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## **Report Name:** Biofuels Annual

**Country:** Indonesia

**Post:** Jakarta

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### **Report Highlights:**

In 2022, Indonesia maintained its biodiesel blending mandate at 30 percent and raised its biodiesel allocation volume to a record 10.1 billion liters on expected increased economic activity and mobility following eased pandemic-related restrictions. The export levy that funds the subsidies underwriting the biodiesel mandate program was adjusted to also subsidize cooking oil prices which have surged since late 2021. Indonesia 2022 biodiesel exports are forecast to remain limited at 200 million liters on expected high export levies and taxes. Domestic production and consumption of fuel grade ethanol (FGE) remains virtually non-existent due to feedstock limitations and no viable subsidy scheme. However, as global ethanol prices are currently lower than gasoline prices, there is renewed interest in pursuing an E2 pilot project and assessing the benefits and viability of importing finished gasoline blended with ethanol or direct imports of ethanol for in-country blending.

## **Section I. Executive Summary**

In 2022, Indonesia maintained its ambitious 30 percent biodiesel blending mandate, with a higher allocation volume despite rising prices of palm oil and fossil diesel. Increased economic activity following eased pandemic-related restrictions gradually pushed up fuel consumption in 2021 and into 2022. In line with this increase, Indonesia biodiesel use increased to 9.3 billion liters in 2021, 10 percent higher than previous year.

The Government of Indonesia (GOI) continues to show firm support for the biodiesel blending mandate program by maintaining the financial support mechanism it put in place since 2015. The mechanism allows funds collected from its palm oil exports levy to be managed by the Crude Palm Oil (CPO) fund agency to be distributed to subsidize the price difference between biodiesel and fossil diesel. Several adjustments of the export levy have been made over the past few years in reaction to palm oil price fluctuations and other factors such as rising cooking oil prices. In March 2022, the latest adjustment included increasing the palm oil export levy to fund the GOI's cooking oil subsidy in response to mounting pressure from consumers due to sustained high cooking oil prices. Cooking oil prices surged 52 percent to around 24,400 IDR (\$1.64) per kg in April 2022 from an average of 16,050 IDR (\$1.08) per kg in September 2021, drawing public attention that pressured the GOI into enacting several intervening policies, including a subsidy for cooking oil that ended up making little impact on real retail prices for consumers.

The GOI set the biodiesel allocation for 2022 at 10.15 billion liters, the highest allocation on record since the biofuel program started nation-wide. GOI plans to expand the blending mandate for biodiesel beyond B30 are still being tabled, pending the determination of its economic feasibility. The B40 road test will be held this year, making it too soon for a B40 blending mandate to start in 2022.

Indonesia's commitment to reduce greenhouse gas emissions is reflected in its updated Nationally Determined Contributions (NDC) and Long-term Strategy on Low Carbon and Climate Resilience 2050 (LTS-LCCR 2050) which were submitted to the United Nations Framework Convention on Climate Change (UNFCCC) prior the Conference of Party (COP) 26, 2021. The LTS-LCCR 2050 document shows that Indonesia aims for biofuels to constitute 46 percent of its transportation energy sources by 2050.

Domestic production and consumption of fuel grade ethanol (FGE) remains virtually non-existent due to feedstock limitations, a lack of demand for blended gasoline, and no viable subsidy scheme for bioethanol as there is for biodiesel. However, as global ethanol prices are currently lower than gasoline prices, there is renewed interest in pursuing an E2 pilot project and assessing the benefits and viability of importing finished gasoline blended with ethanol or direct imports of ethanol for in-country blending (see Section II. Policy and Programs).

## Section II. Policy and Programs

Indonesia began adopting national-level biofuels policies in 2006 with the issuance of Government Regulation 1 concerning the procurement and usage of biofuels. In support of Regulation 1, Presidential decree 10/2006 established a National Biofuels Development Team, responsible for supervising the implementation of biofuel programs and creating a blueprint for biofuels development. According to the blueprint, biofuels development aims to (1) alleviate poverty and unemployment, (2) drive economic activities through biofuel procurement and (3) reduce domestic fossil fuel consumption. This regulation was followed by Indonesia's House of Representatives (DPR) also passing the Energy Law (UU 30/2007) to strengthen regulations prioritizing the use of renewable energy. Additional background information can be found [here](#).

The National Energy Policy (KEN) established through government regulation 79/2014 is now the most important policy basis for the biofuels program. KEN targets 23 percent renewable energy use economy-wide by 2025 and 31 percent by 2050. The contribution of biofuels towards meeting these goals roughly translates to 13.9 billion liters and 52.3 billion liters of biofuel use, respectively. Table 1 provides the plan for biofuel contribution in the transportation sector.

**Table 1. Plan of Biofuel Provision for Transportation 2016-2050**

|                   |                   | 2016 | 2025 | 2050 |
|-------------------|-------------------|------|------|------|
| <b>Biodiesel</b>  | Blend rate (%)    | 20   | 30   | 30   |
|                   | Volume (Bn liter) | 2.5  | 6.9  | 17.1 |
| <b>Bioethanol</b> | Blend rate (%)    | 5    | 20   | 20   |
|                   | Volume (Bn liter) | 0.1  | 2.6  | 11.4 |
| <b>Bioavtur</b>   | Blend rate (%)    | 2    | 5    | 10   |
|                   | Volume (Bn liter) | 0.0  | 0.1  | 2.7  |

Source: Presidential decree 22/2017

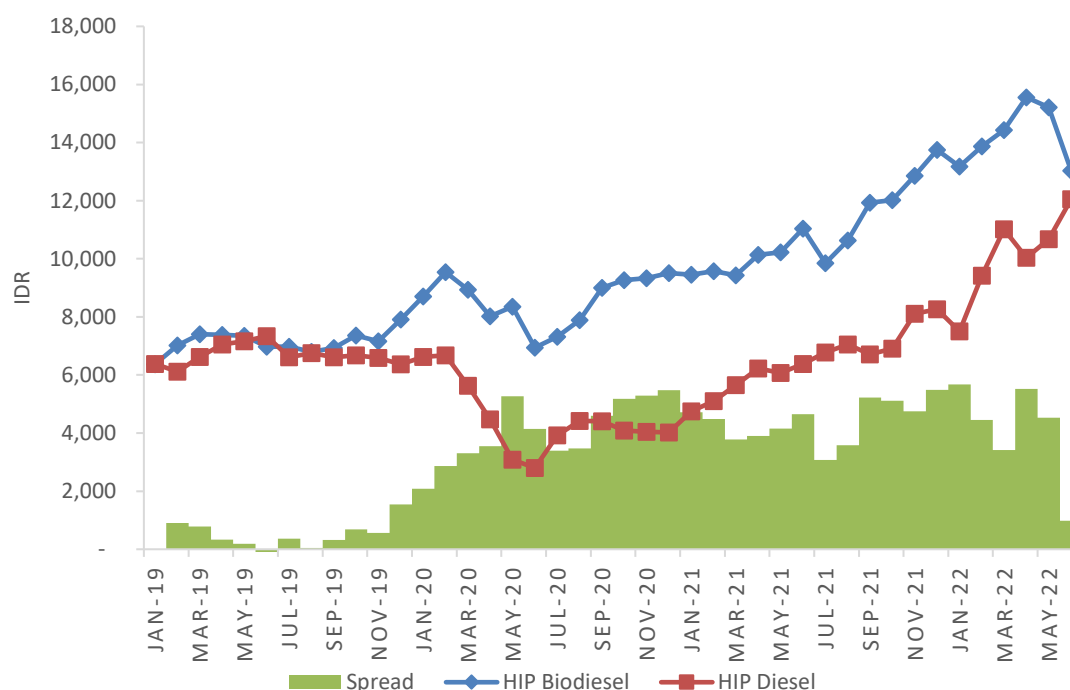
Indonesia's biodiesel mandate program is a nationwide directive to blend palm-based Fatty Acid Methyl Ester (FAME) with diesel to reduce fuel imports, generate domestic demand for palm oil, and reduce emissions. The mandatory distribution is carried out by state-owned energy company Pertamina as well as smaller private companies.

The biodiesel program was unstable until a more reliable support mechanism was established following Indonesia's switch from providing subsidies through the national state budget (APBN) to subsidies via the CPO fund, which was established in 2015 to collect a levy on palm oil product exports. Since 2015, Indonesia has aggressively expanded the blending program from its initial application covering only Public Sector Obligation (PSO) industries to a nationwide B20 program in 2018 and then to the current nationwide B30 program in January 2020. The GOI aims to boost the mandate yet gain to an even more ambitious blending rate of B40 sometime between 2023 and 2025, pending the results of the current B40 road test phase and assessments of the feasibility of raising enough funds to subsidize such a high target blending rate.

The biodiesel mandate program relies on subsidies funded by Indonesia's CPO export levy to cover the price spread between biodiesel and fossil diesel. In 2021, the price of biodiesel and fossil diesel increased 47 percent and 74 percent respectively as shown in Figure 1. Indonesia's

biodiesel index price (HIP) is set based on palm oil prices. The biodiesel subsidy amounts averaged 4,409 (\$0.30) IDR per liter in 2021, 9 percent higher than in 2020. The biodiesel subsidy for June 2022 is expected to decline to the lowest point since November 2019 as palm oil price dropped by 16 percent, narrowing the spread to about 985 IDR/liter (\$.006).

**Figure 1. Biodiesel and Diesel Market Index Price (HIP), 2019-2022**



Source: Ministry of Energy Mineral Resource (MEMR)

In 2020, the COVID-19 pandemic led to severe restrictions on business operations and travel, causing Indonesia's fuel consumption to drop by almost 11 percent. Despite the downturn in fuel consumption, the GOI maintained its B30 mandate program by increasing the CPO export levy by \$5 per MT and providing an additional subsidy of IDR 2.78 trillion (\$195 million) from the state budget. Due to signs of economic recovery and the easing of pandemic-related travel restrictions in late 2021, the GOI revised its biodiesel allocation volume up to 9.4 billion liters in November 2021 from 9.2 billion at the beginning of that year. In 2022, the GOI continued to maintain its B30 blending rate and set the 2022 biodiesel allocation volume at 10.1 billion liters, the highest on record since the country started its biofuels program. The GOI appointed 22 biodiesel producers to supply 18 fuel retailers who in turn blend the biodiesel (FAME) with their conventional fossil diesel and sell the blended biodiesel through their distribution channels. Pertamina alone receives around 82 percent of the total biodiesel allocation volume.

### Renewable Energy and Modeling GHG Emission Reductions Tied to UN Commitments

Indonesia has committed to reducing greenhouse gas (GHG) emissions in the energy and transportation sectors. In 2016, Indonesia submitted its first Intended Nationally Determined Contribution (NDC) to the United Nations Framework Convention on Climate Change (UNFCCC), committing itself to reduce its total national GHG emissions by 29 percent by 2030 through domestic ventures, or 41 percent with international assistance.

Within the energy sector, the business as usual (BAU) emission scenario below shows emissions without consideration of climate change mitigation policy. The Counter Measure 1 (CM1) emission scenario, with mitigation, considers sector targets without international support. The CM 2 emission scenario considers sector targets with international support. Emission reductions for the energy sector assume biodiesel use, specifically B30, within the transportation sector covers 90 percent of the total diesel fuel pool under CM1 and 100 percent under CM2.

**Table 2. Indonesia GHG Emission Reduction within Energy Sector**

| GHG Emission Level<br>2010    | GHG Emission Level<br>2030    |       |       | GHG Emission Reduction        |     |                       |      |
|-------------------------------|-------------------------------|-------|-------|-------------------------------|-----|-----------------------|------|
| <i>MTonne CO<sub>2</sub>e</i> | <i>MTonne CO<sub>2</sub>e</i> |       |       | <i>MTonne CO<sub>2</sub>e</i> |     | <i>Percent of BAU</i> |      |
|                               | BAU                           | CM1   | CM2   | CM1                           | CM2 | CM1                   | CM2  |
| 453                           | 1,669                         | 1,355 | 1,223 | 314                           | 446 | 11                    | 15.5 |

Source: Ministry of Environment and Forestry (MEOF), United Nations NDC Registry

In November 2021, Indonesia updated its NDC and submitted its Long-term Strategy on Low Carbon and Climate Resilience 2050 ([LTS-LCCR 2050](#)) to the United Nations Framework Convention on Climate Change (UNFCCC COP 26). The strategy puts forward biofuels as Indonesia's main source of energy in the transportation sector by 2050 (see Table 3), gradually replacing gasoline with bioethanol and palm oil-based gasoline and diesel with palm biodiesel and green diesel.

**Table 3. Indonesia Transport Energy Source 2050**

| Energy Source | Contribution |
|---------------|--------------|
| Biofuels      | 46 percent   |
| Oil Fuels     | 20 percent   |
| Electricity   | 30 percent   |
| Natural Gas   | 4 percent    |

Source: Indonesia LTS-LCCR

In order to achieve its NDC target, the GOI issued [Law 7/2021](#) establishing a carbon tax and [Presidential Regulation 98/2021](#) laying out carbon market mechanisms, including (1) carbon trade, (2) result-based payment, (3) carbon tax, and (4) other mechanisms based on the

development of science and technology. The GOI plans to apply the carbon tax to the power sector beginning in July 2022 and expand it to all sectors by 2025.

### Mandate & Pricing

Indonesia's biofuel blending mandate was created in 2008 through Ministry of Energy Mineral Resource (MEMR) Regulation 32 and was most recently revised through MEMR Regulation 12, released in March 2015. MEMR Regulation 12/2015 established biofuel-blending targets for transportation, industry, and power generation sectors. For more information, read earlier report [here](#).

Table 4. shows GOI plans to increase biodiesel and bioethanol blending through 2025. While biodiesel targets for on-road transportation have been achieved, targets for industry and electricity (estimated at 22-24 percent in 2020) have fallen short. No progress has been made in fulfilling the bioethanol mandate.

**Table 4. Indonesia Biofuels Mandatory Targets**

| Sector                                          | Biodiesel |      |      | Bioethanol |      |      |
|-------------------------------------------------|-----------|------|------|------------|------|------|
|                                                 | 2016      | 2020 | 2025 | 2016       | 2020 | 2025 |
| Transportation, Public Service Obligation (PSO) | 20%       | 30%  | 30%  | 2%         | 5%   | 20%  |
| Transportation, Non-PSO                         | 20%       | 30%  | 30%  | 5%         | 10%  | 20%  |
| Industry                                        | 20%       | 30%  | 30%  | 5%         | 10%  | 20%  |
| Electricity                                     | 30%       | 30%  | 30%  |            |      |      |

Source: Ministry of Energy Mineral Resource Regulation 12/2015

Accompanying the mandate program, the GOI sets market index prices for both bioethanol and biodiesel on a monthly basis. Since 2016, domestic molasses prices published by state-owned agricultural trade company KPB are used as the basis of bioethanol. Prior to 2016 an Argus based price was utilized. For biodiesel prices, GOI uses CPO prices published by the same state-owned company as a reference.

**Table 5. Biofuels Market Index Price (HIP) Formula**

| HIP Formula (IDR/liter) |                                                                                                          |
|-------------------------|----------------------------------------------------------------------------------------------------------|
| Biodiesel               | $= (\text{CPO Price IDR/kg} + 85 \text{ \$/ton}) \times 870 \text{ kg/m}^3 + \text{transportation cost}$ |
| Bioethanol              | $= (\text{Molasses price IDR/kg} \times 4.125 \text{ kg/liter}) + 0.25 \text{ \$/liter}$                 |

Source: Ministry of Energy Mineral Resource

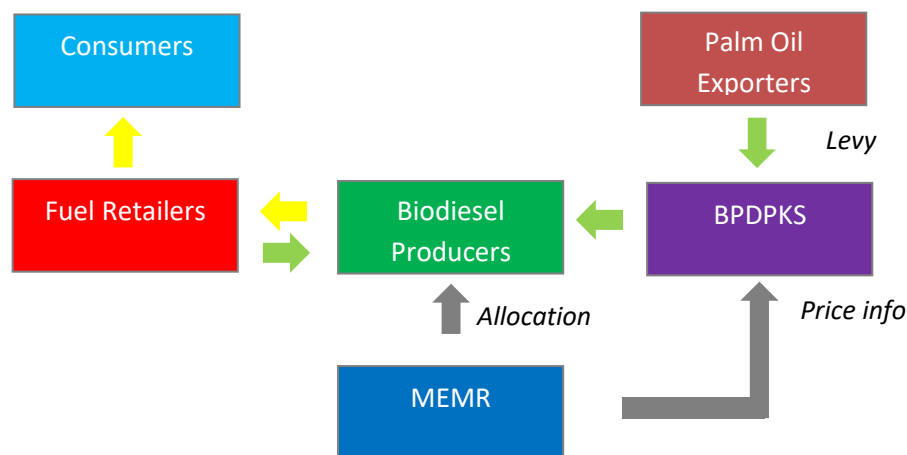
The HIP biodiesel formula has been adjusted several times in recent years. In 2015, the biodiesel conversion was set at \$125 per metric ton (MT). In 2017, the GOI lowered the value to \$100 per MT before reducing further to \$80 per MT in May 2020. Most recently, the GOI adjusted the conversion upwards to \$85 per MT in September 2020. The biodiesel conversion value bridges producers' margin and amount of subsidy from CPO fund, with lower values reducing subsidy expenditures and lowering producer's margins.

## Financial Support

In 2015, the financial support mechanism for domestic biodiesel consumption was completely overhauled. The new scheme, with modifications as needed, has proven effective and durable thus far. Managed by the Oil Palm Plantation Fund Management Agency (BPDPKS), funds are collected from a palm oil export levy to offset the price gap between biodiesel and fossil diesel. The agency also uses the fund for research and development, replanting, and palm promotion activities.

The GOI has been setting domestic biodiesel supply allocations on an annual basis since 2019. The MEMR establishes volumes for fuel retailers consisting of private and state-owned companies and assigns production allocations to biodiesel producers, who in turn supply palm oil-based biodiesel, also referred to as palm oil fatty acid methyl ester (PME) for blending. BPDPKS continues to disburse funds based on the spread between the diesel market index price (HIP Diesel) published by Directorate General of Oil and Gas (DG Migas) and biodiesel index market price (HIP Biodiesel) published by Directorate New and Renewable Energy (DG EBTKE). Both offices are parts of MEMR.

**Figure 2. Indonesia Biodiesel Support Mechanism**



Over the past few years, the GOI has frequently adjusted its export levy scheme to maintain the solvency of its CPO fund amidst palm oil price fluctuations. In December 2018, the export levy formulation changed from a flat-rate structure to a progressive price-based structure in response to declining CPO prices. As the price decline continued into 2019, the GOI halted CPO levy collection altogether, leading to no new revenues being collected by the CPO fund for the entirety of 2019. In 2022, after palm oil prices rebounded to above \$1,000 per MT, the GOI adjusted the progressive levy structure again to include a new top tariff bracket for palm oil prices reaching between \$1,000 and \$1,500 (See Table 9). This new top bracket was added in order to fund the GOI's cooking oil subsidy in response to mounting pressure from consumers due to sustained high cooking oil prices. The GOI also added new leviable categories of palm products, including Used Cooking Oil (UCO) and Palm Oil Mill Influent (POME), which are both used for biodiesel feedstock. Now, [the latest levy structure](#), modified in June 2022, covers 26 products, with the highest tariff rate at \$194 per MT for Palm Methyl Ester (PME) and a flat rate export levy of \$35/MT for UCO and \$5/MT for POME (See Table 6).

**Table 6. Changes in Export Levy Structure (\$/MT) for Select Palm Oil Product Categories**

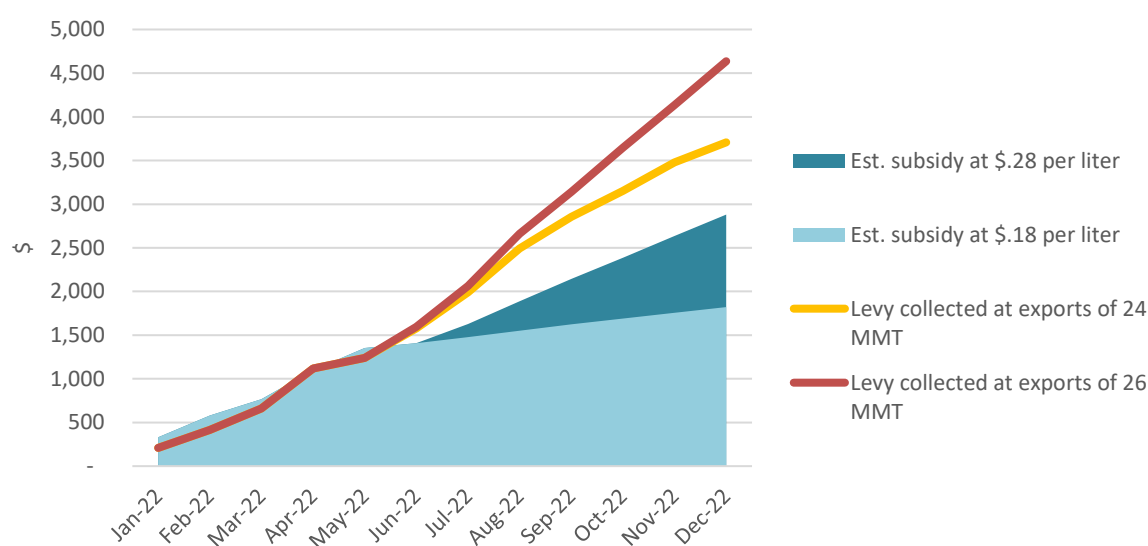
|                                                                                                                                                                                           | <b>Previous Tariff</b> | <b>Current Tariff</b><br>(Effective June 10, 2022) |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|----------------------------------------------------|
| Palm Oil Mill Effluent                                                                                                                                                                    | 5                      | 5                                                  |
| RBD Palm Olein (In package of 25 Kg or less)                                                                                                                                              | 20 – 276               | 20 - 184                                           |
| RBD Palm Stearin, RBD Palm Kernel Olein, RBD Palm Kernel Stearin, Palm-based Biodiesel (with Methyl Ester more than 96.5%)                                                                | 25 -281                | 25 - 194                                           |
| Used Cooking Oil                                                                                                                                                                          | 35                     | 35                                                 |
| Split Fatty Acid from CPO, CPKO (with free fatty acid of 2% or more), Split PFAD (with free fatty acid of 70% or more), Split PKFAD (with free fatty acid of 70% or more), RBD Palm Olein | 35 - 291               | 35 - 204                                           |
| RBD Palm Oil, RBD Palm Kernel Oil                                                                                                                                                         | 38 - 294               | 38 - 207                                           |
| Palm Fatty Acid Distillate (PFAD), Palm Kernel Fatty Acid Distillate (PKFAD)                                                                                                              | 45 - 301               | 45 - 214                                           |
| Crude Palm Oil, Crude Palm Kernel Oil, Crude Palm Olein, Crude Palm Stearin, Crude Palm Kernel Olein, Crude Palm Kernel Stearin                                                           | 55 - 375               | 55 - 240                                           |

Source: Ministry of Finance

The rise of palm oil price and adjustment of its levy structure has yielded a record of CPO fund collected since 2015. Estimated levy collected in 2021 at IDR 72 trillion (\$ 4.9 billion) more than all collection between 2015 and 2020. In 2022, levy collection is projected to reach between \$3.7 and \$4.6 billion (Figure 3).

Since its establishment, the vast majority of CPO fund was distributed as biodiesel subsidy, and less than 10 percent for combined program of replanting, research, and promotion.

**Figure 3. Estimate Subsidy and Levy Collected 2022 (\$ million)**



Source: Post's calculations

In addition to the biodiesel subsidy, the GOI provide lower sales tax on flexible fuel vehicles (FFVs) to incentivize the adoption of low carbon emission vehicles along with electric cars and hybrids. Government Regulation 79/2019 which amended by [Government Regulation 74/2021](#) put sales taxes at 15 percent on luxury goods (PPnBM) of new flexy-engine vehicle, lower than other luxury goods. The flexy engine vehicle is capable to utilize 100 percent of biofuel.

#### Import Policy, Import Duties and Export Taxes

Import duties for biofuels are listed below (Table 7). Biofuels importation requires recommendations from the MEMR, as stated by the Ministry of Trade (MOT) 25/2022 which replaces MOT 21/2019. MOT will issue import approval based on either commodity balance or availability of the data. Biofuel import approval valid for one year in accordance with the commodity balance.

**Table 7. MFN Import Duties on Biofuels**

| HS code  | Description                                                             | Duty Rate (percent) |
|----------|-------------------------------------------------------------------------|---------------------|
| 2207.10  | Undenatured ethanol                                                     | 30                  |
| 2207.20  | Denatured ethanol                                                       | 30                  |
| 3826.001 | Biodiesel, with Coconut methyl ester (CME) content more than 70 percent | 5                   |
| 3826.002 | Biodiesel, with ester alkyl content more than 96.5 percent              | 5                   |
| 2710.20  | Petroleum oils containing up to 30 percent biodiesel                    | 0                   |
| 2710.12  | Gasoline pre-blended with ethanol                                       | 0                   |

Source: Ministry of Finance

Indonesia is bound by several trade agreements, providing lower duties below MFN rates on ethanol imports (see Table 8). The Preferential Trade Agreement (PTA) between Indonesia and Pakistan allows ethanol imports at zero percent beginning in 2019. A new trade agreement signed between Indonesia and EFTA countries (Iceland, Liechtenstein, Norway, and Switzerland) also reduces the duty on ethanol imports from those countries to 27.6 percent beginning 2022.

**Table 8. Trade Agreements Providing Lower Ethanol Import Duties**

| Trade Agreement |                   | 2022 Tariff Regulation | Ethanol Import Duty (HS Code 2207) |
|-----------------|-------------------|------------------------|------------------------------------|
| ATIGA           | ASEAN             | MOF Regulation 43/2022 | 0%                                 |
| AKFTA           | ASEAN-Korea       | MOF Regulation 45/2022 | 5 % (2017 onward)                  |
| AJCEP           | ASEAN - Japan     | MOF Regulation 48/2022 | 7.94 % (2022)                      |
|                 |                   |                        | 6.47 % (2023)                      |
|                 |                   |                        | 5 % (2024)                         |
|                 |                   |                        | 5 % (2025 onward)                  |
| IJEPA           | Indonesia – Japan | MOF Regulation 50/2022 | 1.88 % (2022)                      |

|        |                      |                        |                   |
|--------|----------------------|------------------------|-------------------|
|        |                      |                        | 0 % (2023 onward) |
| IPPTA  | Indonesia – Pakistan | MOF Regulation 52/2022 | 0 % (2019 onward) |
| IECEPA | Indonesia - European | MOF Regulation 56/2022 | 27.6 % (2022)     |

Source: Compiled from Ministry of Finance Regulations

In March 2020, Pertamina removed a prohibition on ethanol as a component in gasoline import tenders. The removal opens the market for ethanol-blended finished gasoline imported as RON 88 and RON 92 gasoline. The GOI has placed considerable pressure on Pertamina to reduce petroleum imports to improve the current account deficit, which has thus far been realized through the country's biodiesel program reducing diesel imports. Although commercial bioethanol blending in Indonesia has not yet started, Pertamina and MEMR continue to assess the potential cost savings and supply chain viability of importing finished gasoline blended with ethanol or direct imports of ethanol for in-country blending. Because global ethanol prices are currently lower than gasoline prices, there is renewed interest within MEMR to pursue an E2 pilot project.

The GOI revises up export tax for palm oil products and its derivatives, including biodiesel in June 2022. The new export tax covers higher reference price with higher tariff. Export tax of biodiesel will be charged at \$98 per MT if the reference CPO price reach between \$1450 and \$1500 per MT.

**Table 9. Price Structure of Export Duties on CPO, Biodiesel (\$/MT)**

|    | Price Threshold (\$/ton)   | Export Tax (\$/ton) |           | Export Levy (\$/ton) |           |
|----|----------------------------|---------------------|-----------|----------------------|-----------|
|    |                            | CPO                 | Biodiesel | CPO                  | Biodiesel |
| 1  | up to 750                  | 0                   | 0         | 55                   | 25        |
| 2  | more than 750 up to 800    | 3                   | 0         | 75                   | 41        |
| 3  | more than 800 up to 850    | 18                  | 0         | 95                   | 57        |
| 4  | more than 850 up to 900    | 33                  | 0         | 115                  | 73        |
| 5  | more than 900 up to 950    | 52                  | 0         | 135                  | 89        |
| 6  | more than 950 up to 1000   | 74                  | 0         | 150                  | 104       |
| 7  | more than 1000 up to 1050+ | 124                 | 32        | 165                  | 119       |
| 8  | more than 1050 up to 1100+ | 148                 | 35        | 180                  | 134       |
| 9  | more than 1100 up to 1150+ | 178                 | 37        | 190                  | 144       |
| 10 | more than 1150 up to 1200+ | 201                 | 71        | 200                  | 154       |
| 11 | more than 1200 up to 1250+ | 220                 | 73        | 210                  | 164       |
| 12 | more than 1250 up to 1300* | 240                 | 77        | 215                  | 169       |
| 13 | more than 1300 up to 1350* | 250                 | 82        | 220                  | 174       |
| 14 | more than 1350 up to 1400* | 260                 | 88        | 225                  | 179       |
| 15 | more than 1400 up to 1450* | 270                 | 93        | 230                  | 184       |
| 16 | more than 1450 up to 1500* | 280                 | 98        | 235                  | 189       |
| 17 | more than 1500*            | 288                 | 105       | 240                  | 194       |

Source: Ministry of Finance Regulation 98/2022 and 103/2022

Note: + new brackets for export levy; \* new brackets for export levy and tax

## Environment Sustainability and Certification

Indonesia is preparing a regulation to broaden the scope of its Indonesia Sustainable Palm Oil (ISPO) domestic sustainability certification, to downstream products such as cooking oil, biodiesel, and oleochemicals. The regulation is expected to apply to companies that process, produce, and export ISPO-certified palm oil products. This sustainability certification covers a range of criteria, including GHG emissions, land use, biodiversity, and labor. The GOI has been enforcing sustainability standards for all palm plantations through [Presidential Regulation \(Perpres\) 44/2020](#) mandating all companies and smallholder growers adopt ISPO certification by 2025.

In addition to the mandatory ISPO requirements, there are several voluntary sustainability certification schemes in place to support palm oil product exports, such as the RSPO (Roundtable on Sustainable Palm Oil).

The European Union (EU) focus on biofuel sustainability criteria weighs heavily on the Indonesian biofuels sector and is a constant source of strife among GOI officials and their EU counterparts. The EU outlines its sustainability criteria in its Renewable Energy Directive (RED) and RED II.

RED II officially entered into force in December 2018 and EU member states transposed its provisions into national law in June 2021. In March 2019, the EU Commission adopted the delegated act which set criteria both for (1) determining the high ILUC (indirect land-use change) risk feedstock for which there is a significant expansion of the production area into land containing high carbon stocks and (2) certifying low ILUC-risk biofuels. The report, published along with the delegated act, concluded that palm oil qualifies as high ILUC-risk feedstock and therefore PME must be capped then gradually decreased after 2023 to zero by 2030. Several EU member states have already begun an earlier phase-out, including France, Austria, Belgium, and Germany. However, the report also notes that some palm biodiesel production, under certain conditions, may be considered in the low ILUC risk category. This phaseout pertains only to palm oil-based fuel, not palm oil products for other uses such as food.

The GOI continues to challenge this policy, requesting a WTO consultation in December 2019. A dispute panel was established in July 2020 at the request of Indonesia. In December 2021, the Chair of the panel announced that the panel will issue its final report no sooner than the 2nd quarter of 2022. A summary of the dispute and its status can be found [here](#).

### **Section III. Ethanol**

#### Consumption

Non-Fuel Grade Ethanol (Non-FGE) consumption is expected to slightly increase to 168 million liters in 2022 from 167 million liters in 2021. Demand for antiseptic products surged in 2020 and slowed down in 2021 in line with high vaccination rates and eased pandemic-related sanitation restrictions. In addition to the antiseptic industry, non-FGE uses include pharmaceuticals, cosmetics, and chemical solvents.

Indonesia's Fuel Grade Ethanol (FGE) consumption has remained virtually zero since 2010 due to a lack of financial support to run the blending program and a mandate that was never enforced. From 2006-2009, Pertamina was able to sell E2 gasoline on a limited basis due to state subsidies covering the price difference between bioethanol and gasoline. However, due to increasing costs of production for FGE and a limited state-budget for subsidies, Pertamina received limited supplies from ethanol producers and the E2 program collapsed after 2009.

#### Production

Indonesia's ethanol production is expected to reach 205 million liters in 2022, a 3 percent increase from 2021. According to the Ministry of Industry (MOI), Indonesia's cumulative ethanol installed capacity is roughly 254 million liters per year across seven active ethanol producers. More than half of this ethanol installed capacity is located in East Java province.

Indonesia's ethanol production relies on molasses as the main feedstock. Sugar production is expected to reach 2.3 million MT in 2022, providing about 1.62 million MT of molasses ([Indonesia Sugar Annual 2022](#)). However, competition for the valuable feedstock continues to pose challenges for local ethanol producers as molasses is also used in food processing, the production of monosodium glutamate and for export. Unless the GOI sets a subsidized nationwide blending mandate for bioethanol like it did for palm-based biodiesel, domestic fuel ethanol production is unlikely to be viable.

#### Trade

Indonesia's ethanol exports (non-FGE) recovered to 82 million liters in 2021 after a sharp decline in 2020 due to a temporary ban on ethanol exports in the early months of the pandemic as the government sought to ensure adequate local supplies for use in antiseptic products such as hand sanitizers. Post expects 2022 ethanol exports to increase to 85 million liters, based on continued demand from key markets, including the medical industry.

Post expects the Philippines to remain the main market for Indonesian ethanol in 2022. In 2021, Indonesia shipped 97 percent of its ethanol exports to the Philippines, with the rest going to Thailand, Vietnam, Malaysia, and Singapore.

Ethanol imports are expected to decline 16 percent to 45 million liters in 2022, as demand for sanitizer peaked in 2020 and then contracted in 2021, lowering ethanol consumption to 167 million liters last year from 175 million in 2020. Pakistan ethanol made up 89 percent of total imports in 2021 and is expected to continue to make up most of Indonesia's ethanol imports in 2022. Indonesia signed a Preferential Trade Agreement (PTA) with Pakistan in 2019 establishing a zero-import duty rate for ethanol.

## Production, Supply and Demand Statistics

| Ethanol Used as Fuel and Other Industrial Chemicals (Million Liters) |        |        |        |        |        |        |        |        |        |        |
|----------------------------------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Calendar Year                                                        | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   | 2019r  | 2020r  | 2021r  | 2022f  |
| <b>Beginning Stocks</b>                                              | 52     | 39     | 14     | 16     | 15     | 14     | 14     | 5      | 5      | 10     |
| Fuel Begin Stocks                                                    | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      |
| <b>Production</b>                                                    | 207    | 202    | 205    | 205    | 195    | 200    | 200    | 193    | 200    | 205    |
| Fuel Production                                                      | 2      | 18     | 1      | 0      | 0      | 0      | 0      | 1      | 0      | 0      |
| <b>Imports</b>                                                       | 0      | 2      | 0      | 2      | 5      | 96     | 1      | 29     | 54     | 45     |
| Fuel Imports                                                         | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      |
| <b>Exports</b>                                                       | 86     | 94     | 67     | 71     | 64     | 158    | 70     | 47     | 82     | 85     |
| Fuel Exports                                                         | 2      | 18     | 1      | 0      | 0      | 0      | 0      | 1      | 0      | 0      |
| <b>Consumption</b>                                                   | 135    | 135    | 136    | 137    | 137    | 138    | 139    | 175    | 167    | 168    |
| Fuel Consumption                                                     | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      |
| <b>Ending Stocks</b>                                                 | 39     | 14     | 16     | 15     | 14     | 14     | 5      | 5      | 10     | 7      |
| Fuel Ending Stocks                                                   | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      |
| Total BalanceCheck                                                   | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      |
| Fuel BalanceCheck                                                    | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      |
| <b>Refineries Producing Fuel Ethanol (Million liters)</b>            |        |        |        |        |        |        |        |        |        |        |
| Number of Refineries                                                 | 3      | 3      | 3      | 3      | 3      | 3      | 3      | 3      | 3      | 3      |
| Nameplate Capacity                                                   | 100    | 100    | 100    | 100    | 100    | 100    | 100    | 100    | 100    | 100    |
| Capacity Use (%)                                                     | 2%     | 18%    | 1%     | 0%     | 0%     | 0%     | 0%     | 0%     | 0%     | 0%     |
| <b>Feedstock Use for Fuel (1,000 MT)</b>                             |        |        |        |        |        |        |        |        |        |        |
| Molasses                                                             | 7      | 72     | 4      | 0      | 0      | 0      | 0      | 5      | 0      | 0      |
| <b>Market Penetration (Million Liters)</b>                           |        |        |        |        |        |        |        |        |        |        |
| Fuel Ethanol                                                         | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      |
| Gasoline                                                             | 30,511 | 30,925 | 31,528 | 31,986 | 33,548 | 34,490 | 35,679 | 31,195 | 32,954 | 33,943 |
| Blend Rate (%)                                                       | 0%     | 0%     | 0%     | 0%     | 0%     | 0%     | 0%     | 0%     | 0%     | 0%     |

Source: Trade Data Monitor (trade), Ministry of Energy Mineral Resource (consumption, gasoline use)

## **Section IV. Biodiesel**

### Consumption

Indonesia biodiesel consumption in 2022 is expected to increase to 10.1 billion liters on expected higher overall demand for diesel fuel. Following eased pandemic-related restrictions and greater mobility, the GOI set its 2022 biodiesel blending allocation at 10.15 billion liters, 8 percent higher than 2021 of 9.4 billion liters. The GOI reported that biodiesel consumption in the four first months of 2022 reached 3.2 billion liters, equal to 31 percent of total allocation.

The GOI increased 2021 allocation to 9.4 billion liters in November 2021 from 9.2 billion liters at the beginning of the year, on faster-than-expected speedy recovery than previously expected. GOI data shows that biodiesel consumption in 2021 reached 9.3 billion liters, 10 percent higher than 2020.

Fuel transportation is a major contributor for biodiesel consumption, followed by the industrial sector, including electricity generation. Based on revised MEMR data, the transportation sector accounted for 85 percent of biodiesel consumption in 2021.

### Production

Post expects Indonesia biodiesel production to reach 10.6 billion liters in 2022, an increase from 9.55 billion liters 2021. Biodiesel production mainly serves B30 mandate program and expected a minor for export purposes.

Biodiesel production nameplate capacity is expected to rise to 16.6 billion liters in 2022, based on the planned expansion of current producers and the addition of a new refinery.

### Trade

Indonesia biodiesel exports in 2022 are forecast to remain limited at 200 million liters on expected high export levies and tax. During January to April period, biodiesel shipment reached 26 million liters, mostly to China and South Korea. In 2021, Indonesia exported 193 million liters biodiesel, mainly to China (44 percent), Peru (18 percent) and Spain (15 percent).

The latest export duties adjustment resulted in a higher tariff corresponding to a higher reference price (see brackets in Table 9). With this latest adjustment, the biodiesel export levy rose to between \$25 and \$194 per MT, and the export tax rose to a maximum of \$105 from \$64 previously.

Indonesia palm biodiesel exports to the United States remains limited due to high countervailing and anti-dumping duties. Indonesia palm biodiesel is also not eligible for Renewable Identification Numbers (RINs), nor permitted to meet biofuels obligations under Renewable Fuel Standard (RFS) which requires U.S. oil refiners to blend biofuels or buy credits. Besides the United States, the EU also imposed 8-18 percent countervailing duties on Indonesia biodiesel since December 2019.

## Production, Supply and Demand Statistics

| Biodiesel (Million Liters)                  |        |        |        |        |        |        |        |        |        |        |
|---------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Calendar Year                               | 2013   | 2014   | 2015   | 2016   | 2017   | 2018   | 2019r  | 2020r  | 2021r  | 2022e  |
| <b>Beginning Stocks</b>                     | 27     | 11     | 97     | 94     | 110    | 152    | 258    | 294    | 329    | 390    |
| <b>Production</b>                           | 2,950  | 3,500  | 1,200  | 3,500  | 2,800  | 5,600  | 7,700  | 8,500  | 9,550  | 10,300 |
| <b>Imports</b>                              | 24     | 0      | 0      | 0      | 0      | 28     | 0      | 0      | 0      | 0      |
| <b>Exports</b>                              | 1,942  | 1,569  | 343    | 476    | 187    | 1,772  | 1,271  | 39     | 193    | 200    |
| <b>Consumption</b>                          | 1,048  | 1,845  | 860    | 3,008  | 2,572  | 3,750  | 6,393  | 8,426  | 9,296  | 10,100 |
| <b>Ending Stocks</b>                        | 11     | 97     | 94     | 110    | 152    | 258    | 294    | 329    | 390    | 390    |
| BalanceCheck                                | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      |
| <b>Production Capacity (Million Liters)</b> |        |        |        |        |        |        |        |        |        |        |
| Number of Biorefineries                     | 26     | 26     | 27     | 30     | 32     | 31     | 31     | 31     | 32     | 33     |
| Nameplate Capacity                          | 5,670  | 5,670  | 6,887  | 10,898 | 11,547 | 11,357 | 11,357 | 11,357 | 14,415 | 16,656 |
| Capacity Use (%)                            | 52.0%  | 61.7%  | 17.4%  | 32.1%  | 24.2%  | 49.3%  | 67.8%  | 74.8%  | 66.3%  | 61.8%  |
| <b>Feedstock Use for Fuel (1,000 MT)</b>    |        |        |        |        |        |        |        |        |        |        |
| Crude Palm Oil (CPO)                        | 2,714  | 3,220  | 1,104  | 3,220  | 2,576  | 5,152  | 7,084  | 7,820  | 8,786  | 9,476  |
| <b>Market Penetration (Million Liters)</b>  |        |        |        |        |        |        |        |        |        |        |
| Biodiesel, on-road use                      | 734    | 1,292  | 583    | 2,263  | 1,963  | 2,982  | 5,238  | 7,341  | 7,945  | 8,184  |
| Diesel, on-road use                         | 24,508 | 23,257 | 21,931 | 21,567 | 23,877 | 24,984 | 26,753 | 25,255 | 27,752 | 28,585 |
| Blend Rate (%)                              | 3.0%   | 5.6%   | 2.7%   | 10.5%  | 8.2%   | 11.9%  | 19.6%  | 29.1%  | 28.6%  | 28.6%  |
| Diesel, total use                           | 36,124 | 34,651 | 30,912 | 30,039 | 31,441 | 33,268 | 33,169 | 31,230 | 34,728 | 35,770 |

Source: Trade Data Monitor (trade), Ministry of Energy Mineral Resource (consumption, diesel use), biodiesel association (capacity)

## Section V. Advanced Biodiesel

Indonesia does not currently commercially produce hydrogenation-derived renewable diesel (HDRD). In December 2021, the GOI announced testing results of a B40 biodiesel blend utilizing HDRD at 10 percent volume and FAME for the other 30 percent, showing higher added value on maximum power by 0.6 percent and maximum torque by 2.6 percent.

Pertamina plans to increase refinery production capacity for drop-in renewable diesel up to 4,000 barrels per day (636,000 liters) in Cilacap, Central Java and palm-based jet fuel (bioavtur) up to 20,000 barrels per day (3,180,000 liters) in Plaju, South Sumatra. Another refinery in Dumai, Riau is ready to produce 1,000 barrels a day of renewable diesel. Production at commercial scale is expected to begin in 2024.

In 2020, Pertamina conducted road tests utilizing drop-in renewable diesel produced from its Dumai refinery. In September 2021, palm based Bioavtur J2.4 produced at Pertamina refinery in Cilacap was successfully used during a flight test of a CN235 FTB aircraft. [MEMR](#) is planning expand its research to include palm-based gasoline at a plant in South Sumatra with a production capacity of 238.5 kiloliters per day. This project converts palm oil to gasoline using a cracking process utilizing a [zeolite-based catalyst](#) produced by Bandung Institute Technology (ITB).

In June 2022, MEMR issued a national standard ([Kepdirjen EBTKE 95/2022](#)) for renewable diesel specification, a step forward to leverage renewable diesel into official procurement. The biodiesel used in current mandate program are referring to specification issued by the MEMR.

## Section VI. Notes on Statistical Data

Consumption figures are based on MEMR statistics. Trade figures are based on Trade Data Monitor (TDM) data, under HS code 3826.00 and 2710.20. This report assumes that all product moving under these codes are B100 and B5, respectively.

The following table compiles CPO reference prices used to calculate the biodiesel market index price (HIP Biodiesel), while Diesel market index price (HIP Diesel) uses crude price as seen in Figure 1. Both reference prices are published monthly by MEMR.

| Month | CPO Reference Price<br>(IDR/kg) |        |        | HIP Biodiesel<br>(IDR /liter) |        |        | HIP Diesel<br>(IDR/liter) |       |        |
|-------|---------------------------------|--------|--------|-------------------------------|--------|--------|---------------------------|-------|--------|
|       | 2020                            | 2021   | 2022   | 2020                          | 2021   | 2022   | 2020                      | 2021  | 2022   |
| Jan   | 8,599                           | 9,666  | 13,927 | 8,706                         | 9,457  | 13,177 | 6,619                     | 4,745 | 7,506  |
| Feb   | 9,573                           | 9,813  | 14,723 | 9,539                         | 9,579  | 13,867 | 6,674                     | 5,100 | 9,415  |
| March | 8,901                           | 9,650  | 15,373 | 8,933                         | 9,434  | 14,436 | 5,630                     | 5,649 | 11,018 |
| April | 7,806                           | 10,422 | 16,665 | 8,019                         | 10,131 | 15,559 | 4,471                     | 6,230 | 10,034 |
| May   | 8,316                           | 10,520 | 16,264 | 8,352                         | 10,229 | 15,211 | 3,083                     | 6,070 | 10,679 |
| Jun   | 6,773                           | 11,462 | 13,743 | 6,941                         | 11,034 | 13,033 | 2,801                     | 6,382 | 12,048 |
| July  | 7,272                           | 10,107 |        | 7,321                         | 9,852  |        | 3,926                     | 6,781 |        |
| Aug   | 7,903                           | 10,992 |        | 7,887                         | 10,635 |        | 4,419                     | 7,053 |        |
| Sept  | 9,098                           | 12,487 |        | 9,003                         | 11,930 |        | 4,403                     | 6,708 |        |
| Oct   | 9,393                           | 12,604 |        | 9,265                         | 12,022 |        | 4,086                     | 6,911 |        |
| Nov   | 9,465                           | 13,567 |        | 9,329                         | 12,854 |        | 4,040                     | 8,107 |        |
| Dec   | 9,705                           | 14,590 |        | 9,505                         | 13,746 |        | 4,025                     | 8,263 |        |

Source: Ministry of Energy Mineral Resource.

Note: HIP Diesel for Feb to June 2022 are estimate figure, as official release is unavailable

The following table shows the CPO reference price used by the MOT to determine both the export duty and the export levy on palm oil export products, including PME.

| Month | CPO Reference Price (\$/MT) |       | CPO Export Duty (\$/MT) |      | PME Export Duty (\$/MT) |      | CPO Export Levy (\$/MT) |      | PME Export Levy(\$/MT) |      |
|-------|-----------------------------|-------|-------------------------|------|-------------------------|------|-------------------------|------|------------------------|------|
|       | 2021                        | 2022  | 2021                    | 2022 | 2021                    | 2022 | 2021                    | 2022 | 2021                   | 2022 |
| Jan   | 952                         | 1,308 | 74                      | 200  | -                       | 64   | 225                     | 175  | 167.5                  | 121  |
| Feb   | 1,027                       | 1,315 | 93                      | 200  | 1                       | 64   | 255                     | 175  | 192.5                  | 121  |
| March | 1,036                       | 1,432 | 93                      | 200  | 1                       | 64   | 255                     | 175  | 192.5                  | 121  |
| April | 1,094                       | 1,788 | 116                     | 200  | 3                       | 64   | 255                     | 375  | 192.5                  | 281  |
| May   | 1,111                       | 1,657 | 144                     | 200  | 3                       | 64   | 255                     | 375  | 192.5                  | 281  |
| Jun   | 1,224                       | 1,700 | 183                     | 288  | 36                      | 105  | 255                     | 235  | 192.5                  | 194  |
| July  | 1,094                       |       | 116                     |      | 36                      |      | 175                     |      | 121                    |      |
| Aug   | 1,049                       |       | 93                      |      | 1                       |      | 175                     |      | 121                    |      |
| Sept  | 1,185                       |       | 166                     |      | 36                      |      | 175                     |      | 121                    |      |

|            |       |  |     |  |    |  |     |  |     |  |
|------------|-------|--|-----|--|----|--|-----|--|-----|--|
| <b>Oct</b> | 1,197 |  | 166 |  | 36 |  | 175 |  | 121 |  |
| <b>Nov</b> | 1,283 |  | 200 |  | 64 |  | 175 |  | 121 |  |
| <b>Dec</b> | 1,366 |  | 200 |  | 64 |  | 175 |  | 121 |  |

Source: Ministry of Trade, Ministry of Finance

**Attachments:**

No Attachments