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Report Highlights:

Indonesia has maintained its nationwide biodiesel program with a high on-road blending rate average of 30 percent nationwide since 2020, despite the financial challenge of supporting a widening price spread between palm oil and diesel prices during the COVID-19 pandemic. After facing significant shortfalls in 2020, the CPO Fund subsidy program has generated record revenue as a result of high global palm prices during the first semester of 2021. Biodiesel exports are forecast to remain low due to export taxes, COVID-impacted demand for diesel in Europe, and a CPO-diesel price spread that has sharply curtailed China's discretionary demand.

Section I. Executive Summary

Indonesia has maintained its ambitious B30 biodiesel blending mandate during a period of lower diesel consumption due to the COVID-19 pandemic and higher price spreads between diesel and biodiesel, straining on-hand reserves for producer subsidies. In 2020, biodiesel consumption reached a record 8.4 billion liters, equal to 88 percent of the designated allocation, and a further increase to 9.2 billion liters is estimated for 2021. Post estimates the overall effective national average on-road blending rate will remain unchanged at essentially 30 percent in 2021, making it the highest of any country in the world.

The Government of Indonesia (GOI) continues to provide firm support for the mandate, demonstrating a willingness to provide direct financial support through the state budget when needed. Since the current support program was first implemented in 2015, the GOI has favored policy flexibility in adapting to changing market conditions over policy predictability, with the ultimate goal of achieving higher targeted blend rates which have generally been achieved. To this end, the export levy structure (the primary source of revenue for providing producer subsidies through the CPO Fund) has undergone several modifications in recent years, most recently reverting to a progressive scheme which has generated additional revenue as palm oil prices have surged in the latter half of 2020 and first half of 2021. Additionally, the GOI has made adjustments to the biodiesel conversion factor used to determine payouts to producers, narrowing overall subsidy amounts and tightening producer margins.

The GOI has set 2021 biodiesel allocation at 9.2 billion liters, lower than 2020 allocation of 9.6 billion liters. Efforts to advance beyond B30 to B40, including road tests, have begun, however it appears unlikely an expansion would occur before 2022 or 2023.

While the government has been successful in achieving biodiesel blending targets at stated in Ministry of Energy and Mineral Resource (MEMR) Regulation 12/2015, plantation owners are increasingly raising concerns over high export levy and export taxes, noting their impact on competitiveness as well as investment in yield improvement and overall sector sustainability. The palm industry also highlights the advantage funding the mandate through taxes provides to foreign competitors, particularly Malaysia, where the implementation of a similar mandate has been put on hold and producers who aren't subject to high export levies and taxes are flush with cash.

Domestic production and consumption of fuel grade ethanol (FGE) remains virtually non-existent due to feedstock limitations and no viable subsidy scheme. The GOI and state-owned industries continue to evaluate the viability of ethanol to reduce reliance on imported gasoline, as well as so-called "green gasoline" derived from palm oil. As for advanced biofuels, the state-owned oil company Pertamina is developing limited capacity to produce drop-in hydrogenation-derived renewable diesel (HDRD), but this remains at early stages. There are no other efforts to develop other advanced biofuels at this time. Biodiesel exports are forecast at 100 million liters, historically a very low figure and little changed from 2020.

Section II. Policy and Programs

Indonesia began adopting biofuels policy at national level in 2006 by issuing 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 in 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
Biodiesel	Blend rate (%)	20	30	30
	Volume (Bn liter)	2.5	6.9	17.1
Bioethanol	Blend rate (%)	5	20	20
	Volume (Bn liter)	0.1	2.6	11.4
Bioavtur	Blend rate (%)	2	5	10
	Volume (Bn liter)	0.0	0.1	2.7

Source: Presidential decree 22/2017

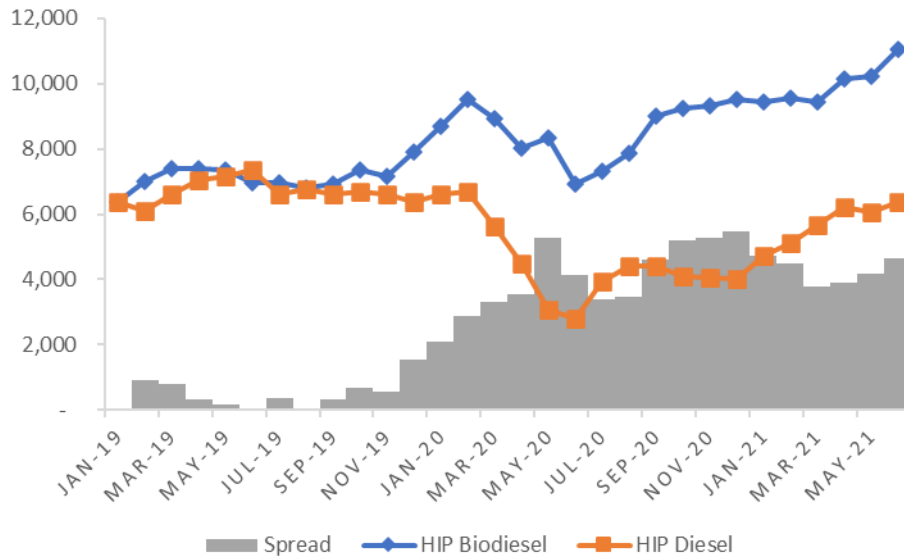
Indonesia's biodiesel mandate program is a nationwide directive to blend palm-based Fatty Acid Methyl Ester (FAME) with diesel to reduce fuel imports, generate domestic demand for palm oil and reduce emissions. The mandatory distribution is carried out by state-owned energy company and fuel retailer 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, as of January 2020, to B30 nationwide.

In 2021, the GOI is expected to maintain the B30 blending rate with an allocation volume of 9.2 billion liters. The allocation is 9 percent higher than 2020 consumption based on expected partial recovery of the diesel pool since the pandemic began. The GOI appointed 21 biodiesel producers to supply 19 fuel retailers including Pertamina that handle 85 percent of total allocation.

The biodiesel mandate program relies on the CPO fund to cover the CPO-diesel price spread. Sharp increases in the price spread between palm-based biodiesel and diesel in 2020 weakened the solvency of the CPO fund faster than expected as diesel prices cratered, pushing the GOI to adjust its export levy scheme in June 2020 and again in December 2021. The biodiesel subsidy reached IDR 4,052 (\$.28) per liter on average in 2020, jumping from only IDR 444 (\$.003) in 2019. Subsidy amounts have remained high in 2021, reaching an average IDR 4,281 (\$.30) per liter during the first six months.

Figure 1. Biodiesel and Diesel Market Index Price 2019-21 (IDR/liter)



Source: MEMR

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 Intended Nationally Determined Contribution to the United Nations Framework Convention on Climate Change, 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 the total the diesel fuel pool under CM1 and 100 percent under CM2.

Table 2. Indonesia GHG Emission Reduction within Energy Sector

GHG Emission Level 2010	GHG Emission Level 2030			GHG Emission Reduction			
	Mtonne CO _{2e}			Mtonne CO _{2e}		Percent of BAU	
	BAU	CM1	CM2	CM1	CM2	CM1	CM2
453.2	1,669	1,355	1,271	314	398	11	14

Source: Ministry of Environment and Forestry (MEOF)

Mandate & Pricing

Indonesia's biofuel blending mandate was created in 2008 through MEMR Regulation 32 and most recently 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. Read earlier report [here](#).

Table 2. 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 3. 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: MEMR Regulation 12/2015

Accompanying the mandate program, 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 4. Biofuels Market Index Price (HIP) Formula

HIP Formula (IDR/liter)	
Biodiesel	= (CPO Price IDR/kg + 85 \$/ton) x 870 kg/m ³ + transportation cost
Bioethanol	= (Molasses price IDR/kg x 4.125 kg/liter) + 0.25 \$/liter

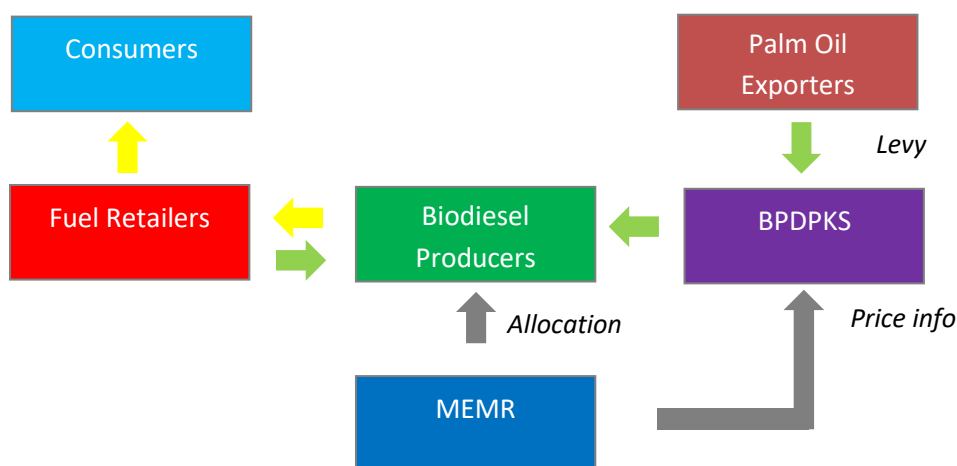
Source: MEMR

The HIP biodiesel formula has been adjusted several times in recent years. In 2015, the biodiesel conversion was set at \$125 per ton. In 2017, the GOI lowered the value to \$100 per ton before reducing further to \$80 per ton in May 2020. Most recently, the GOI adjusted the conversion upwards to \$85 per ton 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 highly 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.

Figure 2. Indonesia Biodiesel Support Mechanism

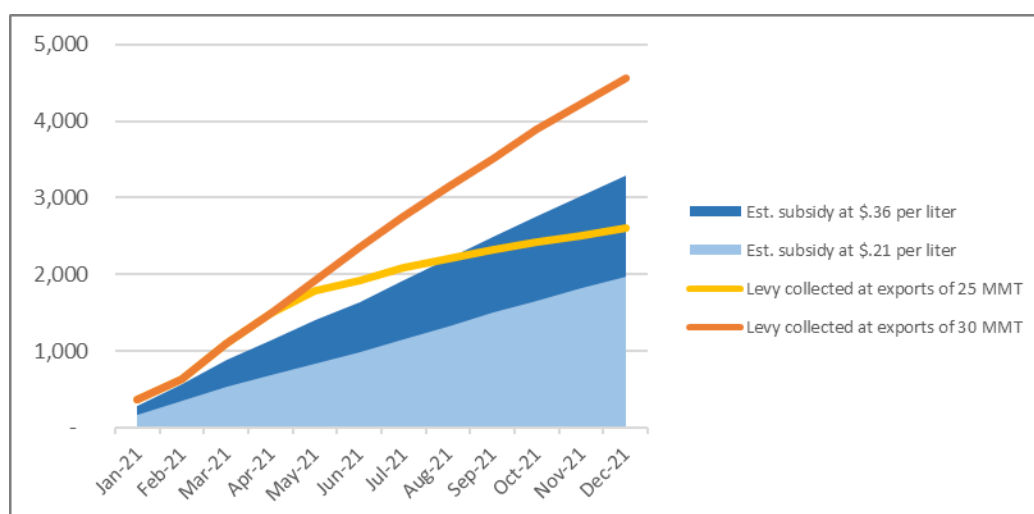


In December 2018, the GOI changed its export levy formulation from a flat-rate to a price-based structure in response to declining CPO prices. In early 2019 GOI halted levy collection altogether, leading to no new revenues being collected by the CPO fund for the entirety of 2019. Collection of the levy resumed in January 2020 as CPO prices passed \$600 per ton in expectation of B30 implementation.

In June 2020, the GOI again modified the export levy structure back to a flat rate, adding an additional \$5 per ton for palm oil product exports in 24 categories, including palm biodiesel (see Ministry of Finance (MOF) Regulation 57/2020). Six months later, the GOI changed the levy scheme into progressive structure, with the highest tariff rate capped at \$255 per ton. As a result of implementing the new progressive structure during a period of surging prices, an influx of revenues has recapitalized the CPO fund, which had been in jeopardy of expending its accumulated reserves in late 2020.

From 2015 to 2020, the levy collected from palm oil product exports is estimated at IDR 63 trillion (\$4.4 billion), the vast majority of which was distributed as biodiesel subsidy (approximately IDR 58 trillion or \$4 billion). The subsidy disbursement reached a record high IDR 28 trillion (\$1.9 billion) in 2020 and is expected to rise in 2021. According to a [BPDPKS](#) estimate, it requires IDR 45 trillion (\$3.1 billion) to cover 9.2 billion liters of B30 in 2021.

Figure 3. Estimate Subsidy and Levy Collected 2021 (\$ million)



Source: Post calculation

Table 5. Change on Exports Levy Structure 2020-2021 (\$/ton)

HS Code	Description	Progressive Levy (Before June 2020)	Flat Levy (June to Dec 9, 2020)	Progressive Levy (Since Dec 10, 2020)
1511.1000	Crude palm oil (CPO)	0 - 50	55	55 - 255
1513.21.10	Crude Palm Kernel Oil (CPKO)	0 - 50	55	55 - 255
1511.90.20	Refined Bleached Deodorized (RBD) Palm Oil	0 - 20	25	25 - 192.5
1511.90.42 1511.90.49	Crude Palm Olein	0 - 50	55	55 - 255
1511.90.41	Crude Palm Stearin	0 - 50	55	55 - 255
3823.19.20	Palm Fatty Acid Distillate (PFAD)	0 - 40	45	45 - 212.5
3823.19.30	Palm Kernel Fatty Acid Distillate (PKFAD)	0 - 40	45	45 - 212.5
3826.00.90	Biodiesel contains Palm methyl ester (PME) more than 96.5 percent	0 - 20	25	25 - 192.5

Source: Ministry of Finance

Since early 2019 biodiesel supply allocations have been set on an annual basis. MEMR establishes volumes for fuel retailers (both 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 published by Directorate General of Oil and Gas (DG Migas) and biodiesel index market price published by Directorate New and Renewable Energy (DG EBTKE). Both offices are parts of MEMR.

Table 6. List of Biodiesel Producers for 2021 Allocation

No	Biodiesel Producers	Volume (million liter)	No	Biodiesel Producers	Volume (million liter)
1	Batara Elok Semesta Terpadu	273	11	Multi Nabati Sulawesi	393
2	Bayas Biofuels	349	12	Musim Mas	883
3	Cemerlang Energi Perkasa	483	13	Pelita Agung Agrindustri	485
4	Ciliandra Perkasa	260	14	Permata Hijau Palm Oleo	397
5	Dabi Biofuels	174	15	Sinar Mas Bio Energy	338
6	Darmex Biofuels	117	16	Smart Tbk	353
7	Energi Unggul Persada	319	17	Sukajadi Sawit Mekar	262
8	Intibenua Perkasatama	288	18	Tunas Baru Lampung	342
9	Kutai Refinery Nusantara	399	19	Wilmar Bioenergi Indonesia	1,330
10	LDC Indonesia	387	20	Wilmar Nabati Indonesia	1,369
Total					9,200

Source: MEMR

Import Policy, Import Duties and Export Taxes

Import duties for biofuels are listed below (Table 6). Based on Ministry of Trade (MOT) Regulation 21/2019, biofuels importation requires a recommendation from MEMR. This regulation replaces MOT 3/2015 by introducing online submission, reducing requirements for both export and import approval, and removing verification for biodiesel exports. Ministry of Finance (MOF) Regulation 6/2017 states the latest import duties for both undenatured ethanol and denatured ethanol.

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

Source: MOF. Note: Imports of gasoline pre-blended with ethanol (HS code 2710.12) are not subject to any duty.

Indonesia is bound by several trade agreements, providing lower duties below MFN rates on ethanol imports. The latest agreement with lower ethanol duties is a Preferential Trade Agreement (PTA) between Indonesia and Pakistan. The PTA allows ethanol imports at zero percent beginning in 2019 as stated in Ministry of Finance (MOF) Regulation 14/2019 (See Table 7). Currently, Pakistan only produces industrial grade ethanol.

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, and this has thus far been realized through the country's biodiesel program which is reducing diesel imports. Pertamina and MEMR continue to assess potential cost savings and supply chain viability for importing finished gasoline blended with ethanol or direct imports of ethanol for in-country blending.

Table 8. Trade Agreements Providing Lower Ethanol Import Duties

Trade Agreement		Tariff Regulation	Ethanol Import Duty (HS Code 2207)
ATIGA	ASEAN	MOF Regulation 25/2017	0%
AKFTA	ASEAN-Korea	MOF Regulation 24/2017	5 % (2017 onward)
IJEPA	Indonesia – Japan	MOF Regulation 30/2017	11.25 % (2017)
			9.38 % (2018)
			7.5 % (2019)
			5.63 % (2020)
			3.75 % (2021)
			1.88 % (2022)
			0 % (2023 onward)
AJCEP	ASEAN - Japan	MOF Regulation 18/2018	13.82 % (2018)
			12.35 % (2019)
			10.88 % (2020)
			9.41 % (2021)
			7.94 % (2022)
			6.47 % (2023)
			5 % (2024)
			5 % (2025 onward)
PTA	Indonesia – Pakistan	MOF Regulation 14/2019	0 % (2019 onward)

Source: Compiled from MOF Regulations

Table 9. Price Structure of Export Tax on CPO, Biodiesel (\$/ton), 2015 - Present

	Price Treshold (\$/ton)	Export Tax (\$/ton)	
		CPO	Biodiesel
1	up to 750	0	0
2	more than 750 up to 800	3	0
3	more than 800 up to 850	18	0
4	more than 850 up to 900	33	0
5	more than 900 up to 950	52	0
6	more than 950 up to 1000	74	0
7	more than 1000 up to 1050	93	1
8	more than 1050 up to 1100	116	3
9	more than 1100 up to 1150	144	3
10	more than 1150 up to 1200	166	36
11	more than 1200 up to 1250	183	36
12	more than 1250	200	64

Source: MOF Regulation 136/2015, MOF Regulation 75/2012

Environment Sustainability and Certification

Indonesia has no specific regulation on sustainability criteria for domestically consumed biodiesel or ethanol, environmental or otherwise. However, there are several domestic sustainability certification schemes available for palm oil production to support exports, such as RSPO (Roundtable on Sustainable Palm Oil) and ISPO (Indonesia Sustainable Palm Oil). Sustainability programs cover a range of common criteria including GHG emissions, land use, biodiversity, and labor. The GOI has continued to push sustainability standards for all plantations through [Presidential Regulation \(Perpres\) 44/2020](#). The regulation mandates all companies and smallholder growers adopt ISPO certification by 2025.

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 must transpose its provisions into national law by 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 members 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. The GOI continues to challenge this policy, requesting a WTO consultation in December 2019.

A dispute panel has been established in July 2020 at the request of Indonesia. As of November 2020, panelists have been selected, but a panel report has not been adopted or appealed. A summary of the dispute and its status can be found [here](#).

Section III. Ethanol

Consumption

Indonesia's Fuel Grade Ethanol (FGE) consumption has remained virtually zero since 2010 due to 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 bioethanol and gasoline. However, due to increasing costs of production for FGE and limited state-budget for subsidies, Pertamina received limited supplies from ethanol producers and the E2 program collapsed after 2009.

Non-FGE consumption in 2021 is expected to slightly increase to 176 million liters from 175 million liters in 2020 as the COVID-19 outbreak has increased demand for antiseptic products. In addition to the antiseptic industry, non-FGE uses include pharmaceuticals, cosmetics, and chemical solvents.

Production

Molasses is the main feedstock for the ethanol industry in Indonesia. In 2021, sugar production is expected to reach 2.2 million tons (see [Indonesia Sugar Report 2021](#)), providing about 1.49 million tons of molasses. However, competition for the valuable feedstock continues to pose challenges for local ethanol producers. In addition to ethanol, molasses is also sought after for use in food processing, the production of monosodium glutamate and for export.

In August 2020, an ethanol plant with 30 million liters capacity in Mojokerto, East Java caught on fire, destroying two storage tanks, and temporarily reducing plant operational capacity for several months. As a result, overall ethanol refinery capacity declined to 377 million liters in 2020 and national FGE capacity declined to 70 million liters. This capacity falls far short of what is required to produce FGE for the nation-wide ethanol blending mandate as stated in MEMR Regulation 12/2015 (2 percent nationwide blend rate for only the Public Sector Obligation or PSO would require at least 421 million liters).

The country's largest ethanol distiller (also capable of producing FGE) is currently expanding its facility in Malang, East Java. The expansion is expected to be completed in 2022, enabling it to produce additional 50 million liters of ethanol.

Indonesia's ethanol production expected to reach 197 million liters in 2021, a slight increase from 2020. To produce this volume the ethanol industry will require about 800,000 tons of molasses.

Trade

Indonesia's ethanol exports (non-FGE) decreased to 47 million liters 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 of alcohol for use in antiseptic products such as hand sanitizers. Post expects 2021 ethanol export to increase to 65 million liters on expected key market demand much or all of which could be medical grade as Covid infections risks remains elevated.

In recent years, the Philippines has accounted for nearly 90 percent of Indonesia's ethanol exports. In 2020, other destinations accounting for less than 5 percent were Japan, Thailand, Malaysia, and

Vietnam. Aside from shipments to the Philippines, which saw a 51 percent increase from January – April 2021, demand from other destinations has declined significantly.

Demand for antiseptic products is projected to increase ethanol imports to 44 million liters in 2021, up from 29 million last year. Pakistan has overtaken Vietnam as Indonesia's major supplier, providing 88 percent of total imports in 2020. The increase is the result of a Preferential Trade Agreement (PTA) applied since 2019 that reduced duties on Pakistan ethanol to the level of ASEAN countries.

Production, Supply and Demand Statistics

Ethanol Used as Fuel and Other Industrial Chemicals (Million Liters)										
Calendar Year	2012	2013	2014	2015	2016	2017	2018r	2019r	2020r	2021f
Beginning Stocks	41	52	39	14	16	15	14	14	5	5
Fuel Begin Stocks	0	0	0	0	0	0	0	0	0	0
Production	205	207	202	205	205	195	200	200	193	197
Fuel Production	2	2	18	1	0	0	0	0	1	0
Imports	0	0	2	0	2	5	96	1	29	44
Fuel Imports	0	0	0	0	0	0	0	0	0	0
Exports	59	86	94	67	71	64	158	70	47	65
Fuel Exports	2	2	18	1	0	0	0	0	1	0
Consumption	135	135	135	136	137	137	138	139	175	176
Fuel Consumption	0	0	0	0	0	0	0	0	0	0
Ending Stocks	52	39	14	16	15	14	14	5	5	5
Fuel Ending Stocks	0	0	0	0	0	0	0	0	0	0
Total Balance Check	0	0	0	0	0	0	0	0	0	0
Fuel Balance Check	0	0	0	0	0	0	0	0	0	0
Refineries Producing Fuel Ethanol (Million liters)										
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%	2%	18%	1%	0%	0%	0%	0%	0%	0%
Feedstock Use for Fuel (1,000 MT)										
Molasses	6	7	72	4	0	0	0	0	4	0
Market Penetration (Million Liters)										
Fuel Ethanol	0	0	0	0	0	0	0	0	0	0
Gasoline	29,276	30,511	30,925	31,528	31,986	33,548	34,490	35,679	32,236	33,799
Blend Rate (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Source: TDM (trade), MEMR (consumption, gasoline use)

Section IV. Biodiesel

Consumption

The biodiesel mandate program continues to drive Indonesia consumption in 2021. At the nationwide blending rate of 30 percent, biodiesel consumption in 2021 is expected to reach 9.2 billion liters, a 9 percent increase from 2020 as the mobility and travel restrictions have loosened and the economy continues to rebound. However, as of [May 2021](#), the Ministry of Energy Mineral Resource (MEMR) reported biodiesel consumption reached 2.68 billion liters. Logistical challenges and supply chain bottlenecks between producers and Pertamina have constrained consumption. Resolution of such challenges is likely necessary for Indonesia to reach its full allocation for blending in 2021.

Land transportation continues to account for most biodiesel consumption, followed by electricity generation. State-owned electricity company (PLN) is estimated to account for 8 percent of total biodiesel consumption.

Production

Indonesia biodiesel production is expected to reach 9.25 billion in 2021, a 9 percent increase from 2020. Biodiesel nameplate capacity in 2021 is expected to reach 12.4 billion liters following the opening of a new plant in East Kalimantan and the expansion of several existing production plants.

Total production remains tied to the biodiesel mandate program with imports at zero and exports fraction of earlier years. Currently, many plants report production at or near production capacity.

Trade

Indonesian biodiesel exports declined significantly to 39 million liters in 2020 on high POGO spreads as well as weaker overall demand related to the pandemic. Major destinations were Europe (68 percent), followed by China (24 percent) and South Korea (8 percent).

Biodiesel exports for 2021 are forecast to remain low at 100 million liters, with some increased demand expected from China. Although biodiesel exports during January to April 2021 reached 21 million liters, higher than the same period of 2020, high export taxes along with the high spread of POGO are expected to continue to dampen overseas demand.

Like CPO, the new export levy for biodiesel has been adjusted to a progressive structure. As prices have surged the levy on biodiesel has increased from \$25 per ton in November 2020 to \$192.5 per ton in February 2021, its maximum level. Alongside the levy, the export tax has also increased with higher prices, reaching at \$36 per ton for biodiesel in June 2021.

Beyond China and the EU, the United States is the only other potential large market for Indonesian biodiesel, but sales to the U.S. market remain challenged due to high countervailing and anti-dumping duties, and Indonesian palm oil biodiesel is not eligible for RINs nor permitted to meet biofuel obligations under the RFS. In December 2019, the EU imposed 8-18 percent countervailing duties on Indonesian biodiesel on top of the MFN duty of 6.5 percent.

Production, Supply and Demand Statistics

Biodiesel (Million Liters)										
Calendar Year	2012	2013	2014	2015	2016	2017	2018	2019	2020r	2021e
Beginning Stocks	29	27	11	97	94	110	152	258	294	329
Production	2,270	2,950	3,500	1,200	3,500	2,800	5,600	7,700	8,500	9,250
Imports	5	24	0	0	0	0	28	0	0	0
Exports	1,608	1,942	1,569	343	476	187	1,772	1,271	39	100
Consumption	669	1,048	1,845	860	3,008	2,572	3,750	6,393	8,426	9,200
Ending Stocks	27	11	97	94	110	152	258	294	329	279
Balance Check	0	0	0	0	0	0	0	0	0	0
Production Capacity (Million Liters)										
Number of Biorefineries	22	26	26	27	30	32	31	31	31	32
Nameplate Capacity	4,881	5,670	5,670	6,887	10,898	11,547	11,357	11,357	11,357	12,362
Capacity Use (%)	46.5%	52.0%	61.7%	17.4%	32.1%	24.2%	49.3%	67.8%	74.8%	74.8%
Feedstock Use for Fuel (1,000 MT)										
Crude Palm Oil (CPO)	2,088	2,714	3,220	1,104	3,220	2,576	5,152	7,084	7,820	8,510
Market Penetration (Million Liters)										
Biodiesel, on-road use	449	734	1,292	583	2,263	1,963	2,982	5,155	7,226	7,950
Diesel, on-road use	23,834	24,508	23,257	21,931	21,567	23,877	24,984	26,175	24,330	26,858
Blend Rate (%)	1.9%	3.0%	5.6%	2.7%	10.5%	8.2%	11.9%	19.7%	29.7%	29.6%
Diesel, total use	37,743	36,124	34,651	30,912	30,039	31,441	33,269	33,847	32,832	33,817

Source: TDM (trade), MEMR (consumption, diesel use)

Section V. Advanced Biodiesel

Indonesia does not currently commercially produce hydrogenation-derived renewable diesel (HDRD). In January 2019, State-owned energy company Pertamina signed an agreement with Italian energy company ENI to develop an HDRD facility within Pertamina's refinery in Plaju, South Sumatera. In January 2020, Pertamina disclosed that the agreement had been terminated, citing ongoing issues related to EU sustainability requirements for CPO.

Pertamina's trials for "drop-in" fuel from CPO has moved into developing a catalyst production facility in West Java. The catalyst will be used to process CPO into "drop-in" renewable gasoline, diesel, and jet fuel. [In December 2020](#), a joint venture company was officially established consisting of Pertamina, Pupuk Kujang (a state-owned company) and Bandung Institute of Technology (ITB) with the early investment of IDR 170 bn (\$ 11.8 million). The plant is expected to produce 800 tons of catalyst a year, 64 percent of which will be used by Pertamina.

In July 2020, Pertamina conducted a 200km road test using a fuel made of 30 percent FAME (biodiesel), 50 percent conventional fossil diesel and 20 percent drop-in renewable diesel. This drop-in renewable diesel, made from refurbished bleached deodorized (RBD) palm oil, was produced at the Dumai oil

refinery in Riau province which has a daily refining capacity for this renewable equal to 1,000 barrels (159,000 liters).

In total, Pertamina plans to increase capacity of drop-in renewable diesel to 4,000 barrels per day (636,000 liters) in July 2021 by revamping its Cilacap refinery in Central Java to produce up to 3,000 barrels in addition to production in Riau. Since implementation dates for B40 remain uncertain, [Pertamina](#) has begun exploring overseas markets.

[MEMR](#) is also conducting tests for palm-based renewable jet fuel (bioavtur) produced from Pertamina's refinery. In May 2021, the trial entered second phase of engine testing by utilizing 20,000 liters of jet fuel containing 2.4 percent renewables.

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 (IDR/kg)			HIP Biodiesel (IDR /liter)			HIP Diesel (IDR/liter)		
	2019	2020	2021	2019	2020	2021	2019	2020	2021
Jan	5,872	8,599	9,666	6,371	8,706	9,457	6,385	6,619	4,745
Feb	6,628	9,573	9,813	7,015	9,539	9,579	6,116	6,674	5,100
March	7,101	8,901	9,650	7,403	8,933	9,434	6,617	5,630	5,649
April	7,078	7,806	10,422	7,387	8,019	10,131	7,057	4,471	6,230
May	7,026	8,316	10,520	7,348	8,352	10,229	7,164	3,083	6,070
Jun	6,598	6,773	11,462	6,977	6,941	11,034	7,340	2,801	6,382
July	6,573	7,272		6,970	7,321		6,610	3,926	
Aug	6,394	7,903		6,795	7,887		6,754	4,419	
Sept	6,556	9,098		6,929	9,003		6,607	4,403	
Oct	7,038	9,393		7,358	9,265		6,679	4,086	
Nov	6,813	9,465		7,157	9,329		6,593	4,040	
Dec	7,690	9,705		7,914	9,505		6,374	4,025	

Source: MEMR

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

Month	CPO Reference Price (\$/MT)		CPO Export Duty/Tax (\$/MT)		PME Export Duty/Tax (\$/MT)		CPO Export Levy (\$/MT)		PME Export Levy (\$/MT)	
	2020	2021	2020	2021	2020	2021	2020	2021	2020	2021
Jan	730	952	-	74	-	-	50	225	20	167.5
Feb	840	1,027	18	93	-	1	50	255	20	192.5
March	787	1,036	3	93	-	1	50	255	20	192.5
April	654	1,094	-	116	-	3	50	255	20	192.5
May	635	1,111	-	144	-	3	50	255	20	192.5
Jun	569	1,224	-	183	-	36	55	255	25	192.5
July	622		-		-		55		25	
Aug	657		-		-		55		25	
Sept	738		-		-		55		25	
Oct	769		3		-		55		25	
Nov	782		3		-		55		25	
Dec	871		33		-		180		130	

Source: MOT, MOF

Attachments:

No Attachments