR 19.4 trillion (USD 1.4 billion) in FY 2016 to IDR 61.04 trillion (USD 4.2 billion) in FY 2020.

The 12 support measures identified can be classified as follows:

- Nine measures are in the form of government revenue foregone.
- Two measures are direct and indirect transfers of funds and liabilities.
- One measure is for income or price support.

Measures Quantified

Table 2 summarizes the total coal support measures estimated, covering the period from FY 2016 to FY 2020. Only measures in the form of government revenue foregone were quantified. Government support for coal reached its peak in FY 2019, totalling IDR 66 trillion (USD 4.8 billion). In FY 2020, the value decreased slightly, possibly due to a drop in overall electricity generation (as coal is the main source) and a decline in coal exports attributable to COVID-19 (MEMR, 2021; Oxford School of Enterprise and the Environment, 2020).

Table 2. Quantified government support for coal in Indonesia by mechanism (in IDR trillion)

Mechanism	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Government revenue foregone	19.41	21.78	51.76	66.34	61.04
Direct transfer	0.092	–	–	–	–
Total volume of quantified support measures (in IDR trillion)	19.5	21.78	51.76	66.34	61.04

Source: Authors' calculations.



The three largest support measures could be quantified based on in-house estimates:

- Preferential royalty and corporate tax rates for small coal mining licence holders. Although the report is only able to quantify the last 3 years for one province (FY 2018–FY 2020) using production data from only one main coal-producing province (East Kalimantan), the number reached IDR 93 trillion (USD 3.5 billion).
- Preferential export tax rate on coal totalling IDR 71.6 trillion (USD 5.1 billion) throughout FY 2016–FY 2020, with the largest amount occurring in 2018, because of the higher price of coal at the time. The amount was estimated based on the foregone revenue from the applicable 1.5% coal export tax rate compared to the 7.5% export tax rate that applies to other mineral commodities.
- VAT exemption for coal (also applying to crude oil and natural gas), totalling IDR 55 trillion (USD 3.9 billion) throughout FY 2016–FY 2020, with the largest amount occurring in 2019—IDR 13.6 trillion (USD 966 million). The amount was estimated based on the foregone revenue (10% VAT) from the annual sales value for coal.

Measures not Quantified

Due to the lack of or limited data to estimate the value of support measures provided, eight support measures are not quantifiable, and most of these measures (seven) were in the form of government revenue foregone.

This was because tax deductions or relaxations are not recorded in the state budget, nor is there any requirement for the beneficiaries to declare them. Unlike the quantified measures, it was not possible to identify either a benchmark rate, a subsidized rate, or the extent to which the measures were utilized as tax deductions by companies. The only non-tax measures are a loan guarantee and above-market pricing for low-quality coal provided to mine-mouth power plants. These were not quantified because no official government data were available to facilitate quantification.

Given the number of unquantifiable measures, it is reasonable to assume that the actual amount of support given to the sector is much larger than what has been identified, with an annual amount that is steadily increasing, from IDR 19.4 trillion (USD 1.45 billion) in FY 2016 to IDR 61.04 trillion (USD 4.2 billion) in FY 2020.

Future Trends

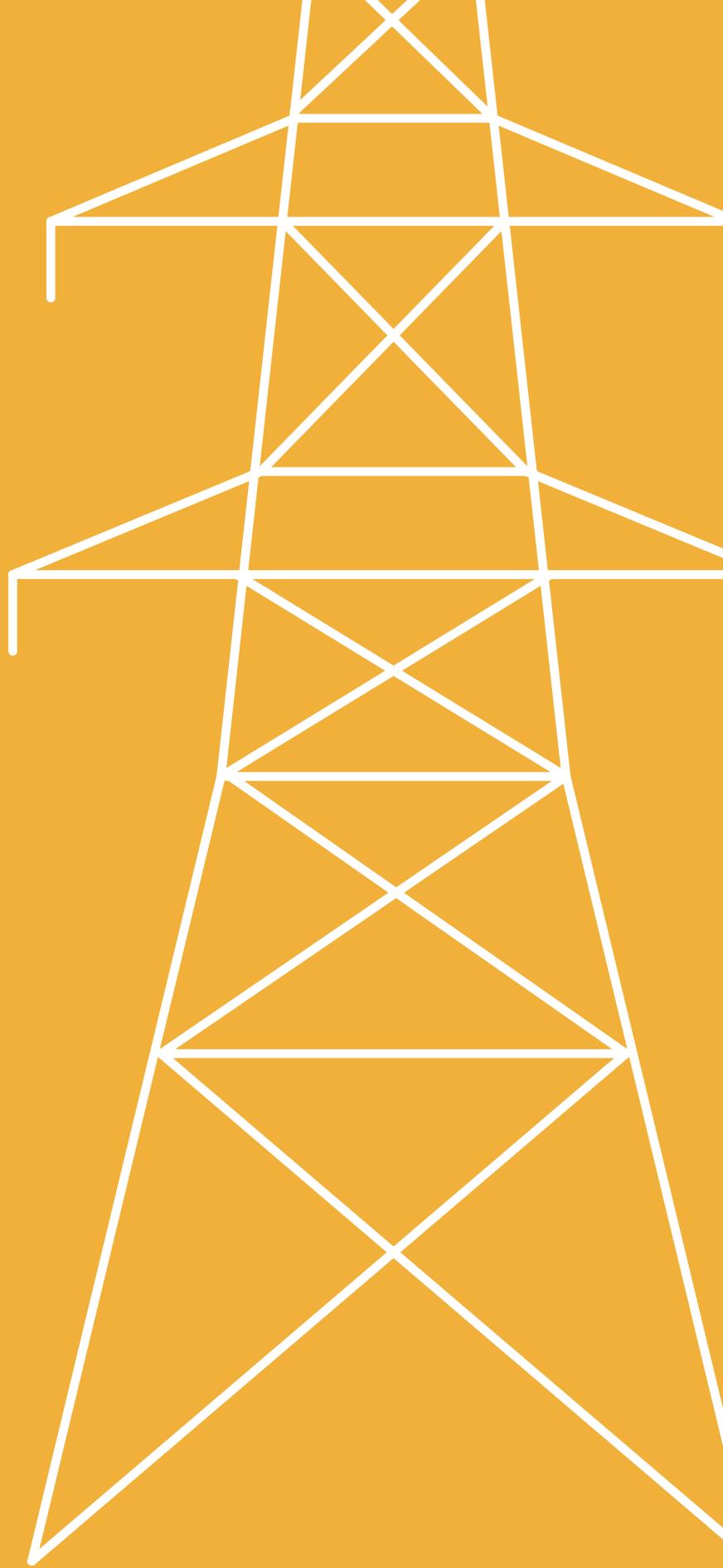
Since the ratification of the Job Creation Law (UU no. 11/2020) in 2020, the coal sector has been receiving more support, mostly in the form of preferential taxation and facilitation of business practices such as ease in getting contract extensions and removal of the limit on mining production areas. Although the law now includes coal as a taxable good on which a 10% VAT will be imposed starting in 2020, this tax will be borne by the state-owned electricity company, PT Perusahaan Listrik Negara (PLN). This will translate into a higher financial burden for PLN.



The rise of coal prices in 2021 caused many coal producers to prefer exporting production at international prices instead of fulfilling the DMO—which mandates domestic coal producers to sell part of their production to the domestic market at discounted prices, where it is generally used in coal-fired power plants to generate electricity—raising concerns of a domestic coal shortage that peaked in late 2021. This resulted in a short-lived export ban in January 2022. On the same day the export ban was lifted, it was also announced that the government is currently discussing a new scheme for PLN to purchase coal for its power plants, in which PLN will be required to purchase it at the market price, no longer using the DMO price of USD 70 per metric ton.

Recently, Indonesia announced a new regulation that introduces a carbon tax at a minimum rate of IDR 30 (USD 0.0021) per kilogram of carbon dioxide equivalent to be applied only to coal-fired power plants starting in July 2022, at the floor rate. Although the announcement of the carbon tax is generally welcomed, it has already faced resistance from the coal industry. The Indonesia Coal Miners Association requested a postponement of the implementation of the tax until further discussions. PLN has also expressed concern over rising power prices that will translate into either a higher electricity tariff to the customer or increasing subsidies and compensation from the government (Ungku & Christina, 2021).

Following its commitment from the 26th Conference of the Parties to the United Nations Framework Convention on Climate Change and PLN's Electricity Supply Business Plan (RUPTL) 2020–2028 to dial back the usage of coal power, the GoI is now looking to develop the coal derivatives industry, especially the conversion from coal to dimethyl ether, in the hopes of reducing LPG imports (Wareza, 2022). The President has also expressed his intention to ban the export of coal as a raw mineral (Kencana, 2022). The form of support to the coal industry in the future will most likely be along the lines of encouraging the coal derivative industry.



3.0 Electricity



Over the past decade, installed electricity capacity in Indonesia more than doubled, from about 33 GW in 2010 to about 70 GW in 2020, with most capacity generated from coal, followed by gas. Part of this increase was to significantly improve Indonesia's electricity access rate to 99.4% in 2021, up from 67% in 2010.

In all, 12 support measures for electricity from FY 2016 to FY 2020 have been identified. Nine of these measures were applicable throughout the entire period, while three measures were applicable only in 2020 as part of the government's COVID-19 recovery package.

The electricity support measures can be classified as follows:

- Six in the form of direct transfers of funds.
- Five in the form of government revenue foregone.
- One in the form of income or price support.

With the exception of one measure, all of the electricity support measures almost equally benefit producers (five measures) and consumers (six measures). Of the identified measures, 58% (seven out of a total of 12 measures) were quantified, and mostly given to poor households within the R-1 tariff group (450 VA–2200 VA). Measures identified under “electricity” mostly benefit fossil fuels, as the vast majority of electricity is generated from coal, oil, and gas (91% of total electricity generation). Therefore, they can be considered fossil fuel support.

Details on the different support measures for electricity can be found in Appendix 2. C: Electricity Support Measures.

Measures Quantified

A total of seven measures could be quantified (i.e., data for these support measures are available), including three COVID-19-related support measures for 2020. Five of these quantified measures took the form of direct transfers of funds, while the remaining two measures represent government revenue foregone and income or price support.

All but one of these quantified measures benefit the consumers. The other quantified measure is for the benefit of electricity producers.

Until FY 2019, the quantified amount remained fairly stable in the range of IDR 85 trillion and IDR 94 trillion. In FY 2020, the amount of the quantified measures increased significantly by about 72% compared to FY 2019, mainly as a result of the additional COVID-19-recovery related support. Throughout the years, the largest quantified measure was a transfer that the government paid to PLN. This transfer was provided in the annual state budget (APBN) to compensate PLN for losses that occur due to the below-market tariff setting by the government for end-user electricity prices. This compensation accounted for between 58% and 67% of all the quantified spending to support the electricity sector between FY 2016 and FY 2019 and about 40% in FY 2020.

The VAT exemption for electricity procurement and the DMO were the second and third largest quantified support measures between FY 2016 and FY 2019.



All three measures explained above (direct transfer to PLN, DMO, and VAT exemption) contributed to the below-cost pricing of electricity in Indonesia; however, there are differences regarding who benefits from the support provided. For example, all consumers benefit from the DMO, and all consumers (except households with power connections above 6,600 VA) benefit from the VAT exemption whereas only households, businesses, and government buildings with 450 VA–950 VA power capacity benefit from the below-cost tariffs. In 2020, the one-time compensation payment to support PLN as part of the COVID-19 Economic Recovery Program was the second largest quantified measure. To a large extent, all of these quantified measures were support given to the fossil fuel sector since the vast majority of electricity is generated by coal, oil, and gas (roughly 91% of total electricity generation) (PLN, 2021a).

Table 3. Quantified government support for electricity in Indonesia by mechanism (in IDR trillion)

Mechanism	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Direct and indirect transfer of funds and liabilities	63	51	71.5	74	92.1
Government revenue foregone	23.8	5.7	6.4	6.6	6.4
Income or price support	9.4	10.3	11.2	12.2	13.3
Total volume of quantified support measures (in IDR trillion)	96.2	67	89.2	92.7	111.7

Source: Authors' calculations.

Measures not Quantified

Five measures could not be quantified. Four of them were in the form of tax exemptions, and one was a direct transfer of funds in the form of a credit support through the Indonesia infrastructure guarantee fund that provides government guarantees for public–private partnership infrastructure projects in Indonesia. The tax exemption measures include an import duty exemption covering equipment and machines for all types of power-generation projects, an income tax deduction, and an extension period of income tax deductions on losses arising from investment on losses to support new types of fossil power generation, such as those using hydrogen, coalbed methane (an unconventional form of natural gas found in coal deposits or coal seams), and liquefied coal or gasified coal.

Future Trends

According to PLN's RUPTL 2021–2030, electricity demand will grow at an average rate of 4.9% per year until 2030. To meet this growing demand, electricity capacity needs to be further expanded, and the RUPTL aims to increase capacity by 40.6 GW by 2030, 51.6%



of which is to be met through renewable sources and the rest (48.4%) through fossil fuels (PLN, 2021b).

In addition, the building of almost 48,000 km of transmission lines is planned, as well as substations with a capacity of about 76,000 megavolt amperes for distribution. All these require PLN—as well as independent power producers—to invest an average of around IDR 129 trillion annually (Pratiwi, 2021).

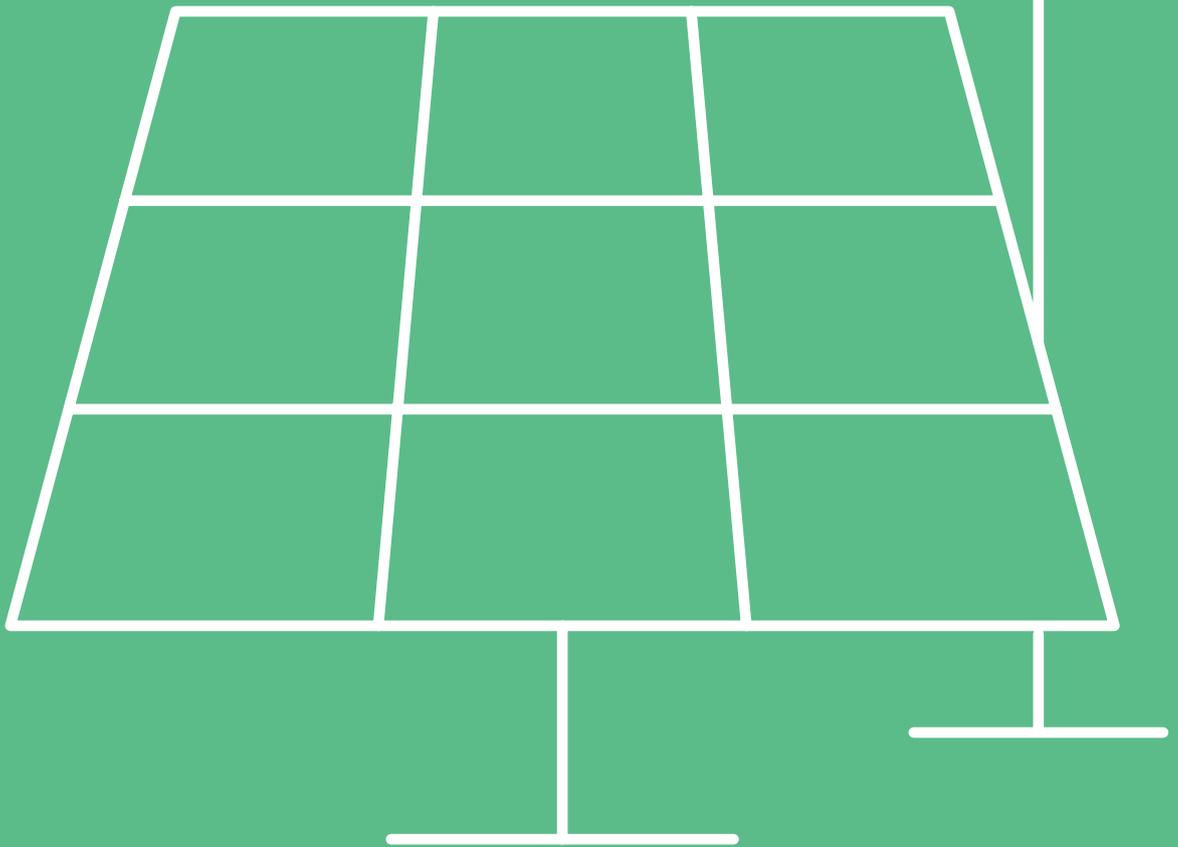
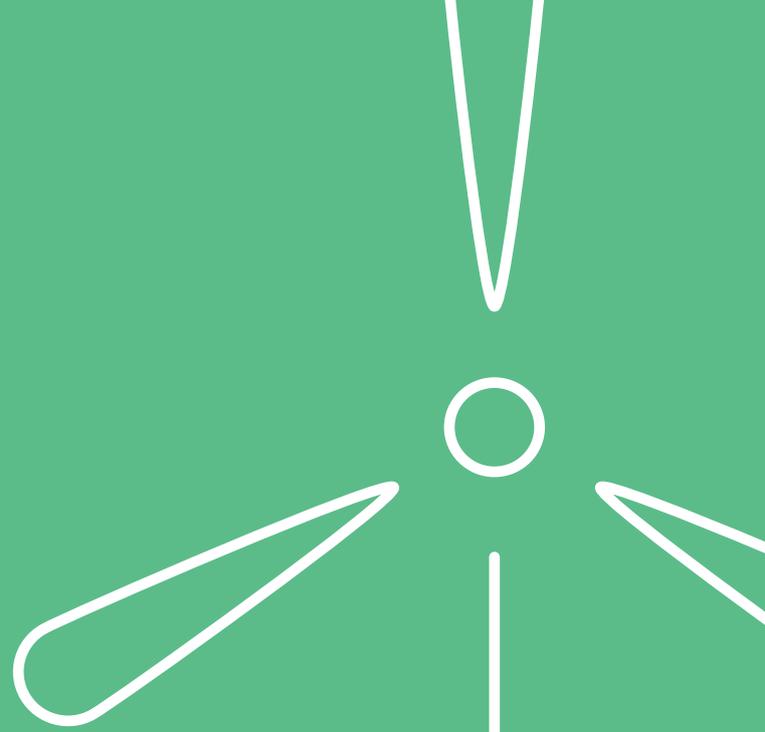
Yet, PT PLN is carrying a large debt of several hundred trillion IDR, which is why the GoI is considering restructuring the company to increase its budget efficiency (Pratiwi, 2021). According to the plan, to be finalized in 2022 and fully implemented by 2025, two sub-entities are being considered:

- One is a holding company that will focus on
 - Handling transmission, distribution, and retail, GENCOS⁷ subsidiary (with transferred assets) to handle generation assets.
 - Another subsidiary that will focus on non-power business (e.g., fibreoptics and charging stations).
- A second holding company that will focus on power plant expansion and electricity generation will enable the necessary transition toward renewable energies (Agung, 2022).

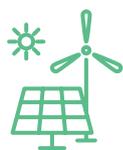
To accelerate the energy transition and reduce carbon emissions, PT PLN plans to build new and renewable energy (EBT) plants with a total capacity of 648 MW, with a target operating date of 2022 (Christian, 2022). However, it was unclear at the time of publication whether this target would be achieved. To support this, PLN is not only intensifying the construction of EBT plants, but also in parallel, modelling an early-retirement scenario of steam power plants (Pembangkit Listrik Tenaga Uap, or PLTU) in several stages up to 2056. In the first stage, by 2030, PLN will reduce 5.5 GW of steam power plants as power supply contracts come to an end. In the second stage, PLN will retire 10 GW of subcritical steam power plants by 2040. Meanwhile, in 2050, PLN will close 18 GW of subcritical and 7 GW of supercritical power plants (Hendartyo & Silaban, 2022).

To improve its financial position, the GoI plans to remove the electricity support measure and instead provide social support directly to poor households and small businesses. As a consequence, PLN will price electricity at the market price, thereby eliminating under-recoveries. This reform plan was approved by the budget committee of the House of Representatives in 2021, and the GoI was aiming to begin implementation in June 2022 (Umah, 2021a).

⁷ This holding company is comprised of the five Korean generation companies known as GENCOS: KOSEP, KOMIPO, KOWEPO, KOSPO and EWP, which are all KEPCO's subsidiaries (KEPCO, n.d.).



4.0 Renewable Energy



Indonesia has enormous renewable energy potential. Across six major renewable energy sources, Indonesia can potentially generate upwards of 400 GW in renewable power from the following sources: solar (207.8 GW), hydropower (75 GW), wind (60.6 GW), bioenergy (32.6 GW), tidal (17.9 GW), and geothermal (11 GW) (Mulyana, 2018).

Even though the largest potential lies in solar energy (Mulyana, 2018), the GoI is currently not providing any specific support for solar energy. Instead, support is generally available for all other types of renewable energy and particularly for geothermal energy.

A total of 16 renewable energy support measures have been identified for the period from FY 2016 through FY 2020. These measures can be classified into the following types of support mechanisms:

- 10 are in the form of government revenue foregone.
- Five are in the form of direct or indirect transfers.
- One is in the form of income or price support.

All of the support measures identified for renewable energy benefit producers. Due to the lack of or limited data, only 31% (five out of 16) of these measures could be quantified.

Details on the different support measures for renewable energy can be found in Appendix 2. D: Renewable Energy Support Measures.

Measures Quantified

Five measures that could be quantified include four direct transfers from the state budget and one price support (a feed-in tariff [FiT] instrument for renewable energy).

The GoI provided support for renewable energy projects in certain regions through the Special Allocation Fund for Small Scale Energy until 2018. Since FY 2019, renewable energy support has been provided as part of consolidated funding for line agencies, without separate program accounting, making it difficult to identify the support allocation for renewable energy.

Some funding in FY 2019 and FY 2020 was also provided through the Geothermal Infrastructure Financing Fund, which had been transferred from the Government Investment Centre to PT Sarana Multi Infrastruktur (PT SMI). The government granted state capital participation (Penyertaan Modal Negara, or PMN) to PT Geo Dipa Energi (Persero), amounting to IDR 700 billion in the 2020 fiscal year as a state equity. The provision of state capital participation is a form of commitment from the House of Representatives and the GoI to encouraging the achievement of the target of utilizing geothermal energy of 7,000 MW as an EBT mix in 2025 (PT Geo Dipa Energi, 2019).

As an income or price support, the GoI also provided FiTs for new renewable energy generation until 2016, but this was reformed in 2017 by basically moving from fixed tariffs to indexed tariffs to PLN's price of production (BPP, basic electricity generation cost), which is mostly determined by coal. The fixed tariff was established at 85% of BPP. Therefore, the new tariff system does not provide subsidies because the tariff levels



are below the average generation price. Nonetheless, government spending for FiTs for renewable energy projects built in the previous years continued after 2016, due to contract durations of 10 to 20 years. Spending on FiTs is calculated by comparing the tariff levels with PLN's average production cost and resulted in a total of IDR 7.4 trillion (USD 535 million) between FY 2016 and FY 2020.

Table 4. Quantified government support for renewable energy in Indonesia by mechanism (in IDR trillion)

Mechanism	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Direct and indirect transfer of funds and liabilities	0.48	0.5	0.5	1.1	1.5
Income or price support	2.6	1.8	2	0.4	0.6
Total volume of quantified support measures (in IDR trillion)	3.1	2.3	2.5	1.5	2.1

Source: Authors' calculations.

Table 4 shows the fluctuation of support provided for renewable energies during the period observed (from FY 2016 through FY 2020). This is primarily due to the changing policy environment, marked by the end of fixed FiTs for new projects and lower FiT spending for existing installations due to a higher PLN average production cost used as reference—which had made up most of the quantified support measures for FY 2016 through FY 2018—and support given to geothermal development.

Measures not Quantified

A total of 11 of the 16 support measures for renewable energy could not be quantified, and almost all (10) of these unquantified measures were government revenue foregone (tax exemptions and reductions). These measures could not be quantified due to the lack of sufficient publicly available information about the investment projects that have benefited from these fiscal incentives. Some of these incentives were based on the profit margin of the renewable energy developers, for which no generalized assumption can be made.⁸

The remaining unquantified support measures were direct transfers, such as funding that has been provided through the environmental fund management agency, the Badan Pengelola Dana Lingkungan Hidup (BPDLH) under the Ministry of Finance.

BPDLH was established in 2018 as the designated agency for the distribution and management of the national environmental fund. The purpose of the BPDLH is to channel funding for specific environmental projects and activities, including renewable energy, through

⁸ Note: Renewable energy project developers need to apply for some of these incentives, and the government needs to grant the support. This information should be available in government records and could therefore be made public.



a variety of instruments. These funding instruments include the following (see Appendix 2. D: Renewable Energy Support Measures for details):

1. Viability Gap Fund
2. Project Development Fund
3. Credit Enhancement Fund
4. Technical Assistance Fund

These support measures could not be quantified since many other sectors also received this support, and it was not clear how much of the spending was allocated to renewable energy.

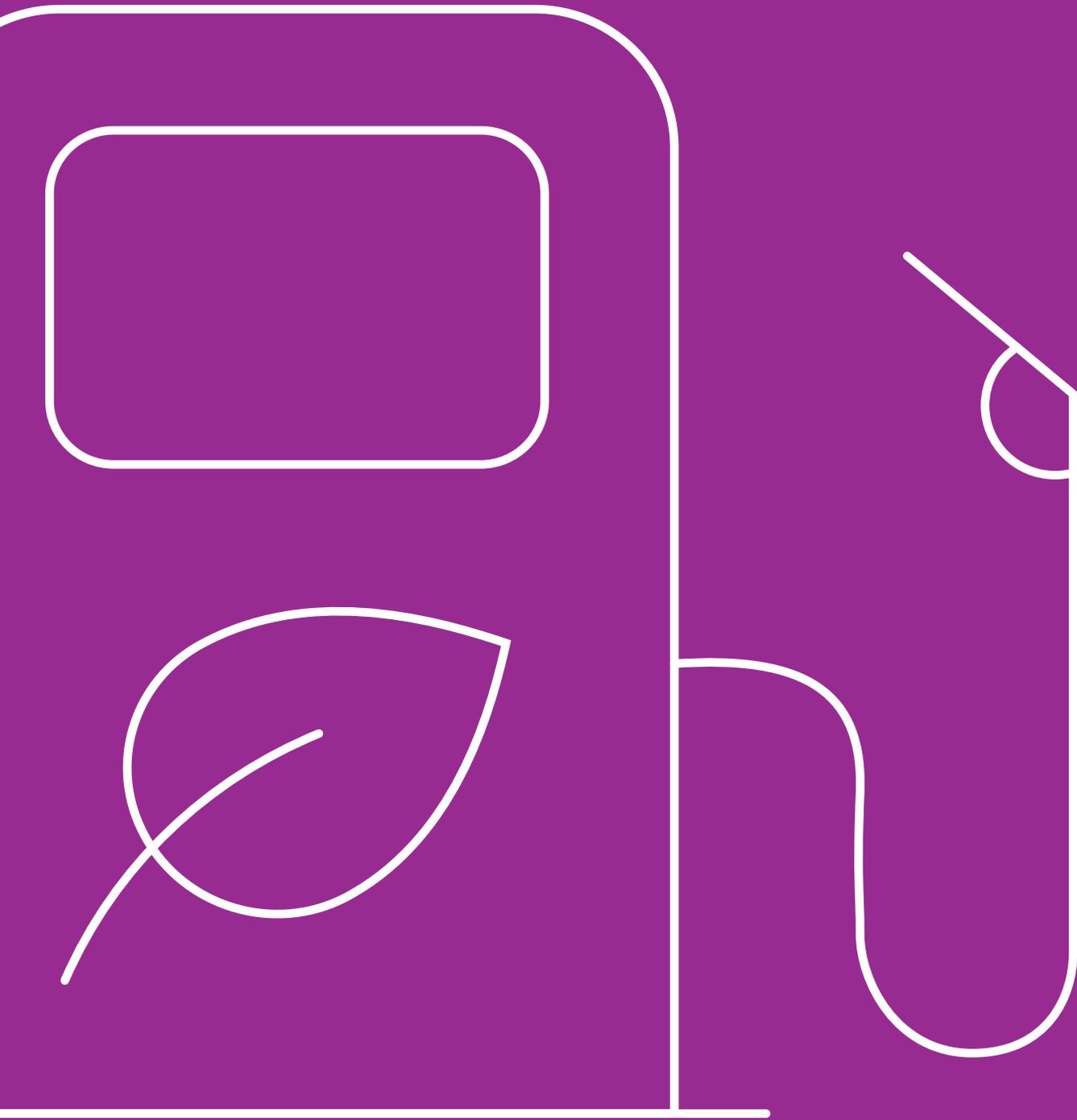
Other unquantified incentives include tax holidays and capital income tax deductions on losses of renewable energy projects, but these are considered ineffective (Lestari, 2021) due to inadequate or misaligned criteria against the actual project duration, payback period, financial viability, and return on investment considerations.

Future Trends

Indonesia is under-exploiting its renewable energy potential. Even though the share of renewable energy in the national power mix doubled from 5.3% in 2015 to 11.5% in 2021, it remains at a very low level (Julian, 2022; MEMR, 2016). Current annual investment in renewables is also quite low, with only IDR 131.5 trillion (USD 9 billion) in investment annually for the period from 2015 to 2030, although it is expected to grow to IDR 226.6 trillion (USD 15.5 billion) annually (BKPM, 2021). To achieve its nationally determined contribution target of 23% by 2025, Indonesia will need to significantly increase its investment in renewable energy to the tune of IDR 533 trillion (USD 37 billion) of additional investment (Pribadi, 2019).

Over the past years, the GoI has been reviewing the New and Renewable Energy Bill and Draft of President Regulation on FiTs but is falling behind its timeline to finalize this review, which was planned for 2021 (Mudassir, 2021; Pushep, 2021). These laws and regulations are expected to improve renewable energy development in Indonesia, but to date it is not clear what these laws and regulations include and when they will actually be implemented (Mudassir, 2021; Pushep, 2021).

In the meantime, the Indonesian Renewable Energy Society (METI) has proposed that a new renewable energy fund be included in the revised regulation, which could help Indonesia accelerate its renewable energy growth (S. Darma, personal communication, December 10, 2021). In 2015, a similar fund to provide incentives and financing facilities for the development of renewable energy—the Energy Resilience Fund—was proposed but never implemented.



5.0 Biofuels



After the United States and Brazil, Indonesia is the third largest producer of biofuels (Sönnichsen, 2021) and the largest producer of biodiesel (Stallard & Song, 2021). Indonesia is also the largest producer of palm oil, and, given its abundance and typically low prices, the country has been increasingly reliant on palm oil for biofuel/ biodiesel production since 2006 (CDP, 2021).

Biofuels play a strategic role in the context of the Indonesian energy sector, and the GoI has been providing incentives or support measures to the biofuels industry since 2006 (Kharina, 2016). To finance these biofuel support measures, the GoI collects levies from CPO exports, the proceeds of which are channelled into a fund called the Crude Palm Oil Supporting Fund. It is used to support and provide compensation for biofuels producers across a range of areas, including research and development, price support, credit interest support, and replanting programs for smallholder farmers (“Indonesia Says,” 2020).

Of particular importance are the support measures given to the mandatory 30% Biodiesel (B30) Program, which was launched by President Jokowi in December 2019 and became effective in 2020.⁹ There have been several attempts to replace the existing B30 Program with a new B40 Program, but these attempts have been paused several times (“Indonesia Says,” 2020; Umah, 2021c).

The aim of the B30 Program is to reduce fuel imports, hence reducing the trade deficit and boosting domestic consumption of palm oil (Christina, 2019). The B30 Program requires biodiesel to contain 30% palm-based fuel mixed with 70% diesel oil (MEMR, 2019). Indonesia is the first country in the world to have the highest blend of biodiesel program (MEMR, 2019).

Three biofuel support measures have been identified, all of which are quantified. They can be classified as follows:

1. One measure in the form of income or price support.
2. Two measures in the form of direct transfers of government funds.

Government support for biofuels increased throughout the period observed, rising from IDR 10.8 trillion (USD 806.7 million) in 2016 to IDR 30.8 trillion (USD 2.1 billion) in 2020. In 2020, the B30 Program received a one-time support of IDR 2.78 trillion (USD 191.3 million) as part of the National Economic Recovery Fund in response to COVID-19 (Kontan, 2020).

From FY 2016 to FY 2020, total support provided for the biofuel sector amounted to IDR 60.8 trillion (USD 4.2 billion).

Details on the different support measures for the biofuel sector in Indonesia can be found in Appendix 2. E: Biofuels Support Measures.

⁹ Based on Presidential Regulation No 79 Year 2014 on National Energy Policy targets biodiesel blending of 30% for transportation without public service obligation by 2025, and Minister of Energy and Mineral Resources Decree No 227/K/10/MEM/2019 on the Piloting Implementation Biofuel Blending of B30 into Diesel in the Year of 2019.



Measure Quantified

All of the three identified support measures for biofuel are quantifiable, and in terms of value, a large portion of the incentives came in the form of price support (see Table 5). The three support measures identified and quantified include the following (see Appendix 2. E: Biofuel Support Measures for details):

- Price support to biodiesel producers.
- One-Time Support from National Economic Recovery Program.
- Small-Holder Biofuel Credit Interest Support.

Data for the amount of support measures provided each year were derived from three primary sources: 1) biofuel support from the CPO Supporting Fund was based on unpublished data from the Ministry of Finance (Traction Energy, 2021); 2) non-recurrent support from the National Economic Recovery Fund; and 3) biofuel credit incentive data were drawn from the Financial Reports of the Central Government (LKPP) years 2017–2020.

1. Due to the fluctuating global market price of both diesel and fuel oil and CPO, the amount of the B30 subsidies tends to vary from year to year. In 2019, the levying of CPO export was postponed to 2020, anticipating the implementation date of the B30 Program (January 1, 2020), resulting in abnormally low support in that year. In 2020, the support provided increased to more than nine times that of the previous year. From 2016 to 2020, total B30 Program amounted to IDR 57.7 trillion (USD 4.1 billion). In the first quarter of 2021, the subsidies reached IDR 34.6 trillion (USD 2.4 billion).
2. In May 2020, a few months after the onset of the COVID-19 pandemic, the GoI provided funds for the National Economic Recovery Program which aims at supporting the severely hit public health and economic sectors including small, micro, and medium-sized enterprises, ultra-micro businesses, and strategic business sectors, including state-owned enterprises. The funding mechanisms include placement of funds, guarantees, state capital participation, and government investment. The B30 mandatory program was one of the eligible programs that received government support of IDR 2.78 trillion (USD 191.3 million) in 2020.
3. From 2016 to 2020, the government spent IDR 371.5 billion (USD 191.3 million) in the form of credit support for biodiesel development and plantation revitalization. The GoI paid for the differences between market credit interest and the interest paid by the oil palm farmers eligible for the support.



Table 5. Quantified government support for biofuel in Indonesia by mechanism (in IDR trillion)

Mechanism	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Income or price support	10.7	10.3	5.7	3.1 ¹⁰	28.0
Direct and indirect transfer of funds	0.15	0.13	0.052	0.016	2.8 ¹¹
Total volume of quantified support measures (in IDR trillion)	10.8	10.4	5.7	3.1	30.8

Source: Authors' calculations.

Measures not Quantified

In the case of the biofuel sector in Indonesia, all identified measures were quantified for the years observed (see Appendix 2. E: Biofuel Support Measures for details).

Future Trends

Incentives given to biodiesel producers depend on the fluctuating CPO market price, and this dependency increases the unpredictability of the amount of subsidies provided each year. Over the past 6 years, CPO prices have been increasing, including the CPO reference price set by the GoI that reached USD 1,787.50/metric ton in April 2022 (Sawit Indonesia, 2022).

In an effort to counter the high CPO price and relatively low domestic demand for fuel, the government had attempted to increase the mandatory content to 40% and introduce the B40 Program in July 2021 (Christina, 2021; "Indonesia Says," 2020). However, due to budgetary constraints, the B40 Program has been suspended and will not be implemented until 2025 (Argus, 2021; Netral News, 2021; Umah, 2021b).

After reaching an all-time high of CPO spot price of USD 1,900/ metric ton in March 2022, it is anticipated that the prolonged Russia–Ukraine conflict may keep CPO prices soaring until 2023 (Vasu, 2022).

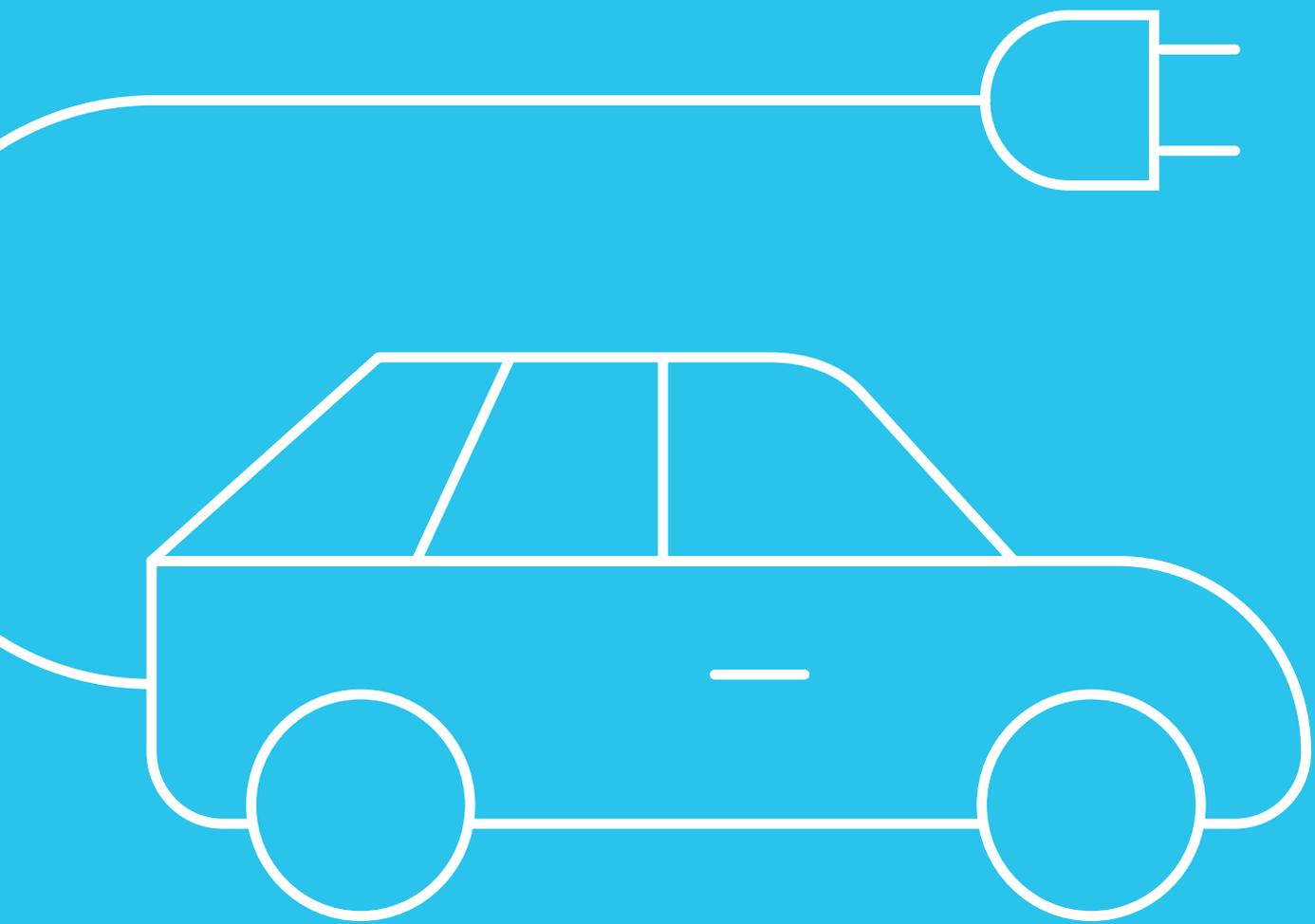
For the foreseeable future, the B30 Program will remain in place, while the GoI continues to monitor the rising price of palm oil, which is primarily driven by the Russia–Ukraine crisis, and also to further discuss the implementation of the B40 Program, including the B40 biodiesel road tests that had been planned for April (Listiyorini, 2022). The MEMR intends to test two types of B40 blend based on a combination of fatty acid methyl ether, distilled palm methyl ester, and the so-called green diesel (Biofuel International, 2022) that is made entirely from palm oil (Tømte, 2020).

¹⁰ In 2019, the payment for biodiesel incentive was postponed to 2020 to wait for the implementation of B30 (starting January 1, 2020).

¹¹ This figure includes the one-time incentive of IDR 2.78 trillion from the Economic Recovery Program.



Indonesia also intends to explore other possibilities for biofuels and biodiesel beyond the B30 Program, working to use palm oil for green diesel (D100), green gasoline (G100), and green jet fuels (MEMR, 2020) as part of the effort to achieve energy security and the renewable energy target of 23% by 2025 (“Indonesia, Malaysia,” 2022).



6.0 Electric Vehicles and Battery for EV



The EV and EV battery industry in Indonesia is still relatively new, but it is growing in both market potential (“EV Battery Indonesia,” 2022) and strategic importance (Cabinet Secretary of the Republic of Indonesia, 2022).

EV and batteries production is also considered a pioneer industry and receives support accordingly (Ministry of Finance Decree No 130/PMK.010/2020).

The National Industry Development Plan (RIPIN) sets EVs as the main priority of the automotive industry (Ministry of Industry, 2015). In 2020, the Ministry of Industry established a roadmap for EV production with a target of 600,000 units of four-wheel EVs and 2.45 million units of two-wheel EVs by 2030 (Kemenperin, 2021). This is almost 190 times the current EV fleet of 16,060 units (Kompas, 2022). In addition, the Ministry of Industry is also planning to issue a roadmap for EV purchasing by government agencies (Kemenperin, 2021).

In conjunction with developing its EV sector, Indonesia also intends to develop its EV battery industry and establish an integrated EV supply chain with an EV battery production target of 140 GWh by 2030 (Huber, 2022). To realize this objective, the GoI issued the Presidential Regulation 55/2019 on the Acceleration of Battery-Powered Electric Vehicles Program in 2019, in order to provide a set of overarching directives and incentives to develop a new market for battery-powered EVs and also to regulate the production of EVs and the required components. In 2021, the Indonesia Battery Corporation was established with an investment of IDR 238 trillion from the Ministry of State-Owned Enterprises (Mordor, 2020).

To encourage the adoption of EVs, the GoI provides several incentives, mostly in the form of tax reductions, which were first introduced in 2019 and reinforced in 2021. The government also provides tax breaks and other support measures that, given the industry's nascency, only recently came into effect (i.e., since FY 2019).

In all, 12 measures to support and incentivize the domestic market for EVs and the EV battery industry were identified, and all in the form of government revenue foregone.

Of these, 10 of the 12 are tax breaks or special taxes, while the other two are in the form of under-pricing of government-owned resources. Some of the measures were difficult to quantify; for instance, it was not possible to estimate the income tax of EV/ battery for EV-producing companies. Only three measures were quantifiable, namely the luxury tax for EV sales in 2020 and the first half of 2021, the reduced electricity tariff for charging, and the discount on electricity installation and wattage upgrade.

Presidential Regulation No 55/2019 (issued in 2019) provides the basis for incentivizing both the supply and the demand sides of EVs.

From the demand side, the support will make EVs more affordable for the consumers in terms of cost of purchase, recharging, replacing batteries and spare parts, and easy access to finance. For the electricity consumption side of EVs, the government also provides several incentives through PLN. PLN offers a reduced electricity tariff for EV charging and discounts for electricity installation and wattage upgrading.



From the supply side, Regulation 55/2019 provides fiscal and non-fiscal incentives for 12 types of activities, which include research and development, training, production-related activities, battery swap and charging services, and other infrastructure. The regulation also allows for gradual restrictions on the use of fossil fuel-based vehicles, the implementation of which will be aligned with the national automotive industry development road map (Dawborn et al., 2019).

Details on the different support measures for the biofuel sector in Indonesia can be found in Appendix 2. F: EV and Batteries Support Measures.

Measures Quantified

Three of the 12 support measures identified for EVs and batteries are quantified, and the estimated amounts are based on the publicly available data. Since the EV and batteries sector is still in its infancy, the three quantified measures only came into effect in FY 2019 and FY 2020, and they include the following incentives:

1. EV. 2: Zero Luxury Tax for Battery-Powered EVs. Issued in 2019, this regulation took effect in 2020, and it is estimated that EVs received a luxury tax incentive of IDR 17.5 billion (USD 1.2 million) for that year. The estimate is based on EV sales data from the Association of Indonesia Automotive Industries (Fikriansyah, 2021) and an assumption of 20% tariff¹² on the off-road price for internal combustion engine vehicles.
2. EV. 11: Reduced Electricity Tariff for Charging. The price support given to EV owners is estimated based on the 30% lower electricity tariff for EV charging from 10:00 p.m. to 5:00 a.m. (Ramli, 2021; Umah, 2021b). Assuming a daily average travel distance of 50 km per unit, 5 days per week, and 50 weeks a year (Kompas, 2008; Pratama & Tokai, 2018), combined with a tariff of IDR 1,444.7/kWh (Umah, 2021b) and electricity consumption of 15 kWh/100 km (Energuide, n.d.), it is estimated that an incentive of IDR 101.6 million (USD 7,000) was given to the EV sector in 2020.
3. EV. 12: Discount on Electricity Installation and Upgrade (PLN). The discount given to EV owners is based on the assumption of a tariff class upgrade from 4,400 kVa to 11,000 kVa that would cost IDR 7,945,400 (PLN, n.d.). In 2020 and 2021, PLN gave a 100% discount on tariff class upgrades for EV owners. This resulted in an incentive of IDR 993.2 million or around USD 68,400 in 2020.

Table 6. Quantified government support for EV & battery in Indonesia by mechanism (in IDR billion)

Mechanism	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020
Government revenue foregone	N/A	N/A	N/A	N/A	18.6

Source: Authors' calculations.

¹² Tariff assumption taken conservatively from the regulation applied for internal combustion engine vehicles, Government Regulation No 73/2019: <https://peraturan.bpk.go.id/Home/Details/122493/pp-no-73-tahun-2019>.



Measures not Quantified

Nine of the 12 identified support measures for the EV and batteries sector could not be quantified because most measures are yet to come into effect.

The nine quantified EV and batteries support measures include the following: acceleration of battery EV program, vehicle tax and title transfer fee exemption, down payment of 0% for EVs, concessional GST on EVs, tax holiday, tax allowance, import duty exemption, corporate income tax facilities, and super tax deduction for R&D.

Future Trends

The EV and EV battery industry in Indonesia will continue to grow, and the GoI has set ambitious targets for the industry, including accelerating the development of an integrated EV ecosystem (Cabinet Secretary of the Republic of Indonesia, 2022).

Following its inception in 2021, the Indonesia Battery Corporation formed a consortium, HKLM Indonesia, with South Korean carmakers and battery suppliers to build the first EV battery factory in Southeast Asia (Ministry of Foreign Affairs, 2021). Construction of this USD 1.1 billion EV battery plant in Karawang, West Java, began in September 2021, and the facility is expected to have an initial production capacity of 10 GWh that will gradually increase to 30 GWh (Ministry of Investment, 2021). The HKLM Consortium is comprised of Hyundai, Kia Motors, and LG Energy Solution, which supplies batteries to car manufacturers such as General Motors, Tesla, and Volkswagen (Huber, 2022).

Soon after, in March 2022, Hyundai inaugurated its full-scale EV factory located in Cikarang, also in West Java (Lee, 2022; HMG, 2022). This full-scale EV factory has an annual production capacity of up to 250,000 units of EV annually (HMG, 2022). Both the Karawang and Cikarang manufacturing plants are the first in Indonesia and in Southeast Asia, representing the initial steps to an integrated ecosystem of EV industry from the nickel mine, smelter, and refinery down to the precursor, cathode, battery cell, module, pack, and EV production, envisioned to be the largest EV export hub in Southeast Asia (Hutauruk, 2021).

The investment made by HKLM Consortium for the EV battery factory in Karawang is entitled to a 15-year income tax holiday, and this investment is only a small part of the total planned investment of USD 9.8 billion or around IDR 142 trillion (Victoria, 2021). Other proposals to further encourage EV adoption include the exemption of EV from goods and services tax (Pajak Pertambahan Nilai/ PPN) (CNN Indonesia, 2021).

Additional support for EVs also came in the form of tax exemption under a recent law, which was passed in January 2022 by the Indonesian Parliament (Law No 1/2022 on Fiscal Relations). This law stipulates the exemption of EVs from vehicle tax (Pajak Kendaraan Bermotor/ PKB) and title transfer fee (Bea Balik Nama Kendaraan Bermotor/BBNKB). Both taxes are part of regional taxes controlled by the provincial governments.

Once Indonesia produces its EVs domestically, the government is expected to offer more incentives than it currently provides. For example, a tax holiday of 20 years is given to companies that invest more than IDR 30 trillion. Since the consortium's total investment value



is much more than that amount (estimated to be around IDR 142 trillion) and requires a longer period of return on investment, the GoI will need to address certain business challenges and investment barriers, in order to attract the required investment (Huber, 2022).

The integrated battery and EV ecosystem will also require additional import duties and tax exemptions, as well as possibly relaxation of local content requirements, depending on the domestic availability of certain components (BUMN, 2020).

Furthermore, the GoI needs to explore the possibility of providing exemptions or concessions of goods and services tax on EV sales. This may be required to increase the sale of EVs to absorb the 1,000 unit- annual production (CNN Indonesia, 2021). The Indonesian central bank, Bank Indonesia, is also reviewing additional incentives related to credits for green projects, including low-interest rate EV financing to further encourage EV sales (Putri, 2021).



Concluding Thoughts and Remarks

The GoI provides substantial support to the fossil fuel sector, which undermines Indonesia achieving its target of 23% of renewable energy by 2025 and net-zero by 2060. Almost 95% of the support provided by the GoI for the energy sector in Indonesia was allocated to fossil fuels, including the fossil fuel-based electricity sector. These subsidies accelerate climate change, increase toxic air pollution, and are an ineffective way to extend energy access and reduce energy poverty (Parry et al., 2021).

This report represents an attempt to track public spending for the energy sector, and it shows that support provided has been skewed in favour of fossil-based energy—oil and gas, coal, and fossil fuel-based electricity. The report also shows that the values presented are likely underestimated, as many of the identified measures, notably in the form of tax exemptions and relaxations, could not be estimated. Improving data and information availability would help achieve deeper understanding of how public resources are supporting the energy sector, as well as help inform policy decisions that align with Indonesia's renewable energy targets.

Fossil fuel support drains the public budget, particularly under the current context of high energy prices, support to fossil fuels is coming at a high cost to Indonesia's public finances, as can be seen from the recent announcement of the Indonesian Parliament approving the government's request for an additional IDR 350 trillion (USD 23.75 billion) in energy subsidies, in addition to the IDR 154 trillion that has already been spent in the first quarter of 2022 (Anggela, 2022). Rather than continuing to support the fossil fuel industry, the government should direct public money toward investments that have social and environmental benefits.

Government support for fossil fuels is slowing Indonesia's energy transition in two ways: 1) it locks in fossil fuel production, leading to ongoing fossil fuel dependence; and 2) by lowering the price of fossil fuels and fossil-sourced electricity, it makes it harder for renewables to compete.

As this report shows, there are opportunities for Indonesia to use its public resources more efficiently to provide appropriate support to the vulnerable parts of the population and pave the way for a just transition away from fossil fuels.

One of the most effective ways would be to improve targeting for the two the largest supports provided: 1) reimbursement to Pertamina for below-market pricing of fuels; and 2) subsidy to PLN to provide cheap electricity. The current distribution scheme for these measures is likely to mostly benefit the wealthier segment of the population, which consumes the largest share of fuel and electricity. Improved targeting by ensuring that the measures are only accessible to lower-income groups can free up more resources. The savings generated could be used to fund the necessary investment in renewable energy, clean transport alternatives, and related infrastructures. It can also be used to fund more social support to those consumer groups that need it most, as it would ensure the poor are protected while allowing Indonesia to transition toward cleaner energy.



In conclusion, the savings derived from ending and reforming government support and incentives can be used to help the poor cope with higher energy prices in a way that is decoupled from energy consumption and to provide clean energy alternatives. Swapping funding for fossil fuels for cleaner alternatives would be a way for Indonesia to get back on track to reach its 23% renewable energy target by 2025.



References

- Agung, F. (2022). *Menteri BUMN Erick Thohir akan Membentuk Holding dan Subholding PLN*. NewsSetup. <https://newssetup.kontan.co.id/news/menteri-bumn-erick-thohir-akan-membentuk-holding-dan-subholding-pln?page=all>
- Anggela, N. L. (2022, May 20). *Cegah Harga Peralite dan Listrik Naik, Pemerintah Tambah Subsidi Energi Rp350 Triliun*. Bisnis.com. <https://ekonomi.bisnis.com/read/20220520/9/1535068/cegah-harga-peralite-dan-listrik-naik-pemerintah-tambah-subsidi-energi-rp350-triliun>
- Antara News. (2022). *Gov't proposes Rp74.9 trillion in additional energy subsidies to DPR*. <https://en.antaranews.com/news/230269/govt-proposes-rp749-trillion-in-additional-energy-subsidies-to-dpr>
- Argus. (2021, December 1). *Indonesia to push back B40 rollout to 2025: MEMR*.
- Asian Development Bank. (2020, December). *Indonesia energy sector assessment, strategy, and road map: Update*. <https://www.adb.org/sites/default/files/institutional-document/666741/indonesia-energy-asr-update.pdf>
- Asmarini, W. (2021). *Dirut Pertamina Buka Suara Penghapusan Premium & Peralite*. CNBC Indonesia. <https://www.cnbcindonesia.com/news/20211228132214-4-302654/dirut-pertamina-buka-suara-penghapusan-premium-peralite>
- Biofuels International. (2022, February 16). *Indonesia launches biodiesel programme*. <https://biofuels-news.com/news/indonesia-launches-biodiesel-programme/>
- BKPM. (2021). *Harnessing renewable energy investment sector in Indonesia*. <https://www3.bkpm.go.id/en/publication/detail/news/harnessing-renewable-energy-investment-sector-in-indonesia>
- BP. (2021). *Indonesia energy market 2021*. <https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2021-indonesia-insights.pdf>
- Cabinet Secretary of the Republic of Indonesia. (2022). *Indonesia ready to welcome EV era, minister says*. <https://setkab.go.id/en/indonesia-ready-to-welcome-ev-era-minister-says/>
- CDP. (2021). *How green are biofuels? Understanding the risks and policy landscape in Indonesia*. https://cdn.cdp.net/cdp-production/cms/policy_briefings/documents/000/005/722/original/Biofuel_Policy_Brief_EN.pdf?1628248407
- Christian, D. (2022). *Dukung Transisi Energi, PLN Targetkan Pembangkit EBT 648 MW Beroperasi Tahun Ini*. PT PLN. <https://web.pln.co.id/cms/media/siaran-pers/2022/02/dukung-transisi-energi-pln-targetkan-pembangkit-ebt-648-mw-beroperasi-tahun-ini/>
- CNN Indonesia. (2021). *PLN Minta Pemerintah Hapus PPN dan PPh untuk Mobil Listrik*. <https://www.cnnindonesia.com/ekonomi/20211201192240-85-728661/pln-minta-pemerintah-hapus-ppn-dan-pph-untuk-mobil-listrik>



- Dawborn, D., Donauw, J. E., & Sormin, J. (2019). *One step forward for battery-powered electric vehicles in Indonesia*. <https://www.herbertsmithfreehills.com/latest-thinking/one-step-forward-for-battery-powered-electric-vehicles-in-indonesia>.
- Dewan Energi Nasional, (2019). *Indonesia energy outlook 2019*. <https://www.den.go.id/index.php/publikasi/index/EnergyOutlook#>
- Enerdata. (2022). *Indonesia energy information*. <https://www.enerdata.net/estore/energy-market/indonesia>
- Energy Policy Tracker. (2020). *Indonesia*. <https://www.energypolicytracker.org/country/indonesia/>
- EV battery Indonesia: Understanding the opportunities and challenges*. (2022). Cekindo. <https://www.cekindo.com/blog/ev-battery-indonesia-understanding-the-opportunities-and-challenges>
- Fikriansyah, I. S. (2021). *Ini Dia Mobil Listrik Paling Laku di Indonesia*. Gaikindo. <https://oto.detik.com/mobil/d-5899805/ini-dia-mobil-listrik-paling-laku-di-indonesia>
- G20 Indonesia 2022. (n.d.). *Sustainable energy transition*. <https://g20.org/g20-presidency-of-indonesia/>
- Hendartyo, M., & Silaban, M. W. (2022). *Ini Strategi Bos PLN Capai Net Zero Emission di 2060*. Tempo.co. <https://bisnis.tempo.co/read/1574505/ini-strategi-bos-pln-capai-net-zero-emission-di-2060>
- HMG. (2022). *Hyundai Motor Company Inaugurates Its First Manufacturing Plant in Southeast Asia*. <https://www.hyundaimotorgroup.com/news/CONT00000000000016127>
- Huber, I. (2022). *Indonesia's battery industrial strategy*. Energy Rewired. <https://www.csis.org/analysis/indonesias-battery-industrial-strategy>
- Hutauruk, D. M. (2021). *Pabrik Mobil Listrik Hyundai di Cikarang Mulai Produksi Januari 2022*. Kontan. <https://newssetup.kontan.co.id/news/pabrik-mobil-listrik-hyundai-di-cikarang-mulai-produksi-januari-2022?page=all>
- Indonesia-Investments. (2018). *Coal mining in Indonesia—Indonesian coal industry*. <https://www.indonesia-investments.com/business/commodities/coal/item236>.
- Indonesia, Malaysia commit to biodiesel mandates despite higher prices*. (2022). Reuters. <https://www.reuters.com/business/sustainable-business/indonesia-malaysia-commit-biodiesel-mandates-despite-higher-prices-2022-03-24/>
- Indonesia says B40 biodiesel programme unlikely to proceed next year*. (2020). Reuters. <https://www.reuters.com/article/indonesia-palm-oil-idUSL1N2I20LZ>
- International Energy Agency. (2020). *Indonesia energy profile*. <https://www.iea.org/countries/indonesia>
- Julian, M. (2022). *Akhir Tahun 2021, Bauran Energi Baru Terbarukan (EBT) Mencapai 11,5%*. NewsSetup. <https://newssetup.kontan.co.id/news/akhir-tahun-2021-bauran-energi-baru-terbarukan-ebt-mencapai-115>



- Kemenperin. (2021). *Upaya Pemerintah Jadikan Indonesia Pemain Utama Industri Kendaraan Listrik*. <https://kemenperin.go.id/artikel/22645/Upaya-Pemerintah-Jadikan-Indonesia-Pemain-Utama-Industri-Kendaraan-Listrik>
- Kemenperin. (2022). *Kemenperin Dukung Akselerasi Ekosistem Kendaraan Listrik*. <https://kemenperin.go.id/artikel/23140/Kemenperin-Dukung-Akselerasi-Ekosistem-Kendaraan-Listrik>
- Kencana, M. R. B. (2022). *Jokowi Larang Ekspor Mineral Mentah dan Batu Bara, Eropa hingga Jepang Meradang*. <https://www.liputan6.com/bisnis/read/4870420/jokowi-larang-ekspor-mineral-mentah-dan-batu-bara-eropa-hingga-jepang-meradang>
- KEPCO. (n.d). *GENCOs*. http://www.kepco-uhde.com/en/01company/03KEPCO-fleet_03.html
- Kharina, A., Malins, C., & Searle, S. (2016). *Biofuels policy in Indonesia: Overview and status report*. International Council on Clean Transportation https://theicct.org/sites/default/files/publications/Indonesia%20Biofuels%20Policy_ICCT_08082016.pdf
- Kompas. (2022). *Jumlah Kendaraan Listrik di Indonesia Capai 16.060 Unit*. <https://money.kompas.com/read/2022/03/21/143726326/jumlah-kendaraan-listrik-di-indonesia-capai-16060-unit>
- Kontan. (2020). *Ini skema program pemulihan ekonomi nasional yang memakan anggaran Rp 318 triliun*. <https://nasional.kontan.co.id/news/ini-skema-program-pemulihan-ekonomi-nasional-yang-memakan-anggaran-rp-318-triliun>
- Lee, J. (2022, March 17). *Hyundai opens EV factory in Indonesia – RM6.5 billion plant to build Ioniq 5, 250,000 unit production capacity*. <https://paultan.org/2022/03/17/hyundai-opens-ev-factory-in-indonesia-cikarang-plant-to-build-ioniq-5-250000-unit-production-capacity/>
- Lestari, V. P. (2021). *Permasalahan dan Tantangan Program Peningkatan Kontribusi Energi Baru dan Terbarukan dalam Bauran Energi Nasional*. <https://berkas.dpr.go.id/puskajiakn/kajian-akuntabilitas/public-file/kajian-akuntabilitas-public-16.pdf>
- Listiyorini, E. (2022). *Indonesia sticks with biodiesel policy even as palm oil soars*. Bloomberg. <https://www.bloomberg.com/news/articles/2022-03-07/indonesia-sticks-with-biodiesel-policy-even-as-palm-oil-soars>
- Ministry of Energy and Mineral Resources. (2016). *Laporan Akuntabilitas Kinerja Instansi Pemerintah 2015 - ESDM*. <https://www.esdm.go.id/assets/media/content/content-laporan-akuntabilitas-kinerja-instansi-pemerintah-kementerian-esdm-tahun-2015.pdf>
- Ministry of Energy and Mineral Resources. (2019). *A single narration: First time in the world, Indonesia to implement 30% biodiesel (B30)*. <https://www.esdm.go.id/en/media-center/news-archives/narasi-tunggal-pertama-di-dunia-indonesia-terapkan-biodiesel-30-persen-b30>
- Ministry of Energy and Mineral Resources. (2022). *Handbook of energy & economic statistics of Indonesia 2021*. <https://www.esdm.go.id/assets/media/content/content-handbook-of-energy-and-economic-statistics-of-indonesia-2021.pdf>



- Ministry of Finance. (2021). *Komitmen Indonesia untuk Transisi Energi Bersih*. <https://www.kemenkeu.go.id/publikasi/berita/komitmen-indonesia-untuk-transisi-energi-bersih/>
- Ministry of Foreign Affairs. (2021, September 21). *Indonesia starts construction of Southeast Asia's first electric vehicle battery factory*. <https://kemlu.go.id/chicago/en/news/16163/indonesia-starts-construction-of-southeast-asias-first-electric-vehicle-battery-factory>
- Ministry of Industry. (2015). *Rencana Induk Pengembangan Industry Nasional*. <https://www.kemenperin.go.id/ripiin>
- Ministry of Investment. (2021, September 15). *Consortium HKML Battery Indonesia groundbreaking, Minister of Investment realizes construction of the first electric vehicle battery Factory in Southeast Asia*. https://www.bkpm.go.id/images/uploads/file_siaran_pers/Consortium_HKML_Battery_Indonesia_Groundbreaking%2C_Minister_of_Investment_Realizes_Construction_of_The_First_Electrical_Car_Battery_Factory_in_S.pdf
- Ministry of Trade. (n.d.). *Indonesia facts and figures*. <https://www.embassyofindonesia.org/basic-facts/>
- Mordor Intelligence. (2022). *Indonesia battery market – Growth, trends, COVID-19 impact, and forecasts (2022–2027)*. <https://www.mordorintelligence.com/industry-reports/indonesia-battery-market>
- Mudassir, R. (2021). *Kapan Perpres Pembelian Listrik EBT Selesai?* Bisnis ID. <https://ekonomi.bisnis.com/read/20211103/44/1461595/kapan-perpres-pembelian-listrik-ebt-selesai-ini-penjelasan-kesdm>
- Mulyana, R. (2018). *Low carbon development in the energy sector*. Ministry of Energy and Mineral Resources. <http://www.iesr.or.id/wp-content/uploads/2019/04/Rida-Mulyana.pdf>
- Nangoy, F., & Suroyo, G. (2021). *Indonesia clings to coal despite green vision for economy*. Reuters. <https://www.reuters.com/business/energy/indonesia-clings-coal-despite-green-vision-economy-2021-09-20/>
- Netral News. (2021). *Well, the B40 program cancels continuing in 2021, why?* <https://netral.news/en/well-the-b40-program-cancels-continuing-in-2021-why.html>
- Oxford School of Enterprise and the Environment. (2020). *COVID-19 & coal investment: Briefings for China, India, Indonesia & Poland*. https://recovery.smithschool.ox.ac.uk/wp-content/uploads/2020/11/20200825CoalBriefings_CH.IND_IN.PLv2_compressed.pdf
- Parry, I., Black, S., & Vernon, N. (2021). *Still not getting energy prices right: A global and country update of fossil fuel subsidies*. International Monetary Fund. <https://www.imf.org/en/Publications/WP/Issues/2021/09/23/Still-Not-Getting-Energy-Prices-Right-A-Global-and-Country-Update-of-Fossil-Fuel-Subsidies-466004>
- PLN. (n.d.). <https://web.pln.co.id/pelanggan/layanan-online/perubahan-daya-migrasi>
- PLN. (2021a). *Sustainability report 2020: Supporting economic recovery, achieving sustainability goals*. [https://web.pln.co.id/statics/uploads/2021/06/Laporan-Keberlanjutan-Tahunan-PT-PLN-\(Persero\)-Tahun-2020-Highres.pdf](https://web.pln.co.id/statics/uploads/2021/06/Laporan-Keberlanjutan-Tahunan-PT-PLN-(Persero)-Tahun-2020-Highres.pdf)



- PLN. (2021b). *RUPTL 2021–2030*. https://gatrik.esdm.go.id/assets/uploads/download_index/files/38622-ruptl-pln-2021-2030.pdf
- Pratama, A. & Tokai, A. (2018). *Passenger vehicle emissions in Indonesia: Future projections*. https://www.researchgate.net/publication/329312126_Passenger_Vehicle_Emissions_in_Indonesia_Future_Projections
- Pratiwi, I. (2021). *Tahun Depan, PLN Restrukturisasi Utang*. Republika. <https://www.republika.co.id/berita/r3ovrv370/tahun-depan-pln-restrukturisasi-utang>
- Pribadi, A. (2019). *Kejar Target Bauran Energi 2025, Dibutuhkan Investasi EBT Hingga USD36,95 Miliar*. Ministry of Energy and Mineral Resources. <https://ebtke.esdm.go.id/post/2019/12/06/2419/kejar.target.bauran.energi.2025.dibutuhkan.investasi.ebt.hingga.usd3695.miliar>
- PT Geo Dipa Energi. (2019). *Berikan PMN Kepada GeoDipa, DPR & Pemerintah RI Dukung Pemanfaatan Energi Panas Bumi*. <https://www.geodipa.co.id/berikan-pmn-kepada-geodipa-dpr-pemerintah-ri-dukung-pemanfaatan-energi-panas-bumi/>
- Pushep. (2021). *Publik Menanti UU EBT yang Revolusioner*. Center for Energy and Mining Studies. <https://pushep.or.id/publik-menanti-uu-ebt-yang-revolusioner/>
- Putri, C. (2021). *DPR: Subsidi LPG Per Orangan Pakai Data Terpadu Sosial*. CNBC Indonesia. <https://www.cnbcindonesia.com/news/20211230105903-4-303217/dpr-subsidi-lpg-per-orangan-pakai-data-terpadu-sosial>
- Ramli, R. (2021). *Diskon Tarif hingga Tambah Daya, Ini Upaya PLN Genjot Pengguna Kendaraan Listrik*. Kompas.com. <https://money.kompas.com/read/2021/02/02/124306726/diskon-tarif-hingga-tambah-daya-ini-upaya-pln-genjot-pengguna-kendaraan>
- Sawit Indonesia. (2022). *Periode April 2022: Harga Referensi CPO Naik tapi Biji Kakao Turun, BK CPO USD 200/MT dan Biji Kakao 5 Persen*. <https://sawitindonesia.com/periode-april-2022-harga-referensi-cpo-naik-tapi-biji-kakao-turun-bk-cpo-usd-200-mt-dan-biji-kakao-5-persen/>
- Sönnichsen, L. (2021). *Leading countries based on biofuel production worldwide in 2020*. Statista. <https://www.statista.com/statistics/274168/biofuel-production-in-leading-countries-in-oil-equivalent/>
- Stallard, E., & Song, W. (2021). *Indonesia's biodiesel drive is leading to deforestation*. BBC News. <https://www.bbc.com/news/59387191>
- Suharsono, A., & Gençsü, I. (2019). *Indonesia G20 coal subsidies*. Overseas Development Institute. <https://cdn.odi.org/media/documents/12746.pdf>
- Thorn, M. (2021). *Indonesia on thorny path to electric vehicles*. *Jakarta Globe*. <https://jakartaglobe.id/business/indonesia-on-thorny-path-to-electric-vehicles/>
- Tømte, A. (2020). *Indonesia readies its green diesel. These are the likely social and environmental impacts*. *The Conversation*. <https://theconversation.com/indonesia-readies-its-green-diesel-these-are-the-likely-social-and-environmental-impacts-145044>



- Ulya, F. (2022, May 20). *Dilema Sri Mulyani, Pilih Tambah Anggaran Subsidi atau Buat Pertamina-PLN Berdarah-darah*. <https://money.kompas.com/read/2022/05/20/093500526/dilema-sri-mulyani-pilih-tambah-anggaran-subsidi-atau-buat-pertamina-pln>
- Umah, A. (2021a). *Banggar DPR Janji Reformasi Subsidi Energi, Ini Strateginya*. CNBC Indonesia. <https://www.cnbcindonesia.com/news/20210413124605-4-237462/banggar-dpr-janji-reformasi-subsidi-energi-ini-strateginya>
- Umah, A. (2021b). *PLN: Charging Mobil Listrik Malam Hari, Dapat Diskon 30%*! CNBC Indonesia. <https://www.cnbcindonesia.com/news/20210104101806-4-213227/pln-charging-mobil-listrik-malam-hari-dapat-diskon-30>.
- Umah, A. (2021c). *Yah, Program B40 Batal Lanjut di 2021 Nih, Kenapa Ya?* CNBC Indonesia. <https://www.cnbcindonesia.com/news/20210114162916-4-216011/yah-program-b40-batal-lanjut-di-2021-nih-kenapa-ya>.
- Ungku, F., & Christina, B. (2021). *Indonesia's new carbon tax signals higher power costs amid calls for clarity*. Reuters. <https://www.reuters.com/world/asia-pacific/indonesias-new-carbon-tax-signals-higher-power-costs-amid-calls-clarity-2021-10-08/>
- Vasu, P. (2022). *CPO prices to moderate in 2022 on higher output*. The Malaysian Reserve. <https://themalaysianreserve.com/2022/03/30/cpo-prices-to-moderate-in-2022-on-higher-output/>
- Victoria, A. V. (2021). *LG Investasi Pabrik Baterai Rp 142 Triliun di Kawasan Industri Batang*. Katadata. <https://katadata.co.id/agustiyanti/finansial/5ff44116028f0/lg-investasi-pabrik-baterai-rp-142-triliun-di-kawasan-industri-batang>
- Wareza, M. (2022), January 24). *Erick: DME Batu Bara Bisa Kurangi Impor LPG 1 Juta Ton/Tahun*. CNBC Indonesia. <https://www.cnbcindonesia.com/market/20220124155951-17-309974/erick-dme-batu-bara-bisa-kurangi-impor-lpg-1-juta-ton-tahun>
- Wooders, P., Steenblik, R., & Zinecker, A. (2019). *Measuring fossil fuel subsidies in the context of the Sustainable Development Goals*. International Institute for Sustainable Development. <https://www.iisd.org/publications/report/measuring-fossil-fuel-subsidies-context-sustainable-development-goals>
- World Bank. (n.d.). *Population, total—Indonesia*. Data. <https://data.worldbank.org/indicator/SP.POP.TOTL?locations=ID>
- World Trade Organization. (1994). *Agreement on subsidies and countervailing measures*. https://www.wto.org/english/tratop_e/scm_e/subs_e.htm
- Zaki, M. F., & Silaban, M. W. (2022). *PLN Targetkan Kapasitas Pembangkit 29 GW untuk Energi Baru Terbarukan pada 2030*. Tempo.co. <https://bisnis.tempo.co/read/1578596/pln-targetkan-kapasitas-pembangkit-29-gw-untuk-energi-baru-terbarukan-pada-2030>.



Appendix 1. Approach and Methodology

The definition of “support measure” or “subsidy” used in this report is taken from the Agreement of Subsidies and Countervailing Measures (ASCM) of the World Trade Organization (WTO) (WTO, 1994). This definition includes:

1. Direct and indirect transfers of funds and liabilities (budget outlays)
2. Government revenue foregone (reduced tax rates and tax exemptions)
3. Provision of goods or services below market value (such as land or water)
4. Income and price support through market regulations (including non-enforcement).

The inventory takes into account support measures for the following types or sources of energy:

1. Oil and gas
2. Coal
3. Electricity
4. Renewable energy
5. Biofuels
6. Electric vehicles and batteries for EV (EV and batteries).

The 78 support measures identified have been further qualified into the following categories:

1. Quantified
2. Non-Quantified or N/A
3. Not Applicable or N/P

A support measure is considered quantified if there are data available for any given year within the period in question (i.e., FY 2016 to FY 2020). Whenever available, official government data were used to provide quantitative estimates.

Due to the lack of and/or limited data, 37% of the support measures identified are considered quantified, while the rest (63%) are considered not quantified. Meanwhile, there are some support measures that fall into the category of Not Applicable (N/P), meaning that the particular support measure has been enacted but not yet applicable until a specified date in the future. Support measures that fall into this N/P category are primarily those applicable to clean new technologies, particularly biofuels and EV and batteries.

Official government data are used whenever available to provide quantitative estimates. Some of the measures are identified yet not quantified due to lack of data. The years covered by the inventory are 2016 to 2020.

In the case of estimating subsidies, the methodology used will follow the methodology for SDG Indicator 12.c.1 (Wooders et al., 2019), and the specific recommendations for each specific type of subsidy as described in the section above.



- **Direct Transfer of Funds:** We look at the national budget, SOE financial reports, COVID-19 recovery packages, and other documents that allow us to identify direct budget allocations to the different energy types. This is what the International Institute for Sustainable Development has traditionally called the “bottom-up approach” and is used by the Organisation for Economic Co-operation and Development in its inventory. In cases where direct transfers are made to a range of industries, additional analysis may be required to allocate the number of payments that are specific or quasi-specific to fossil fuel-related industries. This should be the case for the measures listed in Indonesia’s National Economic Recovery. The specific methodology to allocate the money granted to the fossil fuel or energy industry will be discussed and evaluated case by case.
- **Price Gap Approach.** This will be applied to both consumption subsidies (the most common) or production (for example, for refining). In general, it estimates the difference between domestic energy prices and international reference prices. If domestic prices are lower than the international reference price, subsidies exist, formed by the gap between the two. The international reference price is the price if the commodity at the closest international hub (Singapore, in the case of Indonesia), and additional import costs will have to be added. Then this price gap will be applied to the number of units of the product sold. In the case of electricity, in case the incentive provided for the tariff cannot be determined looking at PLN financials or budgetary transfers, ideally the cost of international electricity exchange could be used. As this is unlikely to exist in Indonesia, it can be estimated as the actual cost of generating electricity vs the tariff. In all cases, the estimates will be ideally done considering average monthly prices/costs. The specific determination of the reference price will be discussed and decided case by case. Note that in some cases there can be duplications with budgetary transfers. These cases will be flagged and discussed case by case.
- **Revenue Foregone.** This category can be broadly separated into tax expenditures (the monetary value of tax breaks) and government revenue foregone (targeted reductions for specific industries of import and other duties), and the under-pricing of goods and services, including risk (access to government services and goods for free or at a reduced price). To estimate these subsidies, first a tax benchmark has to be identified. There are three options to do this (see SDG indicator methodology, page 42), but the easiest is to consider what is the typical tax rate for general companies or products, and use the differential with the product in question. In the case of Indonesia production subsidies, there are several tax holidays and exemptions. The revenue or measure to which the exemption would be applicable should be identified. Then, the tax differential vs. the standard tax that should apply to the product or sector can be estimated. The specific determination of the reference price will be discussed and decided case by case.

Cost of externalities is not included as a support measure.



Appendix 2. Indonesia's Energy Support Measures by Energy Source

Download Appendix 2 at: <https://www.iisd.org/system/files/2022-06/indonesia-energy-support-measures-annex.pdf>

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