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EQUITABLE GROWTH, FINANCE & INSTITUTIONS INSIGHT

Indonesia's Fuel Subsidies Reforms

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Acknowledgments

The Indonesia's Fuel Subsidies Reforms note was prepared by a World Bank team. The main authors are Ahya Ihsan (Senior Economist, EEAM2), Dwi Endah Abriningrum (Research Analyst, EEAM2), Bambang Suharnoko Sjahrir (Senior Economist, EEAPV), Anissa Rahmawati (Consultant, EEAPV), and Sara Giannozzi (Senior Social Protection Specialist, HEASP), with contribution from Rong Qian (Senior Economist, EEAM2), Ralph van Doorn (Senior Economist, EEAM2), Utz Johann Pape (Lead Economist, EAWPV), and Gracia Hadiwidjaja (Social Protection Specialist, HEASP). The team is grateful for the peer-reviewed comments provided by David Elmaleh (Senior Economist, EAWM2), William Seitz (Senior Economist, EECPV), and Jenny Chao (Senior PPP Specialist, IPGPP). The team worked under the guidance of Lars Christian Moller (Practice Manager, EEAM2) and Habib Rab (Lead Economist, EEAM2).



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Abbreviations and Acronyms

APBN	<i>Anggaran Pendapatan dan Belanja Negara</i> (National Budget)
BBM	<i>Bahan Bakar Minyak</i> (Fuel oil)
BLT	<i>Bantuan Langsung Tunai</i> (Unconditional Cash Transfer)
CEQ	Commitment-to-Equity
CG	Central Government
DMO	Domestic Market Obligation
DTKS	<i>Data Terpadu Kesejahteraan Sosial</i> (Integrated Social Welfare Database)
LPG	Liquefied Petroleum Gas
MFMod	Macro-Fiscal Model
MoEMR	Ministry of Energy and Mineral Resources
MoF	Ministry of Finance
PMT	Proxy Means Test
PSO	Public Service Obligation
SoE	State-owned Enterprise



Abstract

This paper¹ provides an assessment of the fiscal and social impacts resulting from the fuel price adjustments undertaken in 2022. The note lays out policy options and their potential fiscal and social impacts to inform future reforms. The policy simulations examine two scenarios: (i) a one-time increase in fuel prices; and (ii) a gradual price increase to align with the market price—accompanied, in each scenario, by social assistance to safeguard poor and vulnerable households. The analysis suggests that a one-time price adjustment would generate immediate and sizeable fiscal savings. However, it imposes a large shock on households and requires a higher fiscal cost to fully offset the impact on poverty. A gradual price increase would generate smaller fiscal savings and impose a smaller shock on households. Under each scenario, compensating the bottom 60 percent would fully alleviate the adverse effects on the poorest households and would cost about 20-34 percent of fiscal savings. In the medium to long term, supporting the poor and vulnerable through improved, more integrated, and dynamic social protection programs will be essential to sustain gains and minimize the risk of policy reversal.

1. This note is prepared in collaboration between the Macroeconomics, Trade, and Investment (MTI); Poverty and Equity (POV); and Social Protection and Jobs (SPJ) Global Practices as part of the green fiscal analysis project.



Executive Summary

The paper provides an assessment of the fiscal and social impacts of the 2022 fuel price hike and offers policy options, along with their potential fiscal and social impacts, to inform future reforms. The first three sections of this paper discuss fuel subsidies and their fiscal costs and social impacts, while the final section considers options for further reforms from a fiscal and social perspective: (1) a brief landscape of all energy (fuel, electricity, and LPG) subsidies and the reforms; (2) an estimate of the fiscal costs of fuel subsidies; (3) an estimate of the fiscal and social impacts of the 2022 fuel price increases; and (4) the policy options to inform future fuel subsidy reforms along with their fiscal and social impacts. The paper acknowledges Indonesia's achievements in energy subsidy reforms and provides the extent to which the fiscal and social impacts are aligned with this overall objective.

Indonesia has a long history of energy subsidy reforms, but the current subsidy arrangement remains highly regressive. Energy subsidies in Indonesia cover electricity, fuel (diesel and gasoline), and LPG. The government has implemented various measures to reform fuel subsidies, with key milestones in 2005 and late 2014 that adopted expanded social assistance program to mitigate the impact on vulnerable households and an automatic fuel price adjustment mechanism. More recent efforts have focused on a gradual shift from subsidizing fuel prices to subsidizing people. There have also been improvements in the targeting of subsidies in the electricity sector, which has been enhanced by using the social registry database. However, studies show that fuel subsidies remain a costly and inefficient means of reducing poverty, especially when compared to direct transfers, which are estimated can lift more than five times as many people out of poverty for the same amount of money spent on fuel subsidies.

Incomplete fuel subsidy reforms have resulted in significant fiscal costs, particularly during periods of rising commodity prices, and have put pressure on Indonesia's fiscal space. The rise in global commodity prices in 2022 had increased fuel and electricity subsidies outlays from 1.7 percent in 2021 to 2.8 percent of GDP in 2022², placing a substantial burden on public finances. The increases had nearly eroded the gains from the reforms introduced at the end of 2014, which significantly reduced energy subsidies from 3.4 percent in 2014 to 1.1 percent of GDP in 2015. The large fuel and electricity subsidies in 2022 have demonstrated the potential pressure on the country's fiscal space, which is critical for improving human and physical capital such as health, social assistance, and infrastructure, which remain well below the average for middle-income and emerging market countries.

2. This includes both explicit and implicit subsidies. Implicit subsidies take the form of compensation to energy SOEs.

Several measures to address the growing fuel subsidy in 2022 are estimated to have generated small fiscal savings and contained the potential increase in the poverty rate. The small fiscal savings are due to the timing of the reforms (last quarter of 2022). Fiscal savings are projected to increase in the 2023-25 projection period and to be larger if oil prices rebound in the future. The temporary targeted fuel cash transfer that accompanies the fuel price increases is estimated to offset the potential increase in the poverty rate and inequality. This is because the transfer helps the poorest households by providing a net positive compensation for the consumption loss due to the increased fuel price. Moreover, the estimated impact of electricity tariff increases on poverty and inequality is projected to be negligible.

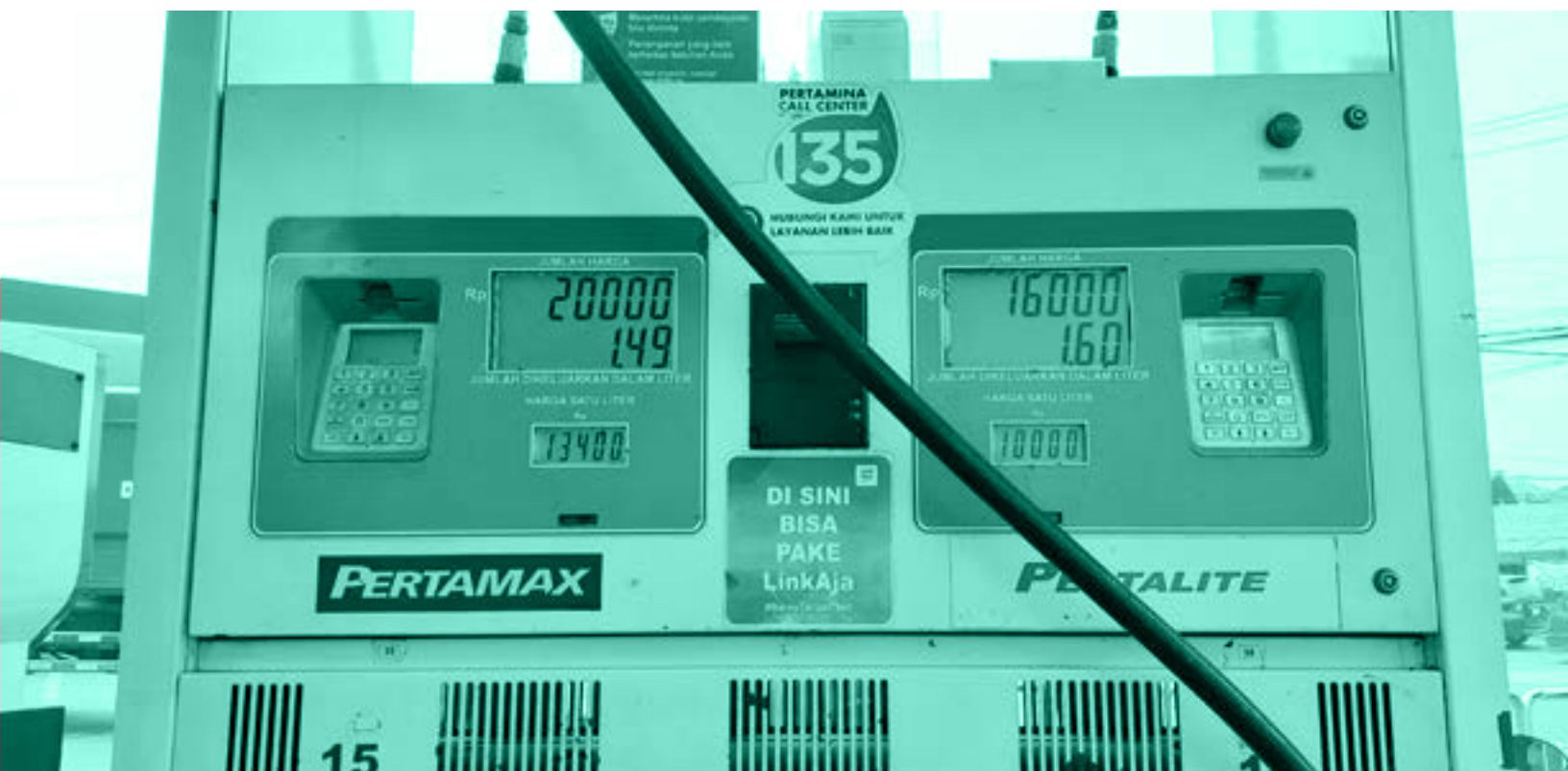
The note presents two policy scenarios for adjusting fuel prices to the market price, with social assistance to protect poor and vulnerable households in each option. In each scenario, compensating the bottom 60 percent would be essential to fully mitigate the adverse impact on the poorest households and would cost around 20-34 percent of the fiscal savings. In the medium to long term, moving from an ad hoc to a formula-based fuel pricing mechanism can help sustain the gains of the reform. Supporting the poor and vulnerable through improved, more integrated, and dynamic social protection programs will be essential to sustain progress and minimize the risk of policy reversals.





Introduction

Fuel subsidies continue to be one of the central fiscal policy challenges in Indonesia. Even when energy prices fall, rising demand adds to the cost of subsidies which have been a significant, albeit declining, budgetary burden and source of fiscal risk. Despite ongoing efforts to reform fuel subsidies, including the notable 2015 reform and the September 2022 fuel price hikes, substantial spending on fuel subsidies persists. Rising global commodity and energy prices in 2022 again significantly increased fuel subsidy outlays. This note provides an assessment of the fiscal and social impacts of the latest fuel subsidy reforms introduced in September 2022 and offers policy options for future reform.





Energy Subsidies and Their Reforms in Indonesia

Indonesia has a long history of providing energy (fuel, electricity, and LPG) subsidies that benefit consumers. The government started subsidizing fuel products in the late 1970s with social and economic objectives—namely, that energy remains affordable for the general population (Figure A.1). Energy subsidies are provided as a public service obligation (PSO). State-owned Enterprises (SoEs), the state-owned electricity company (PT. PLN), and the state-owned oil company (PT. Pertamina) perform PSOs (that is, delivering goods and services on a non-commercial basis) and the government reimburses them for the resulting losses (Asian Development Bank 2015).

Indonesia's energy subsidies are governed by several laws and regulations.³ The government provides subsidies to compensate PLN and Pertamina for the difference between the economic prices (that is, supply cost) and the regulated price of energy products (that is, the price at which it is sold). The economic prices for fuels and electricity tariffs are determined using a formula specified in government regulations which consider factors such as international oil prices, exchange rates, importation costs, shipment costs, distribution costs, and profit margins for the SoEs involved. The regulated retail prices, which are often set below the cost of supply, are set by the government considering the availability of state budget funds, economic conditions, and people's purchasing power. Energy subsidies in Indonesia cover electricity, various fossil fuels such as gasoline/Pertalite, diesel, and small-scale LPG.⁴ Each of these products are subsidized in their own distinct manner as outlined in the regulations (Box 1).

Energy subsidies can be classified into explicit and implicit subsidies. To gain a comprehensive understanding of the fiscal costs associated with energy subsidies, it is essential to consider both explicit and implicit subsidies. In the existing national budget, explicit subsidies involve the expenditure on subsidized fuels or electricity consumption which follows specific criteria and conditions as defined in the budget laws. They are reported as separate expenditure items above the line in the national budget (Anggaran Pendapatan dan Belanja Negara: APBN). These criteria may include type of fuels, volume, subsidy mechanism (fixed per liter), or connection category for electricity. On the other hand, implicit subsidies refer to discretionary spending on energy-related subsidies which arise due to deviation of assumptions or policies

3. These regulations include Law No. 30/2007 on Energy, Law No. 22/2001 on Oil and Gas; Law No. 30/2009 on Electricity, Presidential Regulation No. 117/2021 (3rd revision to the Presidential Regulation No. 191/2014 on Supply, Distribution, and Retail Prices for Subsidized Fuels).

4. According to Presidential Regulation No. 191/2014, there are three types of fuel products: (i) certain types of fuel (*Jenis BBM Tertentu*: JBT), including diesel and kerosene, where the retail prices are set by the government and are explicitly subsidized; (ii) special assignment fuels (*Jenis BBM Khusus Penugasan*: JBKP) (which is Premium-RON 88) that are not subsidized directly, provided 2 percent additional costs and distributed in Java, Madura, and Bali; and (iii) general fuel type (*Jenis BBM Umum*: JBU) (excluding diesel, kerosene, and Premium) which are not directly subsidized—such as Pertalite (RON 90) and Pertamina (RON 92 or above).

from what have been set forth in the APBN law (for example, macroeconomic assumptions and volume of subsidized fuels). These costs are, therefore, linked to the explicit price subsidies policy—that is, adjusting the subsidized fuels retail price does not take place following global oil price movement. These

discretionary expenditures could take various forms such as compensation (for the current year's spending) or arrears payment to energy SoEs such as Pertamina or PLN. Implicit subsidies are reported as other expenditures (above the line) or as part of the financing account in the APBN (below the line).⁵

> > >

BOX 1 - Energy subsidy mechanisms in Indonesia

Indonesia's energy subsidies comprise subsidies for fossil fuels (gasoline and diesel), small-scale LPG, and electricity. The government provides explicit and implicit subsidies to cover the difference between the economic price (cost of supply) and the regulated retail price for these energy products.

Fuel subsidies

Fuel subsidies are categorized into two groups:

Gasoline.⁶ By regulation, Premium (RON 88) fuels are no longer classified as subsidized commodities and, since 2015, have been gradually replaced by a higher-octane grade fuel (RON 90 or Pertalite) which is not a subsidized commodity. In practice, Pertalite's price has been regulated and set below the economic price since prior to April 2022. This creates losses for PT. Pertamina and is not reported as an explicit subsidy in the APBN. Starting in April 2022, the losses are compensated by the government through transfers—which is, effectively, an implicit subsidy.

Diesel. Diesel fuel is classified as a subsidized commodity. Subsidies for diesel have two components:

- A fixed per-liter subsidy to cover the gap between administered retail price and the cost of supply (for example, Rp 1,000 per liter for 2023). This part of the subsidy is reported as an explicit subsidy in the APBN.
- Budget transfers to cover the remaining gap between the administered retail price and the cost of supply after accounting for a fixed per liter subsidy. These transfers are not explicitly accounted for as subsidies in the APBN but are, in effect, implicit subsidies as they compensate PT. Pertamina for losses.

Liquefied Petroleum Gas (LPG)

These subsidies aim to cover the gap between the administered retail price for 3-kg LPG canisters and the cost of supply. Under Government Regulation No. 104/2007, the 3-kg LPG are intended only for: (i) households and micro industries using kerosene (no possession of gas stove); and (ii) targeted households, farmers, fishermen, and micro industries that have never received such assistance. In practice, however, there is no way of limiting consumption to those that are eligible.⁷ The administered price of subsidized LPG has remained unchanged since its inception in 2007. Losses from the price differences are reported as explicit subsidies in the APBN.

Electricity subsidy

The subsidies aim to cover the difference between the regulated tariff and the production cost plus margin for household consumers. Two distinct types of electricity subsidies that are currently channeled to PLN are: (i) a PSO for vulnerable groups, as a proxy, or a subsidy for households with 450VA (voltage ampere) connections and 900VA connections who are also on the integrated social welfare database (*Data Terpadu Kesejahteraan Sosial*: DTKS); and (ii) compensation for the difference between PLN's cost of service and its revenues from all tariff categories. PLN's tariff schedules are classified into six customer categories: (i) households; (ii) business; (iii) industry; (iv) social; (v) government; and (vi) street, which are further disaggregated by connection capacity. Overall, there are 36 tariff groups based on user category and grid connection. The 12 user categories are implicitly subsidized with tariffs far below the average production cost plus the margin. In addition, since all electricity tariffs remain below PLN's average supply cost, all users enjoy some degree of subsidy (implicit) (Figure A.5). The government compensates PLN for losses arising from below-cost pricing of electricity.

Source: Ministry of Finance (MoF), Ministry of Energy and Mineral Resources (MoEMR), and PLN.

5. Explicit subsidies are ex ante allocations based on the criteria set out in the APBN. Implicit subsidies are ex post compensation for losses incurred by SoEs. Implicit subsidies pose challenges for SoEs since they create cash flow and balance sheet pressures.

6. Pertalite (Octane 90 gasoline) was first introduced to the market in 2015 but was formally categorized as a subsidized commodity in April 2022. Pertamina had been selling Pertalite at below production cost prior to 2022.

7. The Directorate General of Oil and Gas of MoEMR is only responsible for preparing a list of eligible beneficiaries for 3-kg LPG and submitting the approved list to Pertamina who is responsible for distributing subsidized canisters to the public.

The government has implemented various measures to reform fuel subsidies. These include: (i) reducing the number of subsidized fuel products from seven to three; (ii) implementing a conversion program to encourage the use of LPG instead of kerosene; and (iii) introducing a semi-automatic fuel pricing mechanism with fixed per-liter subsidies (Figure A.1). The 2005 fuel subsidy reform was an important milestone since it marked the first time that an increase in fuel prices was accompanied by an expanded social assistance program—including temporary unconditional cash transfers (*Bantuan Langsung Tunai*: BLT) to mitigate the impact of the price increase on vulnerable households. The government introduced several price increases and a landmark reform in late 2014 that adopted an automatic fuel price adjustment

mechanism (Box 2). The government also intends to gradually shift its approach to subsidy policies from subsidizing prices/commodities to subsidizing people (direct assistance), which is in line with international good practices (Ministry of Finance 2021).

In the electricity sector, there have also been improvements to the targeting of subsidies. Notable policy reforms include reducing the number of customer categories eligible for subsidies (removing business and industrial categories) and targeting the subsidies exclusively to household users with 900VA and 450VA connections. Targeting for household users has been enhanced by using the DTKS at the Ministry of Social Affairs.

> > >

BOX 2 - Key features of Indonesia's 2014 fuel and electricity subsidy reforms

Taking advantage of lower international oil prices, the Government of Indonesia introduced a bold fuel subsidy reform on December 31, 2014, following a one-off 34 percent average gasoline and diesel price increase in November 2014. The new fuel subsidy scheme, effective on January 1, 2015, consists of: (i) introduction of a new pricing method entailing semi-automatic price adjustments for low-octane gasoline and diesel prices; (ii) removal of the subsidy for low-octane gasoline (RON 88 or Premium); and (iii) introduction of a fixed subsidy at a maximum level of Rp 1,000 per liter for diesel. The new prices of gasoline and diesel would adjust automatically (for example, every month or every two weeks if deemed necessary) subject to changes in reference prices (for example, the international oil price and the US\$/Rp exchange rate).

This new fuel pricing scheme was expected to have positive impacts on fiscal management and the economy such as reducing budget uncertainty, reducing fuel subsidy spending, safeguarding fiscal sustainability, expanding fiscal space for other spending, and lowering the inflationary impact. The implementation had been inconsistent, however, before eventually being reversed. In just a few months after implementation, the pricing formula was applied inconsistently. For example, the frequency of fuel price adjustments continuously changed—from every two weeks to every month, to every three months in 2015, and has not changed at all since 2017.⁸

The government also introduced several measures to improve the electricity subsidy. In 2013, electricity tariffs were increased by 15 percent for non-450VA and non-900VA connection grid's subscribers. In 2014, the government gradually implemented tariff adjustments for large-scale industries. Furthermore, in 2017, the government eliminated subsidies for connection category 900VA and above and provided the subsidy only for customers with 450VA and 900VA connections registered in the DTKS.

Sources: World Bank 2015 and OECD 2019.

8. The administered retail prices of fuels and electricity have been maintained below their market prices since 2017 <https://dataindonesia.id/sektor-riil/detail/riwayat-perkembangan-harga-bbm-subsidi-era-jokowi>. <https://www.esdm.go.id/id/berita-unit/direktorat-jenderal-ketenagalistrikan/dirjen-gatrik-penyesuaian-tarif-listrik-hanya-untuk-rumah-tangga-mampu>.

Despite these efforts, some factors have led to the stalling or reversal of the reforms. The automatic price adjustments mechanism introduced in the 2014 reform were immediately applied during 2015-16 using the window from falling international oil prices but has stalled since Q1 2017 when oil prices rebounded. From a high of US\$96.2/barrel in 2014, average global oil price was only US\$46.8/barrel in 2015-16, before rising to US\$52.8/barrel in 2017. The government has also withheld the automatic electricity tariff adjustment for non-subsidized users since 2017 on the grounds that people's purchasing power is still low. Moreover, in spite of a recent spike in coal prices, electricity subsidies have actually fallen owing to the initiation of a Domestic Market Obligation (DMO) for coal in 2018.⁹ Should the DMO and price caps be removed before the coal price falls significantly, electricity subsidies would rise significantly.

The current fuel and electricity subsidy arrangements remain highly regressive. Studies suggest that fuel subsidies remain poorly targeted and disproportionately benefit higher-income households (Dartanto 2013; Kusumawardhani et al. 2017; TNP2K 2021). In 2019, the top 20 percent of households enjoyed 46.2 percent of fuel subsidies while the bottom 40 percent received only 17.8 percent. Targeting of electricity subsidies remains an issue since 450VA customers also include non-poor households. Non-subsidized electricity customers (900VA and above) also receive subsidies indirectly since tariffs for these groups are fixed below the cost of supply (Figure A.4 and A.5). Following the fuel price hikes and

associated compensation packages, the benefit incidence of energy subsidy spending has improved.

Fuel subsidies are a costly and inefficient means of reducing poverty, especially compared to direct transfers.

Fuel subsidies have remained inefficient since the 2014 reform.¹⁰ Every 1 percent of GDP spent on fuel subsidies only translates to 1.2 percentage points of poverty reduction, while equivalent spending on direct transfers can reduce poverty by 6.4 percentage points (World Bank 2023b). In other words, for the same amount of money, a fuel subsidy can lift about 3 million people out of poverty, while direct transfer can lift more than five times more people.

For these and other reasons, further fuel subsidies reform is critical for Indonesia's ongoing development agenda.

At 10.4 percent of GDP (2022), Indonesia's tax-to-GDP ratio is among the lowest in the world. Public spending in sectors that are key to improving Indonesia's human and physical capital—such as health (2.9 percent of GDP), social assistance (0.7 percent), and infrastructure (3.6 percent)¹¹—remain well below the middle-income and emerging market countries' average (5.3 percent of GDP for health,¹² 1.4 percent for social assistance,¹³ and 5.8 percent for infrastructure¹⁴). Reforming fuel subsidies can free up fiscal space for these key development priorities. This is notable to complement the recently introduced tax reforms (for example, the Tax Harmonization Law) to increase revenue collection which will take some time to show impact.



9. The Government of Indonesia's DMO requires local coal miners to supply part of their coal production to the domestic market at capped domestic prices (MoEMR Regulation No. 19/2018 and MoEMR Regulation No. 1395 K/30/MEM/2018). Coal-fired plants production constitutes 75 percent of energy produced by PLN-owned power plants, leases, IPPs, and projects (PLN Statistics, 2021).
10. See Box 2.
11. These are pre-pandemic figures as of 2019.
12. World Bank. World Development Indicators. <https://data.worldbank.org/indicator/SH.XPD.CHEX.GD.ZS>
13. World Bank 2023a.
14. Foster et al. 2022.



Fiscal Costs of Fuel Subsidies

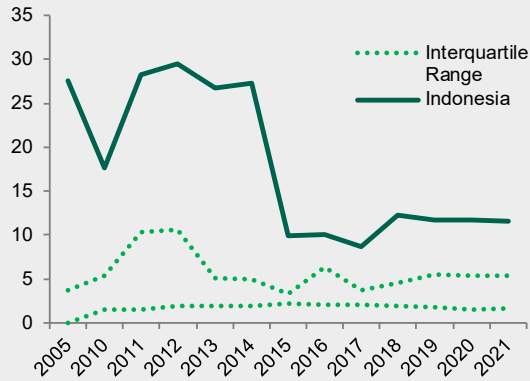
Incomplete fuel subsidy reforms have resulted in fiscal costs and challenges for fiscal management—particularly during periods of rising commodity prices. Despite declining as a share of tax revenue, Indonesia's fossil fuels subsidies remain sizeable compared to structural peers (Figure 1). In 2022, fuels, electricity, and LPG subsidies accounted for 22.3 percent of total central government expenditure, a notable increase from the historical average of 13.2 percent between 2017-21. These subsidies represent 87 percent of total subsidies. This spending includes both explicit and implicit subsidies such as compensation payments for the assigned SoEs. As a percentage of central government spending, subsidies for fuel products account for more than three-quarters (76 percent) of total energy subsidies in 2022—comprised of gasoline (44 percent), diesel (30 percent), LPG (26 percent), and kerosene (0.3 percent). Electricity subsidies accounted for 24 percent of total energy subsidies in 2022 (Figure 2). While energy subsidies may support poor and vulnerable households by making energy prices cheaper and less volatile, they are costly and inefficient when poorly targeted. When global commodity and energy prices rise, the government faces mounting fiscal pressure as the subsidies bill rises, hence posing a substantial burden on public finances and risks to fiscal sustainability.

The surge in global commodity prices in 2022 had a significant impact on fuel subsidy outlays (Figure 5). Between 2021 and 2022, international crude oil prices increased by 44 percent while the Indonesian rupiah depreciated by 9.3 percent against the US dollar during the same period. These developments had a negative impact on the country's fiscal balance since Indonesia is a net oil importer.¹⁵ In 2022, fuel and electricity subsidies rose to 2.8 percent of GDP (Rp 551.2 trillion) (MoF 2023), up from 1.7 percent of GDP in 2021 (Figure 2). The increase was largely driven by implicit subsidies which rose to 1.9 percent of GDP in 2022 (Rp 379.3 trillion) from 0.9 percent in 2021. Explicit subsidies increased only slightly to 0.9 percent of GDP in 2022 from 0.8 percent in 2021 (Figure 3). This implies that if the government followed its policy on the subsidized fuel pricing mechanism adopted in 2014 (Box 2), the impact of higher oil prices on the budget would have been smaller. Subsidized fuel prices would have adjusted upwards following changes in reference prices (for example, the international oil price and the exchange rate).

15. Since 2004, Indonesia has transitioned into a net oil importer owing to maturing existing oil fields and lack of new investment and increasing demand for energy due to income growth. The net impact from oil price increases on fiscal balance has, therefore, become negative. Sensitivity analysis shows that a US\$1.00 per barrel increase in the oil price will lead to a fiscal deficit of Rp 5.8 trillion, and a Rp 100 depreciation relative to US\$1.00 will contribute to a fiscal deficit of Rp 3.1 trillion (MoF 2022).

FIGURE 1 - While decreasing, Indonesia's support to fossil fuels remains high relative to peers.

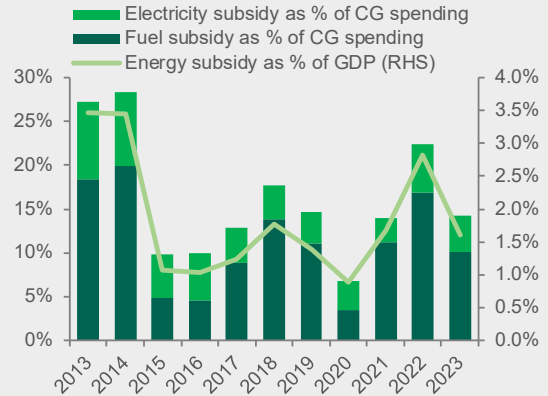
(Fossil fuels subsidy as percentage of total tax revenue)



Source: OECD Green Growth Indicators and World Bank staff calculation.
 Note: Structural peers include Brazil, China, India, Russian Federation, South Africa, Ukraine, Georgia, Argentina, Türkiye, Portugal, Poland, Czech Republic, Chile, and Mexico.

FIGURE 2 - Energy subsidies rose sharply in 2022, dominated by fuels.

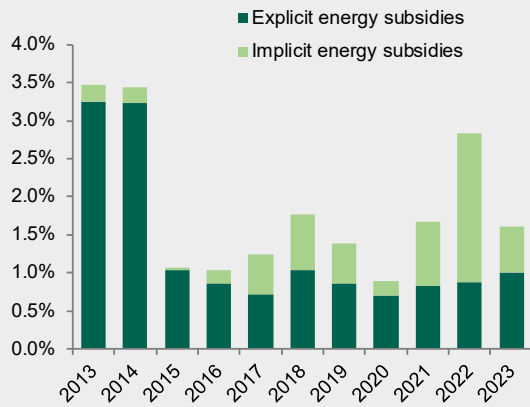
(Percentage of total central government (CG) spending, LHS; percentage of GDP, RHS)



Source: MoF and World Bank staff calculation.
 Note: Central government spending excludes transfers to subnational governments. Data for 2013-22 are actual; 2023 is a projection.

FIGURE 3 - ...especially by implicit subsidy.

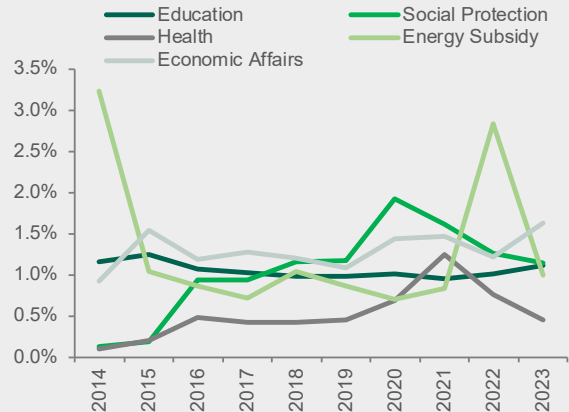
(Percentage of GDP)



Source: MoF and World Bank staff estimate.
 Note: Data for 2013-22 are actual; 2023 is a projection.

FIGURE 4 - Energy subsidies crowd out priority spending.

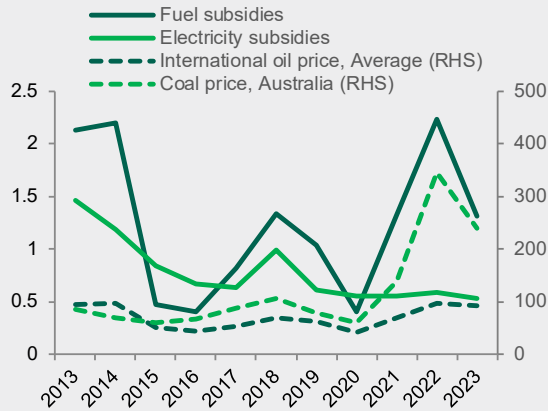
(CG expenditure by function, percentage of GDP)



Source: MoF and World Bank staff estimate.
 Note: Data for 2013-22 are actual; 2023 is a projection.

FIGURE 5 - Fuel and electricity subsidies moved closely alongside oil prices.

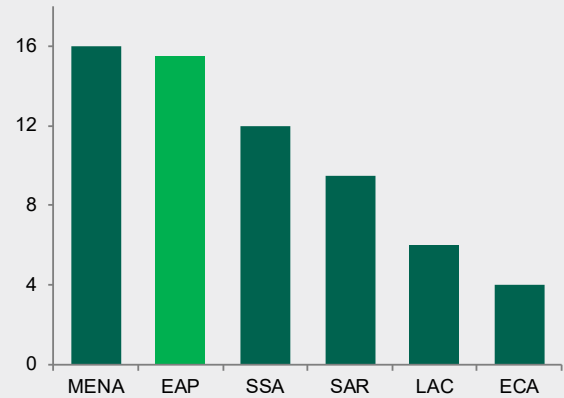
(Percentage of GDP, LHS; US\$/barrel, US\$/ton, RHS)



Sources: MoF, World Bank Pink Sheet, and World Bank staff estimate. Note: Data for 2013-22 are actual; 2023 is a projection.

FIGURE 6 - Many countries adopted a price controls policy in managing the crises in 2022.

(Number of products with price controls)



Source: Trade Policy Reviews in the EAP Economic Update, World Bank. Note: The Y axis depicts the World Bank regional groups.¹⁶

The substantial increase in the fuel subsidies in 2022 has nearly eroded the gains from reforms introduced in 2014.

These reforms resulted in a significant reduction of energy subsidies from 3.4 percent of GDP in 2014 to 1.1 percent in 2015. The success of the 2014 reforms can be attributed to opportune timing—taking advantage of the post-election period—and the decline in global oil prices which reached their lowest level since 2009 (ADB 2015). The suspension of semi-automatic fuel price adjustments since 2017 and the rapid increase in commodity prices in 2022 have, however, contributed to an acceleration in energy subsidy expenditures. Total explicit and implicit energy subsidies reached 2.8 percent of GDP in 2022, approaching the levels observed before the implementation of the fuel pricing reforms in 2014 (Figure 3).

Increasing fuel subsidies in 2022 also put pressure on government spending.

Following high commodity prices in 2022, fuel and electricity subsidies quadrupled from 0.7 percent of GDP in the budget to 2.8 percent of GDP. The government increased subsidized fuel prices in September 2022 to contain the rising fiscal burden, but the estimated fiscal saving was relatively small at 0.2 percent of GDP. Although the fiscal deficit in 2022 ended up much lower than planned, the energy subsidies have driven significant expenditure increases while infrastructure/capital and social spending declined (Figure 4). Although part of the decline in social spending reflects a

normalization of expenditures post-COVID, this nevertheless demonstrates the potential pressure of subsidies on fiscal space.

Energy subsidies distort pricing signals on the use of polluting energy sources which promotes inefficient allocation of resources.

While in the short-term energy subsidies can be used to absorb the impact of oil price increases, in the long term they present significant costs. Energy subsidies send the wrong price signal to consumers, encouraging the production and consumption of inefficient and polluting energy sources, and promoting the misallocation of resources. One of the benefits of setting energy tariffs above costs recovery is that it incentivizes reduced consumption which, in turn, reduces emissions and pollution.¹⁷

It is worth noting that, like Indonesia, many other countries also implemented price control policies to address the exceptional crisis in 2022.

The Philippines, Thailand, Vietnam, and Malaysia, for example, experienced significant increases in fuel and food prices due to unfavorable external conditions. Consumer prices in these economies were, however, less responsive to international price increases since they had to employ a second or third best policy through price controls¹⁸ by providing subsidies to manage the exceptional crisis in 2022 (Figure 6) (World Bank 2022).

16. Abbreviations of the World Bank regional groups: MENA: Middle East and North Africa Region; EAP: East Asia and Pacific Region; SSA: Sub-Saharan Africa Region; SAR: South Asia Region; LAC: Latin America and the Caribbean Region; and ECA: Europe and Central Asia Region.
 17. More detailed analysis of the price elasticity and the potential benefits of correcting price signal is available in the Indonesia CCDR report <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099042823064027780/p17724501e40e50940a6ae035cd74193a44>
 18. The WTO Trade Policy Review for Indonesia (2020) points out that the price controls include: (i) food products: rice, corn, soybeans, sugar, cooking oil, shallots, beef, purebred chicken, and purebred eggs at the farmer level, and reference prices for sales of these items at the consumer level; (ii) medicines used in the National Health Insurance program through the e-catalogue; (iii) gasoline (distribution costs compensation), diesel (fixed subsidy), and kerosene (fixed price); and (iv) coal sales price for the supply of electricity for public purposes.



Fiscal and Social Impacts of the 2022 Fuel Price Increase

In 2022, the government introduced several policy measures to address the growing energy subsidies and enable fiscal consolidation. Between March and April 2022, the government phased out low-octane gasoline (Premium) from the market and introduced compensation for higher-octane gasoline (Pertalite) in the APBN. In June, anticipating higher oil prices, 0.8 percent of GDP was added to the budget for subsidy spending (Rp 152.5 trillion), coming to a total of 2.7 percent of GDP (Rp 502.4 trillion). In July, electricity tariffs for government buildings and residentials, five out of 36 groups, were increased by an average of 11 percent.¹⁹ The government also paid subsidy arrears to PLN of 0.5 percent of GDP (Rp 104.8 trillion) in July (Ministry of Finance 2022b). Lastly, in September, the government increased the price of subsidized diesel and gasoline by 30 percent and accompanied this with targeted cash compensation and expanded social programs in the amount of 0.1 percent of GDP (Rp 24.2 trillion).²⁰

The September 2022 fuel price adjustments are estimated to have generated small fiscal savings in 2022, which are projected to increase over time. Fiscal savings generated by the September 2022 hikes were estimated at 0.2 percent of GDP in 2022. The small savings are in part because the price adjustments were partial and introduced only in the last quarter (Q4) of 2022. Without price hikes, fuel subsidy spending would have been 0.2 percent of GDP higher than the actual (2.2 percent of GDP). This fiscal saving was offset by the targeted and temporary fuel cash compensation (BLT BBM or *Bantuan Langsung Tunai Bahan Bakar Minyak*). The fiscal savings are projected to increase to 0.5 percent of GDP in 2023 when the full impact of retail price increases is accounted for, and the compensating social assistance scheme is discontinued. The September reform is projected to generate cumulative fiscal savings of 1.3 percent of GDP over 2023-25 compared to the baseline (Table A.3). The modest accumulated fiscal savings are partly explained by a moderation of the projected oil price. The fiscal savings from the reform will be larger should the oil price rebound in the future.

19. The five groups are P1, P2, P3, R2, and R3 groups. P1, P2, and P3 are government buildings with connections of 6,600VA-200kVA, and above 200kVA, respectively. R2 and R3 are residentials with 3,500-5,500VA and 6,000VA connections, respectively.

20. The compensation package comprises: (i) Rp 12.4 trillion for cash transfers (BLT BBM) targeted at 20.65 million poor households (beneficiaries of the Non cash Food Program/*Bantuan Pangan Non tunai*: BPNT and the Family Hope Program/*Program Keluarga Harapan*: PKH) in the amount of Rp 150,000/household/month for four months; (ii) Rp 9.6 trillion for wage subsidies for 16 million workers with a monthly maximum salary of Rp 3.5 million, in the amount of Rp 600,000/beneficiary for one month; and (iii) Rp 2.17 trillion for public transportation sector subsidies <https://www.kemenkeu.go.id/informasi-publik/publikasi/berita-utama/Pemerintah-Tambahkan-Bantalan-Sosial-Rp24,17T>

The targeted compensation package, accompanying the fuel price hikes, is estimated to offset the potential increase in the poverty rate in 2022. Without BLT BBM, fuel price hikes would have increased the poverty rate by 0.1 percentage points in 2022.²¹ This is because increased fuel prices are estimated to negatively affect the consumption of the bottom 40 percent of households by 0.2 percent of their market income. The BLT BBM is estimated to offset

the potential negative impact on poverty and inequality and projected to reduce poverty in 2022 by 0.4 percentage points. The BLT BBM especially helps the poorest households where the net compensations are positive and larger than their consumption loss. On the other hand, the estimated impact of electricity tariff increases on poverty and inequality (bottom 40 percent) is projected to be negligible.²²



21. This reflects 200,000 people falling into poverty (that is, below the international poverty line of US\$3.20 per day, 2011 PPP).

22. According to Susenas 2016, only 1 percent of households who are PLN subscribers had a connection of more than 2,200VA and only 4.3 percent of them are in the bottom 40 percent. Since electricity tariffs for business and industry (B and I groups) did not change in 2022, the impact on the poorest 40 percent is negligible.



Options for Further Fuel Subsidy Reforms and Their Fiscal and Social Implications²³

There is a strong case to be made to prepare an exit plan from inefficient fuel subsidies and shift towards targeted social assistance to the poor and vulnerable groups. Even with the September 2022 fuel price adjustment, the current administered retail prices of diesel, 3-kg LPG, and gasoline (Pertalite) remain well below their economic prices by 50, 30, and 60 percent, respectively.²⁴ In addition, electricity tariffs are estimated to remain at 27 percent below their production cost (weighted average) since coal input prices are fixed below market prices through a DMO. Removing subsidies and using fiscal savings for better-targeted social spending and productive investments can promote sustainable and equitable growth and development (International Monetary Fund 2023).

Further fuel subsidy reform can include adjusting regulated fuel prices to market prices, rapidly or gradually (Figure 7). To inform policy choices on the potential impact of fuel price reforms on fiscal burden and social aspects, two scenarios of fuel price increase are assessed: (i) a one-time price increase; and (ii) a gradual price increase. While measures to improve targeting (for example, restricting per vehicle purchases with priority for public transport) can also be considered, they are not simulated due to data and implementation challenges. The two reform scenarios were selected to provide two contrasting illustrations on how the removal of the fuel subsidy could take place. The simulations exercise assumes the current condition of fuels consumption pattern and the DTKS database remains through the projected period, such that, no behavioral responses to changes in policies and no major changes of beneficiaries in the DTKS system. The aim is to trigger a discussion with the counterparts of further energy subsidy reform using these two options as a start. When a policy discussion has been initiated, options for other potential reform variations could be explored, including modeling potential behavior response.

Moreover, the two illustrations allow policy makers to consider important trade-offs and draw a clearer contrast between the advantages and disadvantages of sudden and gradual reform designs. While one-time price adjustment to remove subsidies can immediately create fiscal savings, it leaves no leeway for beneficial behavioral responses. With a sudden price increase, consumers absorb the entire effect by either reducing energy consumption or reducing consumption elsewhere to soften the impact. In contrast, while gradual change might invite less concentrated opposition, it takes longer to reap budgetary and economic gains, and may induce distortionary consumption behavior. It may pose additional costs to sustain in the

23. The discussion and policy simulation in this section focuses on fuel subsidy reform for two reasons: (i) fuel subsidy represents the largest share of energy subsidies (59 percent in 2014-23), and data constraints for estimating production costs structure for electricity and LPG.

24. The administered retail price for subsidized LPG did not change in 2022.

interim and is vulnerable to being derailed by changes in political will. Nonetheless, with lead time, people will be able to make different plans and investment choices (for example, more efficient vehicles and appliances, more carpooling, and public transportation). Finally, inflation pressures form an important factor in how wages are negotiated. Wage setting is not conducted simultaneously with a one-time energy price increase. Sudden (and especially) unexpected increases in the cost of living create a loss in real wages that will take time to catch up.

Each policy scenario is complemented by four compensation package plans. Plan 1 includes compensation equal to the maximum consumption loss of decile 4, further broken down by coverage (bottom 40 and 60 percent). Plan 2 includes compensation equal to the median consumption loss of decile 4, further disaggregated by coverage. Table A.4 presents the net impact on poverty and the cost of the compensation for each proposed scheme for comparative purposes. Given the impact on poverty and the relatively modest fiscal costs compared to fiscal savings, this note shows the compensation scheme Plan 1 with coverage for the bottom 60 percent of households.

To reap the benefits of the reforms, the net fiscal savings could be channeled not only for improving efficiency, but also for facilitating Indonesia’s Vision 2045 economic development. Indonesia’s 2014 fuel reforms led to a significant reduction in the fuel and electricity subsidy from 4 to 1.5 percent of GDP in 2015. In 2015, more than half of the net savings were invested in infrastructure, rural, and regional development projects. The remainder was allocated to social protection program, health, and education (G20 Self-report 2019). Options for resource savings from completing the reform could include investment in public transport, which supports households by providing an alternative to car use.

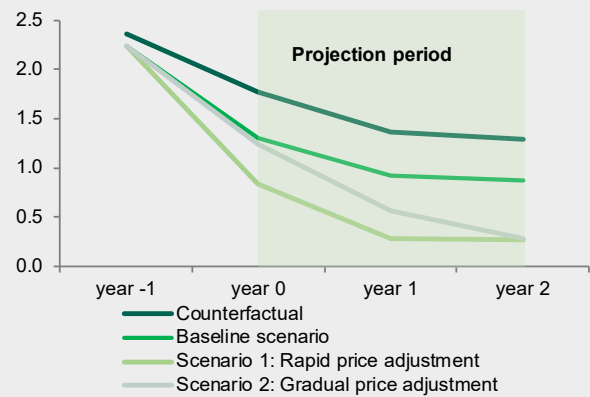
Fuel subsidy reform will affect all of society, but to varying degrees. On average, energy consumption such as gasoline, diesel, electricity, and cooking gas constitute about 8 percent of household expenditure. Fuel dependency is high—86 percent of the population purchase fuel. Among the poor, only 20 percent do not purchase fuel.²⁵ Reliance on subsidized fuels, therefore, affects consumption patterns of all demographics, including those with high income, formal sector workers, and car owners. About 40 percent of the value of the fuel subsidy is captured by the richest 20 percent of the population. Subsidized fuel is, however, a somewhat larger share for informal workers (Figure 8). Fuel subsidies also indirectly affect the cost of living through their knock-on impact on other goods consumed by the population. The indirect impact²⁶ of fuel subsidies accounts for an average of 2 percent of Indonesian households’ market income.

25. Based on Susenas March 2019, World Bank staff estimates.

26. Indirect impact of fuel subsidy is the effect of fuel subsidies on lowering the price of other goods that use fuel as an input of production.

FIGURE 7 - Projected fuel subsidy outlays under different scenarios.

(Fuel subsidy as percentage of GDP)

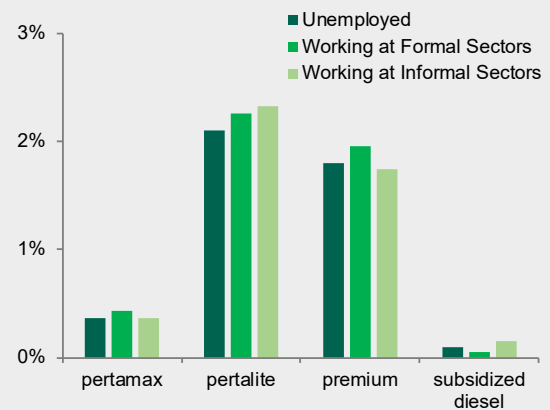


Sources: MoF, MoEMR, Pertamina, World Bank staff estimates.

Note: Baseline refers to the September 2022 reform; counterfactual refers to without September 2022 reform.

FIGURE 8 - Fuel expenditure relative to household consumption, by employment type.

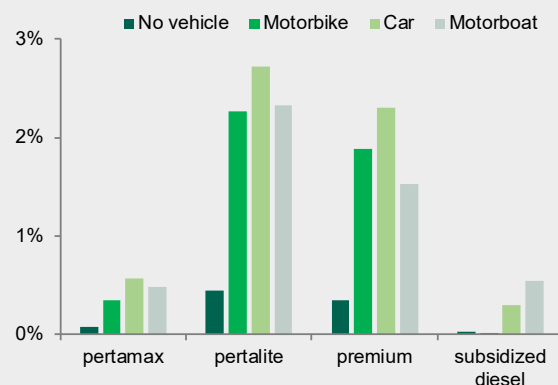
(Relative to household expenditure, percent)



Source: Susenas March 2019, World Bank staff estimates.

FIGURE 9 - Fuel expenditure relative to household consumption, by vehicle ownership.

(Relative to household expenditure, percent)



Source: Susenas March 2019, World Bank staff estimates.

Given the success of the 2005 fuel subsidy reform, it is critical to complement the reform of fuel subsidies with an analysis of its social impacts and a mitigation plan. The estimated poverty impacts of the subsidies' removal options and the temporary targeted cash compensation plans over the projected period (year 0-2) are discussed in the following section to evidence the dialogue over further fuel subsidy reforms.

Scenario 1: One-time price adjustment in Q3 year 0 (1 quarter)

A one-time price adjustment will generate immediate and sizeable fiscal savings. This scenario proposes full removal of fuel subsidies in Q3 year 0 (Table A.1). The scenario is projected to generate sizeable fiscal savings equivalent to 0.5 percent of GDP (Rp 100 trillion) in year 0 (Table A.3). Beyond year 0, the semi-automatic fuel pricing mechanism will maintain gains from the reform, with fiscal savings estimated at 1.7 percent of GDP between year 0-2 relative to the baseline.

A rapid price increase does, however, impose a large shock on households and increases poverty rates.²⁷ This one-time price adjustment could impose a large shock on households and reduce real income of the bottom 40 percent of households by 2.1, 1.7, and 1.6 percent in year 0, year 1, and year 2, respectively. Without compensation, the poverty rate would increase relative to the baseline by 0.8 percentage points (ppt) in year 0, and 0.6 and 0.5 ppt in year 1 and year 2, respectively (Figure A.14).²⁸

A compensation package for a broader set of households can fully offset the impact of the reform on poverty. Under this scenario, compensating the bottom 60 percent of households with the maximum consumption loss of decile 4 per year during year 0-2 can fully offset the poverty impact on the poorest 40 percent of households (Table A.4 and Figure A.14). This package is adequate to compensate for the consumption loss from the price increase and even provide an additional net benefit for the bottom 40 percent (Figure A.15a–A.15c). Poverty is projected to decrease by around 0.3 ppt each year in year 0-2 relative to baseline. The required cash compensation package would cost 0.13 percent up to 0.15 percent of GDP or 20 to 34 percent of the estimated fiscal savings between year 0-2 (Table A.4). Compensating only the

bottom 40 percent of households would have a smaller impact on reducing poverty where poverty is projected to ease only by 0.1 ppt each in year 0 and year 1, and by 0.2 ppt in year 2 relative to the baseline (Table A.4 and Figure A.14).

This scenario would generate 78 percent of net fiscal impacts over the projected period. The net fiscal impacts are calculated by subtracting the total required amount of compensation for the bottom 60 percent from the total fiscal savings projected in year 0-2. Under this scenario, total temporary cash compensation would cost about 22 percent of total fiscal savings in year 0-2, as such generating 78 percent net fiscal savings (of the projected accumulated fiscal saving of 1.7 percent of GDP) for financing the country's Vision 2045 to achieve the goal to reach high-income level status.

Scenario 2: Gradual price adjustment starting in Q3 year 0 until Q2 year 2 (8 quarters)

A gradual removal of fuel subsidies will generate smaller fiscal savings and impose a smaller shock on households. This scenario offers a gradual fuel price increase starting in Q3 year 0 until Q2 year 2 (8 quarters) (Table A.2). The fiscal savings from this scenario are estimated at 1.0 percent of GDP in year 0-2, relative to the baseline (Table A.3). A more gradual price increase will lead to a smaller inflationary shock on households. This scenario requires a road map with a clear timeline and a strong commitment to implementation. If not, it inherits the risk of policy reversal or suspension of implementation.

The impact on poverty is expected to be smaller in year 0 but higher in year 1-2.²⁹ Under this scenario, the bottom 40 percent is estimated to lose 0.2 percent of their market income in year 0, 1.0 and 1.5 percent in year 1-2, respectively. If not compensated, poverty will increase by less than 0.1 ppt in year 0, 0.37 in year 1, and 0.52 ppt in year 2, respectively, compared to the baseline (Figure A.14).³⁰

Compensating the bottom 60 percent with a comprehensive package can fully mitigate the poverty impact. Providing a benefit package to the lowest 60 percent in the amount that equals to the maximum consumption loss of the lowest 40 per year can fully mitigate the poverty impact under this scenario (Table A.4 and Figure A.14). This will cost between

27. The estimated poverty impact in this note should be interpreted as "experienced poverty" as this is estimated by a partial equilibrium model and does not consider any other changes (that is, population growth or economic growth) nor behavioral changes. The poverty impact in this note is accounting for the trend of declining poverty over the years.

28. The poverty impact of a one-time increase is lower in the subsequent years due to a lower implied subsidy.

29. Although the poverty impact is estimated to be higher in 2024-25 than 2023 (as opposed to Scenario 1), the compensation package as well as the fiscal costs of the compensation are lower for Scenario 2 (as opposed to Scenario 1) because real income reductions in the poorest households are also lower under Scenario 2 (gradual removal) compared to Scenario 1 (one-off removal).

30. For 2025, Scenario 2's impact is calculated and compared to the baseline as follows: households still benefit from energy subsidy for the whole year (four quarters) vs households that only benefit from energy subsidy for one quarter. Despite that, the adjustment would be complete by Q2 2025, the CEQ model is an annual basis model, hence we still need to account for the loss of the subsidy for the rest of Q3-Q4.

0.01 to 0.11 percent of GDP (20 to 25 percent of total fiscal savings) between year 0-2. The poverty rate is estimated to decrease between 0.05 to 0.29 ppt relative to the baseline. Alternatively, compensating only the bottom 40 percent will cost between 0.01 to 0.07 percent of GDP (13 to 16 percent of fiscal savings) over the projected period (Table A.4). This will have a smaller impact on reducing poverty. Poverty will ease by only 0.02 and 0.14 ppt. The remaining fiscal savings can be directed towards expenditures that have tangible benefits for the aspiring middle class such as health or infrastructure.

This scenario is estimated to generate smaller net fiscal impacts over the projected period. Under this scenario, total temporary cash compensation would cost about 45 percent of total fiscal savings in year 0-2—thereby generating 55 percent net fiscal savings (of the projected accumulated fiscal saving of 1.7 percent of GDP) through the projection period.





Conclusion and Recommendations

Conclusion

The analysis of fuel price adjustments lays out policy options for energy subsidy reforms. In the projection period, both under rapid and gradual fuel subsidy removal, compensating the bottom 60 percent would fully remove the shocks' impact on the poorest households. The real income of the vulnerable groups will be affected after year 2 under both scenarios—pointing to the need for strengthened social protection in the medium term. A comprehensive compensation package to mitigate the impact under Scenario 1 and Scenario 2 through the projection period is estimated to cost between 20-34 percent of the fiscal savings hence generating 55-78 percent of net fiscal impacts. Subsidy reform would, therefore, create fiscal space for other development spending.

Recommendations

Recommendation One: In the short term, authorities should consider removing fuel subsidies through a one-time fuel price adjustment in year 0 or a gradual price adjustment over the three-year period from year 0 to year 2. Each scenario presents trade-offs, including implementation challenges, economic costs, and social impacts. The analysis suggests that a one-time price adjustment would generate immediate and sizeable fiscal savings, but also imposes a large shock on households and exacerbates poverty, requiring a higher fiscal cost to fully offset its impact on poverty levels. On the other hand, a gradual price increase would generate smaller fiscal savings and impose smaller shocks on households. Nevertheless, its successful implementation would require a well-defined roadmap with a clear timeline and a strong commitment from the authorities. Under each scenario, compensating the bottom 60 percent would be essential to fully alleviate the adverse effects on the poorest households. This compensation would amount to approximately 20-34 percent of the fiscal savings. The government can limit the risk of political disruption by distributing the compensation in a fair and timely manner, and by clearly communicating the costs and benefits to the public.

Recommendation Two: In the medium term, moving from ad hoc price adjustment to a formula-based fuel pricing mechanism can help sustain the gains from the reform. The authorities can revisit the semi-automatic fuel pricing regime introduced in 2015. Reforming energy subsidies is politically sensitive and challenging—especially during a time of high inflation. Indonesia's energy subsidy reforms in 2014-15 were implemented in the early stage of a new administration (Jazuli et al. 2021).³¹ Complementing the reform with a strategic communication and awareness campaign and delivering prudent fiscal compensation packages would build trust and confidence in the government's ability to deliver on its promises.

31. These refer to the 2005 and 2008 fuel subsidy reforms (Beaton and Lontoh 2010; ADB 2015; IMF 2013; World Bank 2012).

Recommendation Three: In the medium to long term, supporting the poor and vulnerable through improved and more integrated social protection programs will be essential to sustain progress. The fiscal savings generated from the reforms can be used to finance increases in social assistance spending to close the gaps in the coverage and adequacy of the social protection system. These include, for example, providing cash assistance to the elderly³² and subsidizing work accident and death benefits (*Jaminan Kecelakaan Kerja* or JKK and *Jaminan Kematian* or JKM)

contributions.³³ Introducing a more responsive and dynamic social protection program can also support energy subsidy reform and minimize the risk of policy reversal. That said, continued investments are required to develop a modern and dynamic information system architecture to support data management, targeting, and delivery of social protection which will enable faster and more accurate responses and payments—thereby increasing the effectiveness of social spending.



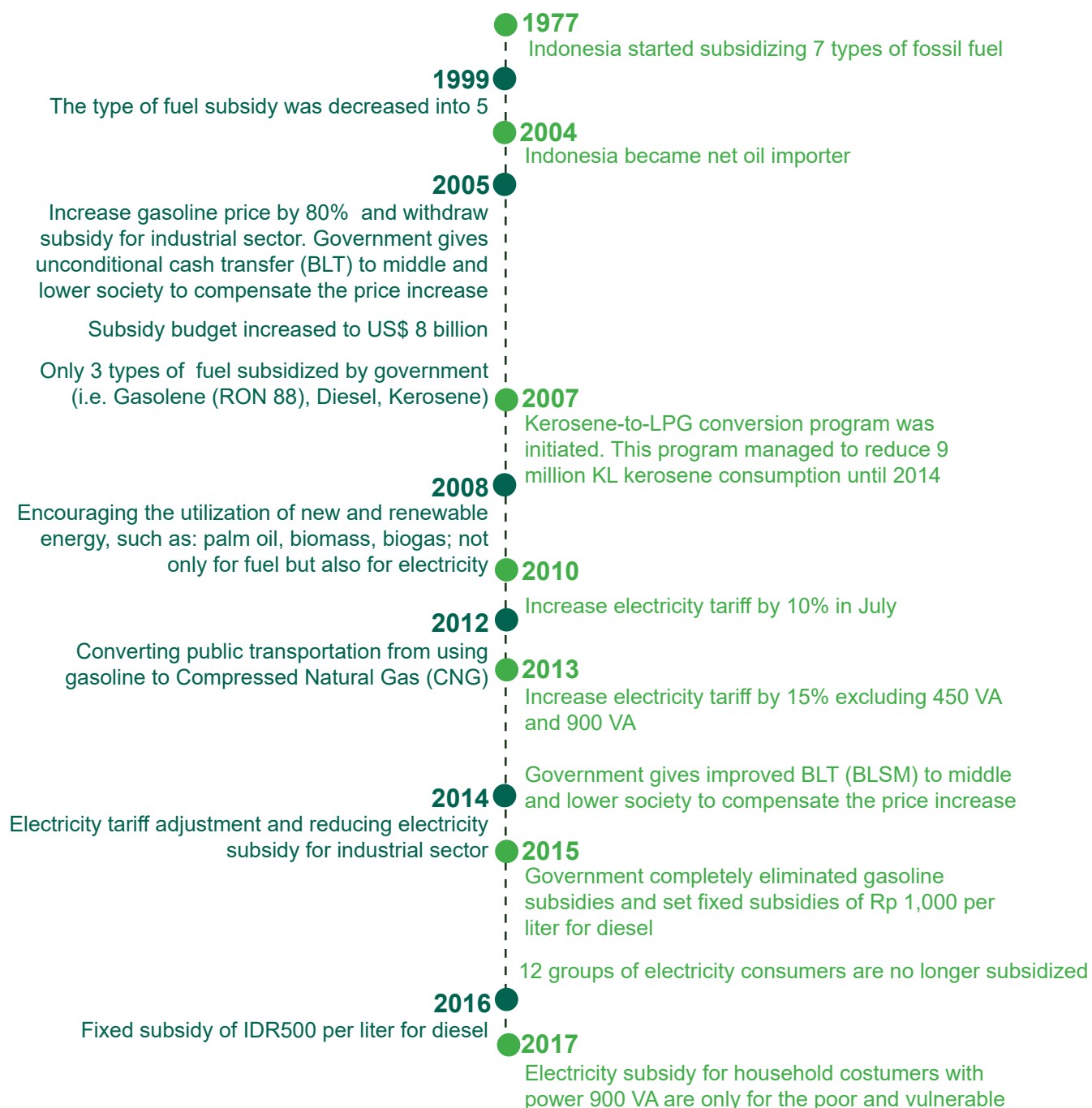
32. Estimated at 70 percent coverage and costs less than 0.2 percent of GDP.

33. The estimated costs are 0.12 percent of GDP. See World Bank 2020a for a detailed analysis and options.



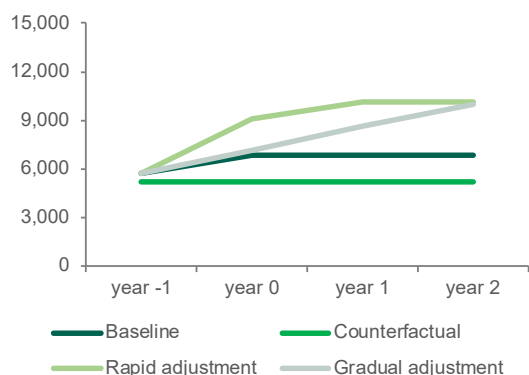
Appendix One: Supporting Data Analysis Figures and Tables

FIGURE A.1 - Milestones of Energy Subsidy Reforms in Indonesia (1977-2017)



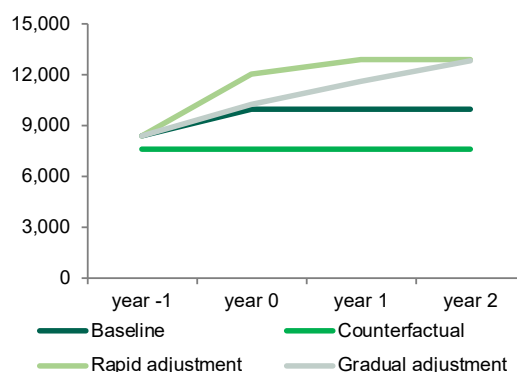
Sources: MoF 2019.

FIGURE A.2 - Regulated diesel fuel price under various scenarios. (Rp/liter)



Sources: MoEMR, Pertamina, World Bank staff estimates.

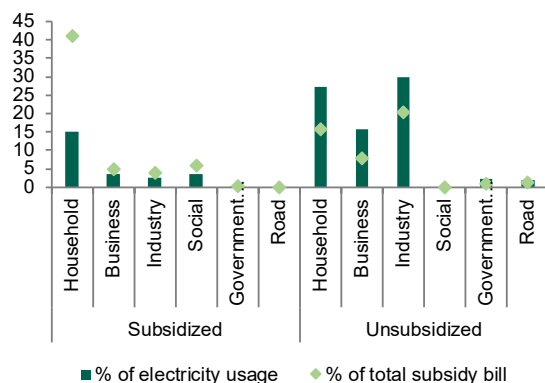
FIGURE A.3 - Regulated Peralite fuel price under various scenarios. (Rp/liter)



Source: MoEMR, Pertamina, World Bank staff estimates.

FIGURE A.4 - Electricity consumption and subsidy allocation by user categories (2019).

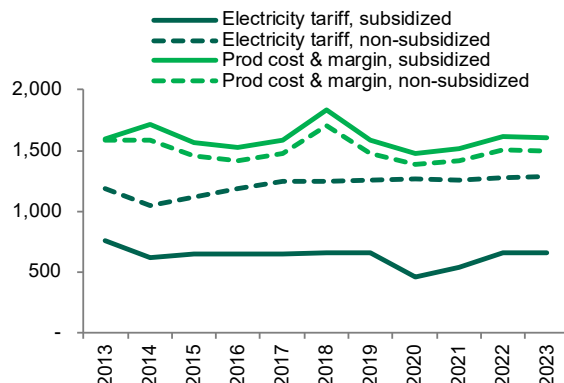
(Percent of electricity usage; percent of total energy subsidy)



Sources: MoF, MoEMR, PLN.

FIGURE A.5 - Non-subsidized electricity tariffs remain below production costs.

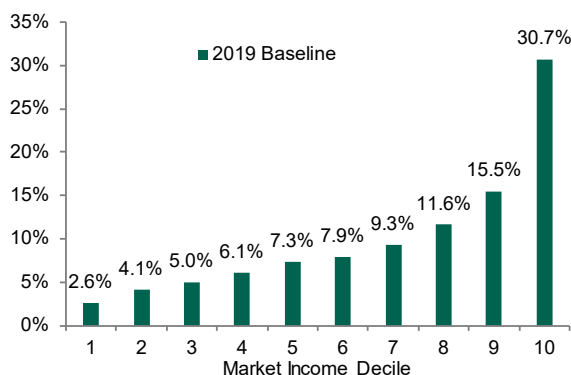
(Subsidized and non-subsidized electricity tariffs in Rp/Kwh)



Sources: MoEMR, PLN, World Bank staff estimates.

FIGURE A.6 - Fuel subsidy is poorly targeted (pre-September 2022 fuel price hikes, 2019).

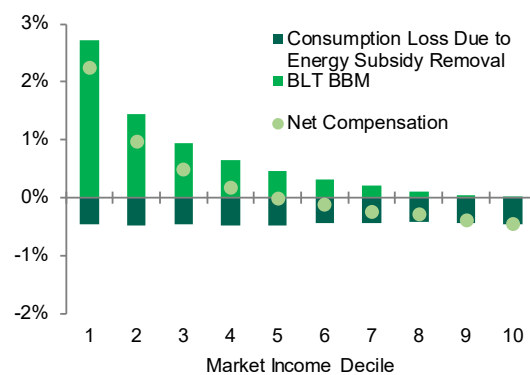
(Benefits as percentage of market income of each decile)



Sources: MWorld Bank staff estimates using Commitment-to-Equity (CEQ) methodology based on Susenas March 2019 data.

FIGURE A.7 - Net impact of September 2022 fuel price increases and fuel cash transfers (BLT BBM).

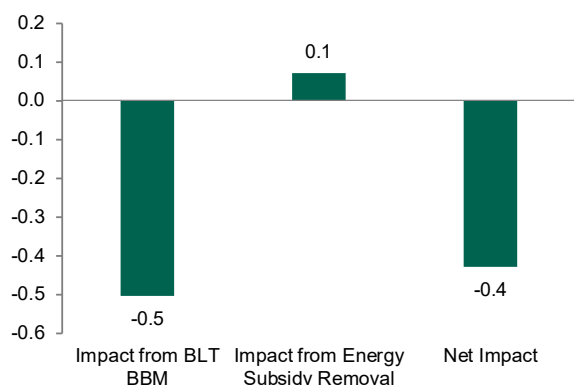
(Percentage of market income of each decile)



Sources: World Bank staff estimates using CEQ methodology based on Susenas March 2019 data.

FIGURE A.8 - Estimated impact of the September 2022 fuel price hikes on poverty.

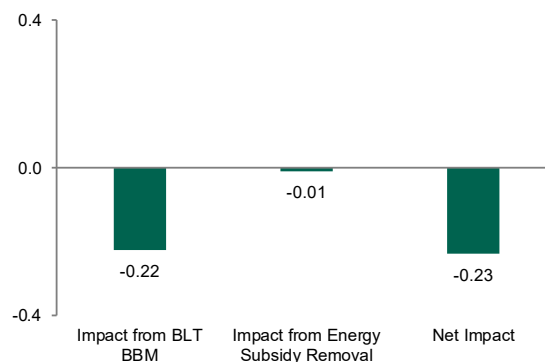
(Percentage points of International Poverty Line of US\$3.20/day, 2011 PPP)



Sources: World Bank staff estimates using CEQ methodology based on Susenas March 2019 data.

FIGURE A.9 - Estimated impact of the September 2022 fuel price hikes on inequality.

(Gini points of International Poverty Line of US\$3.20/day, 2011 PPP)



Sources: World Bank staff estimates using CEQ methodology based on Susenas March 2019 data.

TABLE A.1 - Scenario 1: Rapid price adjustment in Q3 year 0

(Reaching market prices in one quarter) (Rp/liter)

Fuel Type	Baseline Regulated Prices year 0	Estimated Market Prices (Q3 year 0)	Average full year (year 0)	Percent increase from baseline to market prices
Premium***	6,450			
Diesel	6,800	11,420	9,110	67.9
Pertalite	10,000	14,101	13,076	41.0

Source: MoF, Pertamina, World Bank, and World Bank staff estimate.

Note: ***Premium gasoline is no longer classified as a subsidized commodity and Pertalite was assigned to be a compensated fuel in April 2022, as substitute of Premium.

TABLE A.2 - Scenario 2: Gradual price adjustment between Q3 year 0 - Q2 year 2

(Reaching market prices in eight quarters) (Rp/liter)

Fuel	Baseline regulated prices year 0	Gradual (quarterly) adjustments between Q3 year 0 up to Q2 year 2								Average price (Rp/liter)		
		Q3 year 0	Q4 year 0	Q1 year 1	Q2 year 1	Q3 year 1	Q4 year 1	Q1 year 2	Q2 year 2	year 0	year 2	year 2
Premium	6,450											
Diesel	6,800	7,212	7,624	8,036	8,448	8,860	9,272	9,684	10,096	7,109	8,654	9,993
Nominal increase		412	412	412	412	412	412	412	412			
Pertalite	10,000	10,366	10,732	11,098	11,464	11,830	12,196	12,562	12,928	10,275	11,647	12,837
Nominal increase		366	366	366	366	366	366	366	366			

Source: MoF, Pertamina, World Bank Commodity Price Outlook, World Bank Macro-Fiscal Model (MFMMod), World Bank staff estimates.

TABLE A.3 - Summary of projected fiscal costs of the proposed fuel subsidy reform scenarios

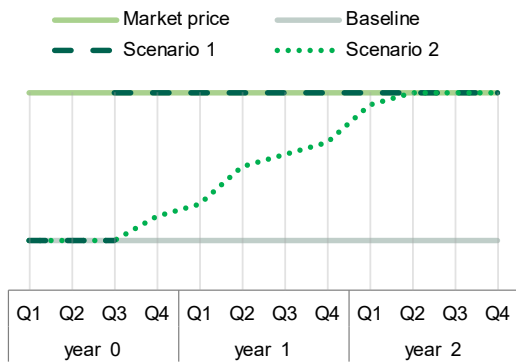
(Fuel subsidy outlays, percentage of GDP)

Scenario	Actual	Estimate		Difference from Baseline	
	year -1	year 0	year 0-2*	year 0	year 0-2*
Baseline	2.2	1.3	3.1	0.0	0.0
Counterfactual**	2.4	1.8	4.4	0.5	1.3
Scenario 1	2.2	0.8	1.4	-0.5	-1.7
Scenario 2	2.2	1.2	2.1	-0.1	-1.0

Source: World Bank staff estimates.

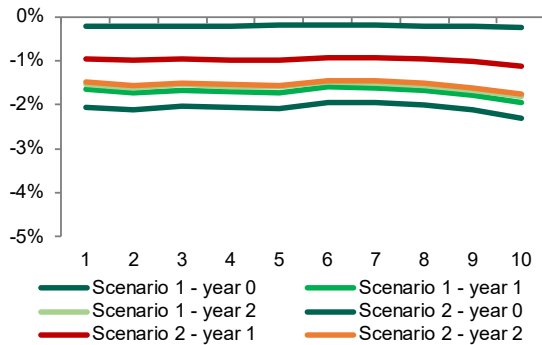
Note: *Refers to cumulative; **Counterfactual without the September 2022 fuel price hikes.

FIGURE A.10 - Policy reform illustration of Scenario 1 (one-off price adjustment: one quarter) and Scenario 2 (gradual price adjustment: eight quarters).
(Unit price per liter)



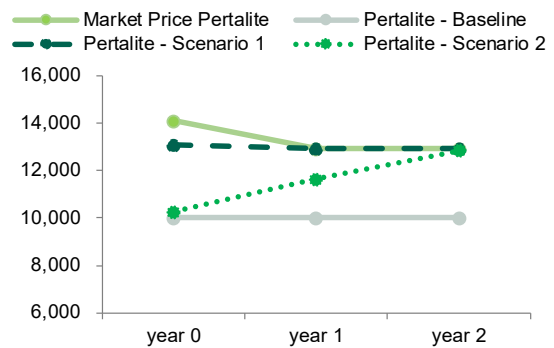
Source: World Bank staff illustration.

FIGURE A.12 - Consumption loss by market income decile.
(Percentage of market income)



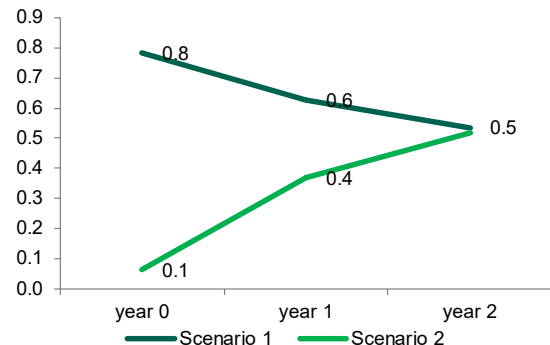
Sources: World Bank staff estimates using CEQ methodology based on Susenas March 2019 data.

FIGURE A.11 - Illustration of gasoline (Pertalite) price under reforms scenarios.
(2019 prices, annual average, Rp/liter)



Source: World Bank staff illustration and estimates.

FIGURE A.13 - Poverty impact from fuel subsidy removal.
(Percentage points of International Poverty Line of US\$3.20/day, 2011 PPP)



Source: World Bank staff estimates using CEQ methodology based on Susenas March 2019 data.

TABLE A.4 - Summary of estimated costs of compensation plans

Plan and Year	Benefit amount per household per year	For Bottom 40 percent			For Bottom 60 percent			
		Net impact on poverty	Share of GDP*	Share of fiscal savings	Net impact on poverty	Share of GDP*	Share of fiscal savings	
Scenario 1: Rapid Fuel Price Adjustment								
Plan 1 (max consumption loss)**	year 0	807,006	-0.06 ppt	0.09%	21%	-0.33 ppt	0.15%	34%
	year 1	706,106	-0.10 ppt	0.08%	13%	-0.30 ppt	0.13%	21%
	year 2	696,765	-0.15 ppt	0.08%	13%	-0.29 ppt	0.13%	20%
Plan 2 (mean consumption loss)***	year 0	458,172	0.21 ppt	0.06%	15%	0.04 ppt	0.10%	23%
	year 1	458,172	0.16 ppt	0.05%	8%	0.04 ppt	0.08%	13%
	year 2	458,172	0.12 ppt	0.05%	8%	0.03 ppt	0.08%	12%
Scenario 2: Gradual Fuel Price Adjustment								
Plan 1 (max consumption loss)**	year 0	79,552	-0.02 ppt	0.01%	16%	-0.05 ppt	0.01%	25%
	year 1	404,026	-0.05 ppt	0.04%	13%	-0.16 ppt	0.07%	21%
	year 2	675,502	-0.14 ppt	0.07%	13%	-0.29 ppt	0.11%	20%
Plan 2 (mean consumption loss)***	year 0	53,137	0.01 ppt	0.01%	11%	-0.01 ppt	0.01%	17%
	year 1	366,993	0.07 ppt	0.03%	9%	0.00 ppt	0.05%	14%
	year 2	548,852	0.07 ppt	0.05%	9%	-0.03 ppt	0.07%	14%

Source: World Bank staff estimates using CEQ methodology based on Susenas March 2019 data.

Note: *Relative to 2023 GDP. Compensation is distributed without any targeting vehicle. Proxy Means Test (PMT) model based on DTKS on determining bottom 40 and bottom 60 percent is employed. **Plan 1: benefit equals to maximum consumption loss of decile 4. ***Plan 2: benefit equals to mean consumption loss of decile 1-4.

FIGURE A.14 - Estimated impacts of fuel price increases on poverty in year 0-2 under various scenarios
(In percentage points)

Figure A.14a: Estimated poverty impact of Scenario 1 in year 0.

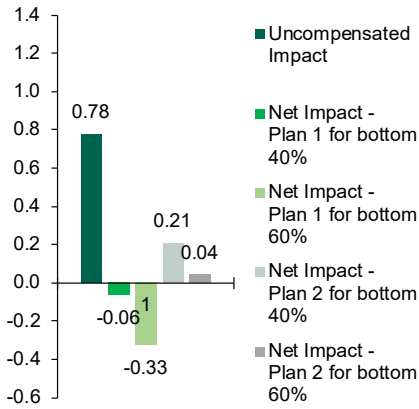


Figure A.14b: Estimated poverty impact of Scenario 1 in year 1.

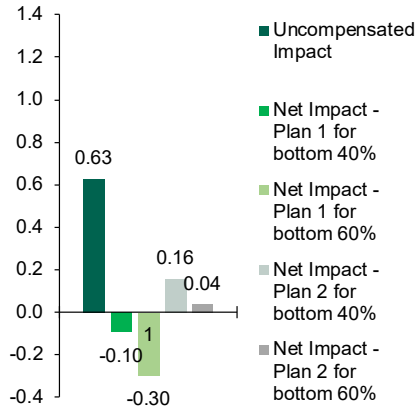


Figure A.14c: Estimated poverty impact of Scenario 1 in year 2.

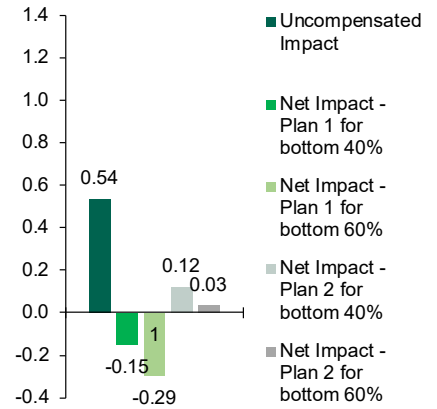


Figure A.14d: Estimated poverty impact of Scenario 2 in year 0.

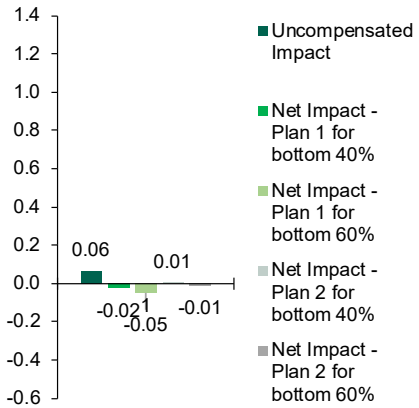


Figure A.14e: Estimated poverty impact of Scenario 2 in year 1.

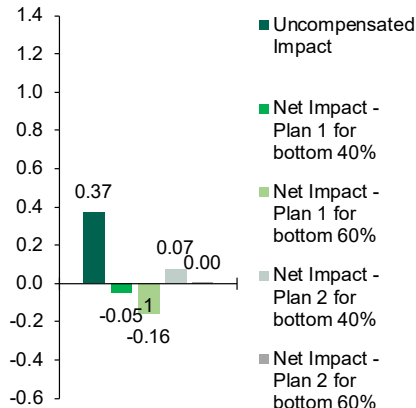
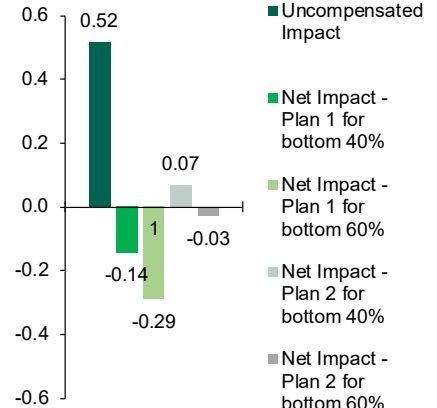


Figure A.14f: Estimated poverty impact of Scenario 2 in year 2.



Source: World Bank staff estimates using CEQ methodology based on Susenas March 2019 data.

Note: All units are measured in percentage points of International Poverty Line of US\$3.20/day, 2011 Purchasing Power Parity (PPP).

FIGURE A.15 - Estimated distributional impacts of compensation Plan 1 (benefit equal to maximum consumption loss of decile 4) under various scenarios in year 0-2

(Percentage of market income)

Figure A.15a: Estimated distributional impact for Scenario 1 in year 0.

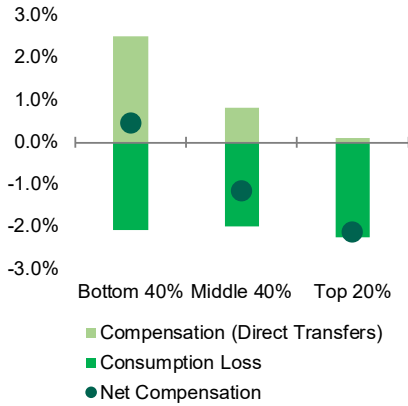


Figure A.15b: Estimated distributional impact for Scenario 1 in year 1.

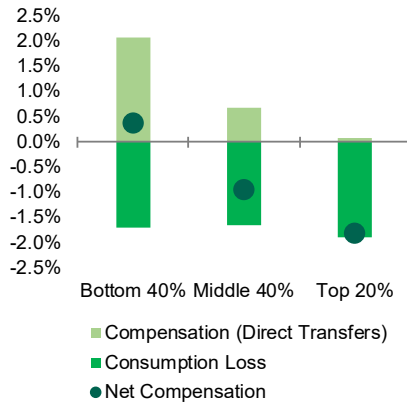


Figure A.15c: Estimated distributional impact for Scenario 1 in year 2.

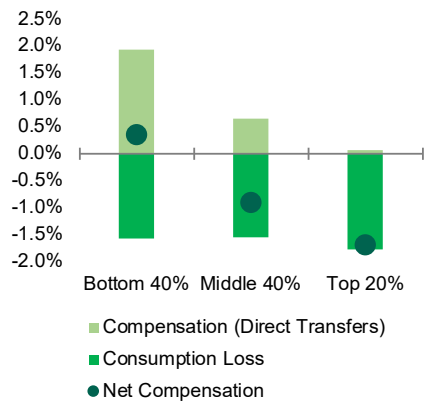


Figure A.15d: Estimated distributional impact for Scenario 2 in year 0.

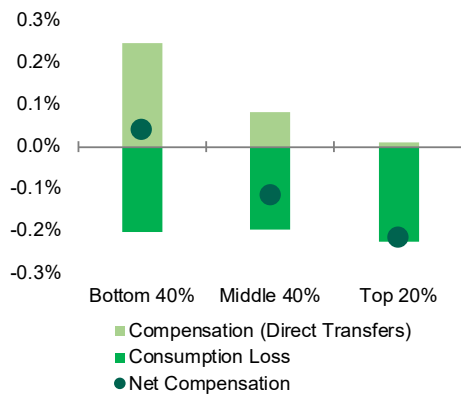


Figure A.15e: Estimated distributional impact for Scenario 2 in year 1.

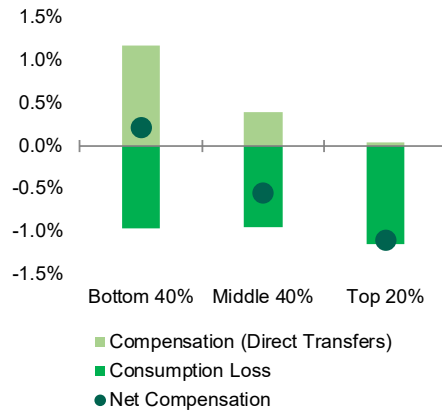
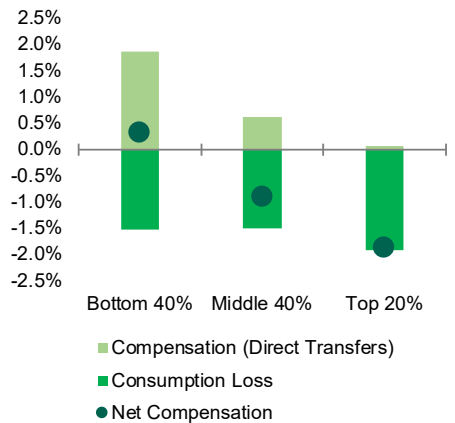


Figure A.15f: Estimated distributional impact for Scenario 2 in year 2.



Source: World Bank staff estimates using CEQ methodology based on Susenas March 2019 data.
 Note: All units are measured in percent of market income by market income decile.



Appendix Two: Simulations methodology

Commitment to Equity (CEQ) Framework

The microsimulations are based on the Commitment to Equity (CEQ) framework, a method that examines how fiscal policy affects household income, poverty, and inequality. The framework measures how subsidies affect household income, and particularly disposable income. The analysis primarily uses the National Survey of Indonesian Households (Susenas), conducted in March 2019, complemented with relevant government administrative data.

Allocating Fuel Subsidy

Allocation of fuel subsidies to households is done by identifying the type of fuel consumed and assigning the value of the subsidy, which is defined as the difference between the market price and the government's administered price. Since Susenas does not record fuel consumption disaggregated by fuel type, the type of fuel is proxied by implicit unit price. After eliminating outliers from the unit price estimates, the analysis assumes that households cannot purchase fuel below the official government administered price and that each household only consumes one type of fuel. The official government administered price at provincial level is applied to determine the unit price corresponding to each fuel type.

These allocation steps suggest that Pertalite (for gasoline) and subsidized diesel (for diesel) are the most common types of fuels consumed by the Indonesian households, hence corresponds to fuels' market share reported by Pertamina. Figures A.16 and A.18 show the distribution of gasoline and diesel consumption by decile. The frequency distribution of unit prices in Figures A.17 and A.19 shows the identified fuel type based on the implicit unit price that corresponds with the government administered price.

After determining the type of subsidized fuel consumed by households, their total consumption is adjusted to match the total national sales recorded in the administrative data, given that Susenas consumption is underreported.³⁴ The adjustment employed is the ratio between total consumption of fuel in Susenas with official total sales of fuel. The ratio is applied uniformly across household purchasing fuel in the observations. Finally, the amount of subsidy allocated to each household is estimated using the price difference between the market price and the government administered price, multiplied by a household's total fuel consumption.

Figure A.16 - Composition of gasoline consumption by decile.

(Share of consumption by income group decile, percent)

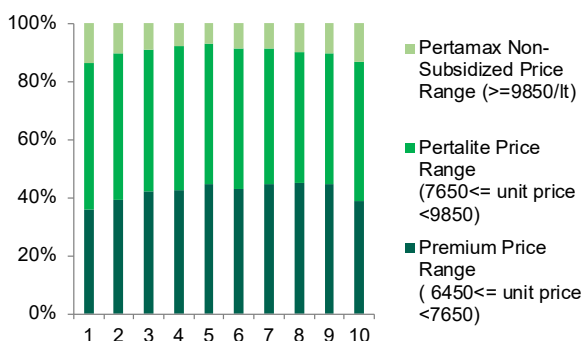
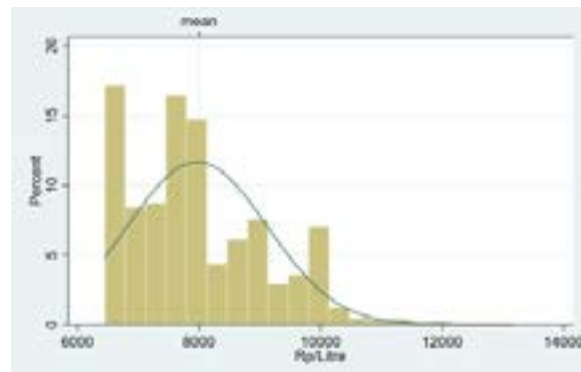


Figure A.17 - Gasoline unit price.

(Unit price, Rp/liter)



34. In 2019, Susenas consumption expenditure accounts for 43 percent of household expenditure in the national accounts.

Figure A.18 - Composition of diesel consumption by decile.
(Share of consumption by income group decile, percent)

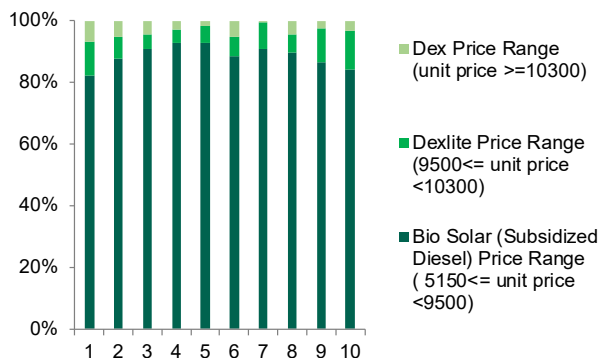
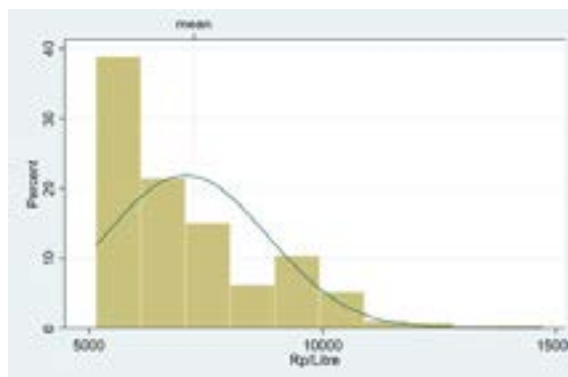


Figure A.19 - Diesel unit price.
(Unit price, Rp/liter)



Sources: Susenas March 2019, World Bank staff estimates.

Simulations

The simulations incorporate both direct and indirect impact of fuel subsidy removal. In the direct impact calculations, the amount of fuel subsidy allocated follows the two scenarios. Simulations show both scenarios have lower subsidy value per liter compared to baseline. Furthermore, in the calculations of the indirect impact, an Input-Output table is used to calculate the cost-push price increase for all sectors that utilize fuel as their input.

The simulations are observed in three projection years from year 0, year 1, and year 2. To capture the declining poverty trends and projected economic growth over this period, the analysis now casts the household expenditure for each corresponding year using a neutral distribution method. As such, constructing aggregate welfare that reflects declining poverty trends, then consumable income by adding indirect taxes, and indirect subsidies under each reform scenario.

The felt poverty impact and inequality impact for each simulation are estimated by comparing the poverty rate and Gini coefficient under each reform scenario with the baseline scenario.³⁵

Compensation scenario

The main objective of the compensation plan is to net out the welfare loss from the fuel subsidy removal for the poor and the vulnerable. The welfare loss in the analysis is defined as the additional expense a household must incur to get the same amount of fuel under the reform scenario. Setting a tailored benefit for each decile will incur more targeting cost to the existing social protection system, hence the compensation amount is set to be equal to the welfare loss experienced by the population in the decile 4 or decile 6. Since the absolute amount of fuel consumption is higher for richer deciles, we argue that setting the compensation benefit equal with the loss of higher decile should be enough to mitigate the welfare loss for the poor and the vulnerable.

In the simulations, the cash transfers are distributed universally to all households in the bottom 40 or bottom 60 percent. A Proxy Mean Test (PMT) model from the Integrated Social Welfare Database (DTKS) in 2015 is applied to determine households that belong to the bottom 40 and bottom 60 percent.

35. The baseline scenario is whereby the government market price follows current fuel subsidy regime.



References

- Asian Development Bank. 2015. "Fossil fuel subsidies in Indonesia: trends, impacts, and reforms". Manila, Philippines: Asian Development Bank.
- Beaton, C., and L. Lontoh. 2010. "Lessons Learned from Indonesia's Attempts to Reform Fossil-Fuel Subsidies". Winnipeg, Canada: The International Institute for Sustainable Development (IISD).
- Dartanto, T. 2013. "Reducing Fuel Subsidies and the Implication on Fiscal Balance and Poverty in Indonesia: A Simulation Analysis". *Energy Policy* Vol. 58 (C): 117-134.
- Foster, V., A. Rana, and N. Gorgulu. 2022. "Understanding Public Spending Trends for Infrastructure in Developing Countries". World Bank Policy Research Working Paper 9903. <https://documents1.worldbank.org/curated/en/727991642167519238/pdf/Understanding-Public-Spending-Trends-for-Infrastructure-in-Developing-Countries.pdf>
- Greenstone, M., and Q. Fan. 2019. "Indonesia's Worsening Air Quality and its Impact on Life Expectancy". *Air Quality Life Index*, March 2019 Update.
- International Monetary Fund. 2013. "Energy Subsidy Reform: Lessons and Implications". IMF Policy Paper. Washington, DC: IMF.
- . 2023. "Climate Change: Fossil Fuel Subsidies". <https://www.imf.org/en/Topics/climate-change/energy-subsidies#> Washington, DC: IMF.
- Jazuli, M.R., I. Steenmans, and Y. Mulugetta. 2021. "Navigating policy dilemmas in fuel-subsidy reductions: learning from Indonesia's experiences". *Sustainability: Science, Practice and Policy* 17(1): 391-403.
- Kusumawardhani, N., R. Hilman, T. Laan, N. Warda, and R. Nurbani. 2017. "Gender and Fossil Fuel Subsidy Reform: An audit of data on energy subsidies, energy use and gender in Indonesia". Winnipeg, Canada: The International Institute for Sustainable Development (IISD).
- Ministry of Energy and Mineral Resources of Indonesia. 2022. "Handbook of Energy and Economic Statistics of Indonesia 2021".
- Ministry of Finance. 2021. *Kerangka Ekonomi Makro dan Pokok-pokok Kebijakan Fiskal*.
- . 2022. *Nota Keuangan dan APBN 2023*.
- . 2022a. *Laporan Keuangan Pemerintah Pusat 2021*.
- . 2022b. *Laporan Realisasi Semester I dan Prognosis Semester II APBN TA 2022*.
- . 2023. *APBN KITA: Kinerja & Fakta (Edisi Januari 2023)*. APBN Kita January 2023.
- Organisation for Economic Co-operation and Development (OECD). 2019. "Indonesia's Effort to Phase Out and Rationalise Its Fossil-Fuel Subsidies, G20 Self-Report". Paris: OECD.

———. 2023. OECD Green Growth Indicators https://stats.oecd.org/Index.aspx?DataSetCode=GREEN_GROWTH

Perusahaan Listrik Negara. 2021. Laporan Statistik PLN Tahun 2021 Audited.

Tim Nasional Percepatan Penanggulangan Kemiskinan (TNP2K) (The National Team for the Acceleration of Poverty Reduction). 2021. Policy Paper (Naskah Kebijakan) Reformasi Kebijakan Subsidi LPG Tepat Sasaran: Mengurangi Kesenjangan dan Menjamin Pemerataan. Jakarta: TNP2K.

World Bank Group. 2012. “Fuel Pricing and Subsidies in Indonesia: Reaching an Equitable and Sustainable Policy”. Washington, DC: World Bank.

———. 2015. “High expectations”. Indonesia Economic Quarterly (IEQ), March 2015.

———. 2020. “Spending for Better Results: Indonesia Public Expenditure Review 2020”. Washington, DC: World Bank.

———. 2020a. “Investing in People: Social Protection for Indonesia’s 2045 Vision”. Washington, DC: World Bank.

———. 2022. “Reforms for Recovery”. East Asia and the Pacific Economic Update, October 2022.

———. 2023. “Indonesia Country Climate and Development Report”. CCDR Series. Washington DC: World Bank.

———. 2023a. “The Atlas of Social Protection Indicators of Resilience and Equity (ASPIRE)”. <https://www.worldbank.org/aspire>

———. 2023b. “Indonesia Poverty Assessment – Pathways Towards Economic Security”. Jakarta: World Bank.

———. 2023c. “Cash Transfers in the Context of Energy Subsidy Reform: Insights from Recent Experience”. <https://openknowledge.worldbank.org/handle/10986/39948> .

———. 2023d. “Green Economic Growth in Indonesia: A background paper for Indonesia Country Climate Diagnostic Report”.

World Trade Organization. 2020. “Trade Policy Review: Indonesia”. Geneva: WTO.

