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Indonesia

Biofuels Annual

Indonesia Biofuels Annual Report 2019

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Report Highlights:
Indonesia's palm-based biodiesel industry enjoyed a large expansion in 2018 with the beginning of nationwide expansion of B20 to the non-public (Non-PSO) transport sector and a sharp jump in overseas demand. Domestic consumption is set for another large year-over-year increase in 2019 largely due to further expansion of B20 to the Non-PSO transport sector. Exports are forecast to remain elevated near 1.8 billion liters based on continued demand from the EU and China. Indonesia's fuel ethanol consumption remains virtually zero since 2010 due to lack of financial support and a mandate that has not been enforced.
Note: Post revises biodiesel production for 2014-2018 based on updated information on industry reporting requirements.

Post:
Jakarta

Section I. Executive Summary

Indonesia's biodiesel industry grew rapidly in 2018 with expanding domestic demand fueled by aggressive domestic mandates (augmented by a growing diesel fuel pool) and sharply higher demand from overseas markets. By contrast, nothing has changed in the bioethanol market where fuel ethanol use remains zero (with no significant action on blending targets), feedstock is costly, production capacity remains limited, and imports are constrained.

In September 2018 Indonesia expanded the nationwide B20 mandate from the Public Service Obligation (PSO) transport sector, or those areas carried out by state-owned companies to serve public needs, to the Non-PSO transport sector. The long-planned expansion was ultimately carried out on short notice as the Government of Indonesia (GOI) faced increasing economic pressures related to the current account deficit and weakening rupiah. This initiative effectively reduces the demand for imported fossil diesel. Following some initial logistical challenges, B20 has now been implemented nationwide and plans are underway to launch B30 in 2020. Support is provided by the CPO fund, which collects a levy on crude and refined palm oil exports and provides a credit to producers by covering price spreads between biodiesel and fossil diesel. Although the fund remains well capitalized for now, questions remain regarding its long-term viability.

Indonesia biodiesel production is expected to increase by 43 percent to 8 billion liters in 2019 on the full extension of mandate program and ample exports. Although several overseas markets remain attractive, especially the EU and China, Indonesia has at least temporarily lost the sizable U.S. market following anti-dumping and countervailing duties imposed in 2017. The EU market reopened once its AD duties were dropped, but RED II essentially classifies Indonesia's biodiesel under a high-ILUC risk category and will therefore be capped and then phased-out by 2030. It remains to be seen if this phase out may be offset to some degree by certain areas being certified as low-ILUC risk.

Indonesia's molasses based bioethanol industry continues to face challenges. Currently, there is no fuel-grade ethanol produced or consumed in Indonesia, although there are ethanol plants producing non-fuel ethanol for the medical industry, cosmetics, other industrial uses and export. Despite ethanol-blending mandates of E5 and E10 by 2020 and E20 by 2025, there is no implementation due to lack of financial support as well as feedstock constraints.

Imported ethanol both pre-blended in finished gasoline and directly imported for domestic blending has potential to improve the country's adverse terms of trade (by lowering the cost of imported finished gasoline) and lower prices consumers pay at the pump. A 30-percent import duty on ethanol protects local ethanol distillers and the domestic sugar industry, which provides the molasses feedstock for ethanol production. Import opportunities are further limited by a general lack of competition in the fuels market with, Pertamina's dominance in the energy sector, and GOI's sole focus (currently) to subsidize the domestic biodiesel industry that relies on the world's largest palm industry for feedstock to the detriment of supporting renewable fuel (biobased ethanol) use in gasoline. As with many commodities, GOI agricultural policy of "self-sufficiency" remains an over-arching rationale to keep trade barriers in place.

Section II. Policy and Program

Indonesia's biofuels program is a key component of the National Energy Policy (KEN), as formalized in Government regulation 79/2014. KEN targets 23 percent renewable energy use nationally by 2025 and 31 percent in 2050. Biofuel's contribution to meeting these goals roughly translates to 13.9 billion liters and 52.3 billion liters of biofuel use, respectively. It is unclear if these biofuel use estimates are based on biodiesel only or a combination of biodiesel and ethanol use, and, if the latter, what he combination is.

Indonesia began adopting biofuels policy at national level in 2006 by issuing Regulation 1 governing the procurement and usage of biofuels. In support of Regulation 1, Presidential decree 20/2006 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 Representative (DPR), which passed Energy Law (UU 30/2007) to strengthen regulations prioritizing the use of renewable energy. Read earlier report here.

Biofuel policy has taken on national importance as a means to reduce imports to improve the balance of payments, become energy self-sufficient, and support the palm oil sector, which is expected to continue to see production increases for the foreseeable future. The B20 expansion has given confidence to GOI officials in moving forward with higher blend rates.

Renewable Energy and GHG Emissions

Indonesia is committed to reduce greenhouse gas emissions (GHG) that include the energy and transportation sectors. Through the Intended Nationally Determined Contribution (INDC) submitted to the UNFCC in 2016 documents, Indonesia commits to reduce total national GHG emissions by 29 percent by 2030 through domestic ventures or 41 percent with international assistance.

Within the energy sector, the BAU (business as usual) emission scenario below shows emissions without consideration of climate change mitigation policy. The CM1 (Counter Measure 1) 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 transportation sector is 90 percent under CM1 and 100 percent under CM2.

Ministry of Energy and Mineral Resource (MEMR) recently added liquid biofuels as part of the renewable energy source for electricity generation by issuing MEMR regulation 53/2018. The previous regulation only referred to sunlight, wind, hydro, biomass, biogas, city waste, geothermal, ocean current and thermal. The regulation allows PLN (Indonesia's state-owned electricity company) to purchase electricity from biofuel power plants directly. The regulation provides a legal standing for PLN to procure electricity from a new CPO power plant that began operating in early 2019 as well as from expected future conversions of diesel to CPO-power plants in remote areas.

Table 1. Indonesia GHG Emission Reduction within Energy Sector

GHG Emission Level 2010 (MTonne CO_2e)	**GHG Emission Level 2030** (MTone CO_2e)			**GHG Emission Reduction**	
	BAU	**CM1**	**CM2**	**MTone CO_2e**	**Percent of BAU**

				CM1	CM2	CM1	CM2
453.2	1,669	1,355	1,271	314	398	11	14

***Source**: Ministry of Environment and Forestry (MEF)*

Mandates and Pricing Formula for Biofuels

A biofuel blending mandate was created in 2008 through MEMR Regulation 32. The blending mandate 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. Read earlier report here.

Tables 2 and 3 show Government of Indonesia (GOI) plans to increase biodiesel and bioethanol blending through 2025.

Table 2. Indonesia Biodiesel Mandatory Target

Sector	2016	2020	2025
Transportation, Public Service Obligation (PSO)	20%	30%	30%
Transportation, Non-PSO	20%	30%	30%
Industry	20%	30%	30%
Electricity	30%	30%	30%

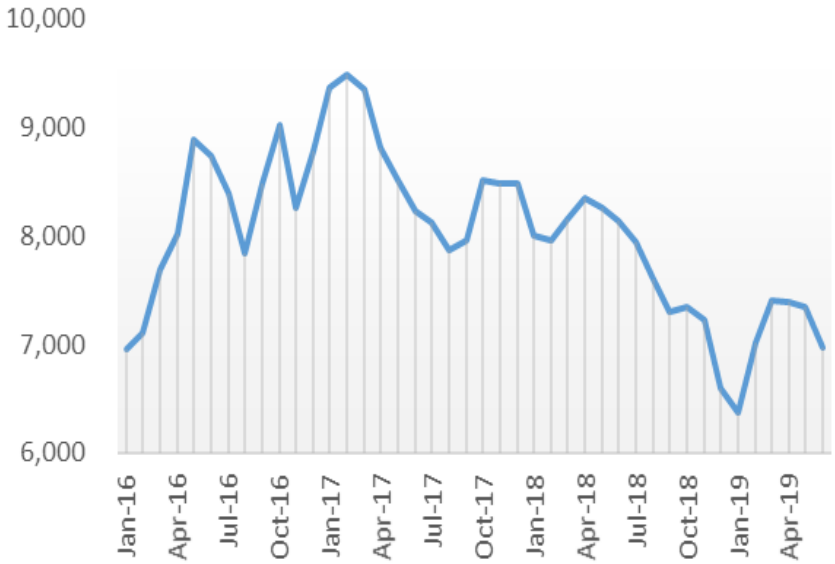
***Source:** MEMR Regulation 12/2015*

Table 3. Indonesia Bioethanol Mandatory Target

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

***Source:** MEMR Regulation 12/2015*

Figure 1. Indonesia Biodiesel Market Index Price 2016-2019 (IDR per liter)



Source: *MEMR*

In 2016, through MEMR Regulation 6034, GOI revised the market index price formula to strengthen the incentive for bioethanol production. The new formula switched from an Argus price-based formula to domestic molasses price formula published by state-owned agricultural trade company Kharisma Pemasaran Bersama (KPB).

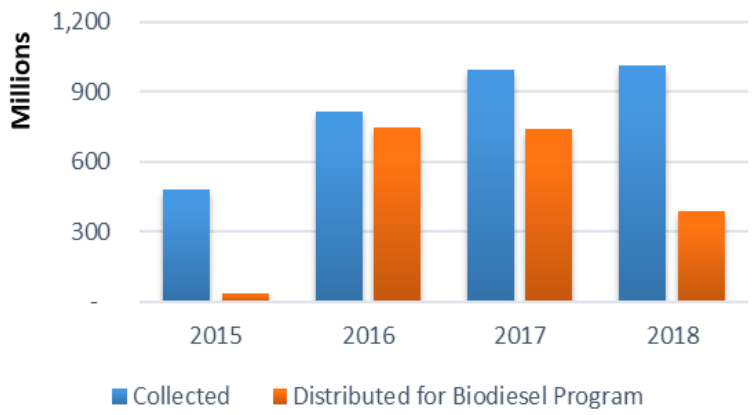
MEMR further revised the formula for the biodiesel market index price in May 2017. The new formula lowers the biodiesel conversion factor from 125 USD/MT to 100 USD/MT, implying a decrease in the amount paid per unit through biodiesel fund to the producers. As stated in the MEMR regulation 2026, the revision aims to increase both "production efficiency" as well as biofuel consumption. The regulation seeks to prevent over-compensation to producers and to reduce fund expenditures. To ensure producers and retailers meet their allocated quota and distribution obligations, GOI has enforced a fine of IDR 6000 per liter for companies unable to meet the contracted obligations.

<u>Financial Supports</u>

In 2015, a financial support mechanism was created to support domestic biodiesel consumption. Managed by the Oil Palm Plantation Fund Management Agency (BPDPKS), funds are collected from a palm oil export levy to offset price gap between biodiesel and fossil diesel. The agency also uses the fund for research and development, replanting and palm promotion activities.

From 2015-2018 the fund collected $3.3 billion (IDR 47.28 trillion). Through November 2018 the fund had disbursed $1.9 billion (IDR 24.71 trillion) for biodiesel incentives. In December 2018, due to low palm oil prices and pressure from palm oil producers GOI changed the levy structure from a fixed rate to a price-based structure. Since the levy structure change went into effect, BPDPKS has not collected any levy funds.

Figure 2. Funds Collected from Palm Oil Export Levy and Distributed for Biodiesel Program ($)



***Source**: media compilation*

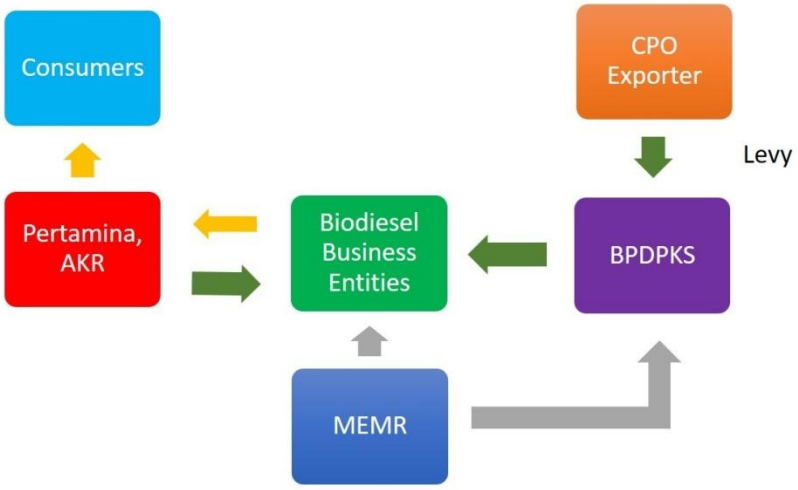
Table 4. Old and New Exports Levy ($/ton)

HS Code	Description	Old Levy, flat	New Levy Structure, price-based
1511.1000	Crude palm oil (CPO)	50	0 - 50
3826.0090	Biodiesel contains Palm methyl ester (PME) more than 96.5 percent	20	0 - 20

Also in December, GOI announced biodiesel allocations would no longer be made on a six-month cycle, but instead made for the entire calendar year. The announcements disclosed the biodiesel volume eligible producers are required to deliver to retailers.

Eligible producers are awarded volume based on their capacity. MEMR is responsible for verifying the delivery of biodiesel from producer to retailer, both private operators and State-owned energy giant Pertamina. BPDPKS uses the verification result to disburse funds to the producers *(see Figure 3)*.

Figure 3 Indonesia Biodiesel Support Fund Mechanism



***Source**: BPDPKS*

Traditionally, many producers had purposefully inflated their capacity to secure larger government allocations as many plants ran well below capacity and government procurement was the only game in town. Ironically, during the latest cycle of allocations, producers were able to earn significantly more by producing for export than by fulfilling GOI allocations, causing some to re-state their overall capacity and others to purchase biodiesel production from competitors to meet their government allocation obligations.

Import Policy, Export Taxes and Export Levy

Biofuels importation requires recommendation from MEMR according to Ministry of Trade (MOT) Regulation 21/2019. This regulation replaces MOT 3/2015 by introducing online submission, reducing requirements for both exports and imports approval and removing verification for biodiesel exports.

Ministry of Finance (MOF) Regulation 6/2017 states the latest import duties for both undenatured ethanol (HS code 2207.10) and denatured ethanol (HS code 2207.20).

Table 5. 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*

Indonesia is bound by several trade agreements, providing a lower duty on ethanol imports from ASEAN member states, Japan and South Korea.

Table 6. Trade Agreements Providing Lower Ethanol Imports Duties to Indonesia

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

Source: MOF

In addition to import duties, Indonesia also imposes export taxes and an export levy on biodiesel and its main feedstock, Crude Palm Oil (CPO). Under MOF regulation 136/2015, the export tax is based on CPO reference price. There is zero export tax on CPO for prices below $750 per ton and for biodiesel prices below $1000 per ton. Once reference prices exceed these levels, the tax is imposed on a sliding scale.

Table 7. Price Structure of Exports Tax on CPO, biodiesel ($/ton)

	Price Threshold ($/ton)	Export Tax ($/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*

In December 2018, GOI changed the levy structure from a fixed rate to a price-based structure. Under the new structure, the levy will be exempted if the CPO price goes below $ 570 per ton and fully applied for prices above $619. If the price moves between these thresholds, then the levy is partially applied. Indonesia export reference prices went below $570 during December 2018 to February 2019.

Table 8. Price Structure of Exports Levy on palm oil, biodiesel ($/ton)

	Below $570/ton	Between $570/ton and $619/ton	Above $619/ton
CPO	0	25	50
Biodiesel	0	10	20

Source: MOF Regulation 23/2019

Since the levy is no longer being collected, in February 2019, GOI removed requirements for verification survey documents on all CPO exports. Despite aiming to accelerate export procedures, this action may result in misreporting of export data as the surveys had been the primary means for determining export volumes.

Environment Sustainability and Certification

Indonesia has no specific regulation on biofuel sustainability criteria for domestically consumed biodiesel. However, there are several sustainability certification schemes available for palm oil production, such as RSPO and ISPO. Programs cover a range of common sustainability criteria including greenhouse gas (GHG) emissions, land use, biodiversity and labor. They apply only to palm oil and palm oil biodiesel exported to countries that have sustainability requirements for these products.

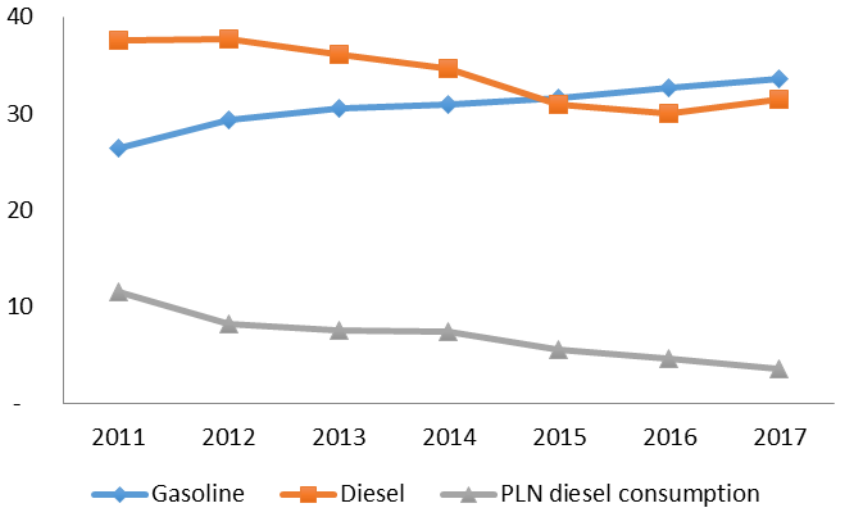
The EU focus on biofuel sustainability criteria, translated into policy outlined in the Renewable Energy Directive (RED) and RED II, weighs heavily on the Indonesian biofuels sector, and is a constant source of strife among high-level GOI officials and their EU counterparts.

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, concludes that palm oil qualifies as high ILUC-risk feedstock that must be capped then gradually decreased after 2023 to zero by 2030. 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 oppose EU attempts to regulate biofuels and has engaged other palm producing countries to counter the measures. GOI officials frequently mention the possibility of retaliation against EU products like aircraft, dairy and beverage products. Recently, Indonesian alcoholic-beverage importers were given zero annual quota issued for EU-origin spirits, what many believe was a slap at EU palm oil and biofuel policy.

Section III. Gasoline and Diesel Pools
Beginning in 2012, conversion to coal-fired power plants by PLN has lowered diesel consumption for stationary power. These conversions have generally offset the upward trends in gasoline and jet fuel pools. Indonesia total fuel sales began to rebound in 2017, as PLN diesel-to-coal conversions stopped for now and following increases in diesel and gasoline used in transportation.

Figure 4. Gasoline and Diesel Consumption 2011-2017 (billion liter)



Source: MEMR, PLN Statistic

Indonesian gasoline subsidies were removed in 2015 with the collapse in oil prices. As a result, the price gap between various qualities of light duty fuels fell and fuel consumption shifted slightly to higher-octane fuels. As crude oil price increased during 2016-2017, Pertamina began to adjust the price of

higher-octane fuels such as Pertalite (Ron 90) and Pertamax (Ron 92). However, no price adjustments have been made for PSO fuels such Premium and diesel.

Table 7. Gasoline retail price (IDR per liter) and sale share

Type of Gasoline	Brand	Sale Share (Percent)		Price (IDR per liter)		
		2016	2017	Jan-17	Jul-18	May-19
RON 98	Pertamax Turbo	1.1	1.1	9,100	10,700	11,200
RON 92	Pertamax	14.9	18.4	8,050	9,500	9,850
RON 90	Pertalite	18.1	43.2	7,350	7,800	7,650
RON 88	Premium	65.8	37.2	6,550	6,550	6,550

***Note**: 2016 updated. Price for Java and Bali area. **Source**: MEMR, BPH Migas*

Gas retailers offer different fuel prices in each region or province. In general, Java and Bali receive the lowest pricing, while eastern Indonesia sees the highest due to logistical costs. Fuel prices in remote areas such in Papua may reach two or three times the prices on Java. The GOI program on single fuel price (BBM Satu Harga) aims to provide fair price for fuel in remote areas, mainly for PSO fuel. There were 128 points of sale established under this program at the end of 2018 with an expected increase to about 170 points in 2019.

Table 8. Diesel retail price (IDR per liter) and sale share

Type of Diesel	Brand	Sale Share (Percent)		Price (IDR per liter)		
		2016	2017	Jan-17	Jul-18	May-19
Diesel CN 48	Solar	92	91	5,150	5,150	5,150
Diesel CN 51	Dexlite	0.4	1.2	7,200	9,000	10,200
Diesel CN 53	Pertamina Dex	0.5	0.6	8,500	10,500	11,700

*Note: Price for Java and Bali area. Solar price refer to PSO sector. **Source**: MEMR, BPH Migas*

GOI has increased the fuel subsidy for diesel from IDR 500 per liter to IDR 2000 per liter in response to crude oil price increases and interest in maintaining low retail diesel prices ahead of the 2019 election. GOI has not re-established a subsidy for gasoline; however, a price review is conducted quarterly to determine if adjustments may be necessary to Premium grade prices based on international prices.

Table 9. Indonesia, Fuel Use History

Fuel Use History (Million Liters)										
Calendar Year	2010	2011	2012	2013	2014	2015	2016r	2017	2018e	2019e
Gasoline Total	23,863	26,447	29,276	30,511	30,925	31,528	31,986	33,548	34,353	35,246
Diesel Total	36,450	37,497	37,743	36,124	34,651	30,912	30,039	31,441	32,196	33,033
All Surface transports	27,125	26,030	29,528	28,649	27,220	25,433	25,372	27,843	28,785	29,621
Industry	9,325	11,467	8,215	7,474	7,431	5,479	4,667	3,598	3,411	3,412
Jet Fuel Total	3,530	3,270	3,901	4,162	4,231	4,340	4,668	4,715	5,503	5,646
Total Fuel Markets	63,842	67,214	70,920	70,797	69,807	66,779	66,694	69,704	72,052	73,925

***Source**: MEMR, r= revised, e = Post estimation*

Section IV. 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.

In February 2018, MEMR announced a plan to implement bioethanol blending of E2 in several big cities, most likely in East Java due to proximity with ethanol producer plants. Unlike the broad-based E2 program in the past, which was inadequately supported by the state-budget fund, this pilot program may target only high-octane gasoline where the price difference with ethanol is narrower. However, a MEMR official indicates that this E2 pilot program was "ineffective" due to the higher price of E2 compared with conventional gasoline.

Non-FGE demand originates from various industries including perfumes, cosmetics, pharmaceutical and chemical solvents. Post expects consumption of industrial grade ethanol (IGE) will slightly increases to 139 million liters in 2019.

Production

FGE production became unfeasible following the end of GOI's limited blending support. As a result, ethanol distillers switched their entire production to meet industrial grade demands. Post expects Indonesia industrial ethanol production to reach 195 million liters in 2019.

In July 2018, Indonesia largest ethanol producer commenced development of a new production facility in Lampung, Sumatra. The plant will utilize various raw materials including molasses and corn. It's expected to be commissioned in 2020 and will have a 50-million liter capacity.

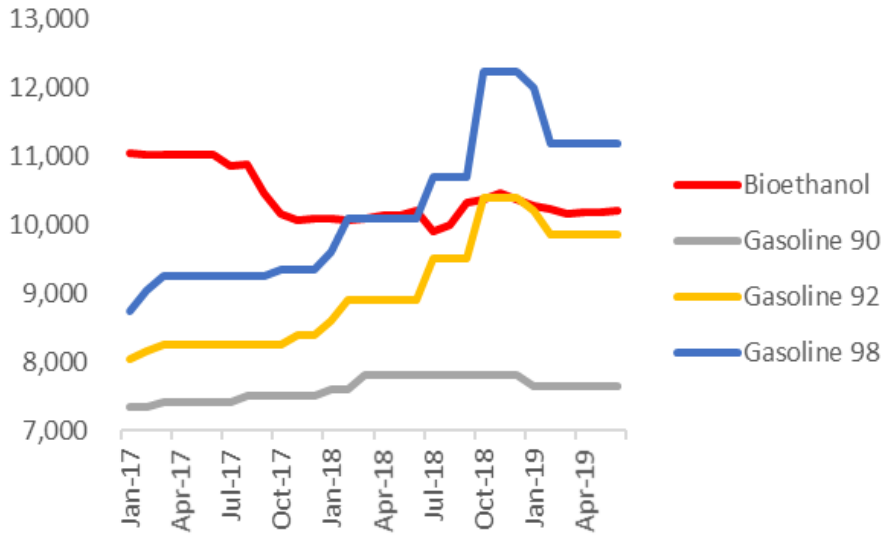
Indonesia's 2019 ethanol refinery capacity, both active and idle, remains unchanged at 408 million liters. Only 3 out of 14 plants are able to produce FGE, with capacity up to 100 million liters.

Molasses is the feedstock for Indonesia ethanol production. More than 60 sugarcane mills are currently active and producing molasses. Indonesia sugarcane industry is expected to produce 2.1 million tons sugar in 2019/20 from 29.1 million tons of sugarcane (Sugar: World Market and Trade), resulting 1.4 million tons of molasses available. To produce 200 million liters of ethanol, industry requires roughly 815,000 tons of molasses. However, Indonesia's ethanol industry is not the only consumer of molasses. Lucrative overseas markets and demands from the monosodium glutamate industry compete with the ethanol industry.

Indonesia's import restrictions on cheaper, more widely available ethanol feedstock such as corn continue to hinder the growth and viability of local ethanol producers.

MEMR formulates Bioethanol Market Index price (Figure 5) based on domestic molasses prices. The bioethanol price reached 10,201 IDR per liter in June 2019 and has remained higher than Pertamina gasoline RON 92 since February 2019, after almost achieving parity during October 2018 to January 2019.

Figure 5. Bioethanol and high-octane gasoline price (IDR per liter)



***Source**: MEMR, BPH Migas*

Trade

In recent years, annual ethanol exports have ranged from 60 to 90 million liters with most shipped to the Philippines or Japan for use as non-fuel industrial chemicals. However, a larger volume (158 million liters) of exports was shipped in 2018 with Singapore as the reported destination. This corresponds to about 95 million liters of ethanol Indonesia imported from the United States and Malaysia (October-November 2018). News reports based on interviews with traders identify this as sales of US-origin fuel ethanol indirectly shipped to China. Direct US-China sales were shut off early in 2018 when China raised duties on U.S. product to 45% and eventually 70%. Jan-March 2019 ethanol exports reached 12.7 million liters, 27 percent lower than the similar period in 2018. Post expects ethanol exports to reach 64 million liters in 2019. Shipments of ethanol used as other industrial chemicals continue to Japan and the Philippines with no recorded sales to Singapore.

A 30 percent import duty on ethanol protects local ethanol distillers and the domestic sugar industry, which provides the molasses feedstock. Import opportunities are further limited by a general lack of competition in the fuels market with Pertamina's dominance in the energy sector, and GOI's inaction to promote ethanol use in gasoline.

Production, Supply and Demand Statistics

Ethanol Used as Fuel and Other Industrial Chemicals (Million Liters)										
Calendar Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019f
Beginning Stocks	42	36	41	52	39	14	16	15	14	14
Fuel Begin Stocks	0	0	0	0	0	0	0	0	0	0
Production	175	220	205	207	202	205	205	195	200	195
Fuel Production	3	3	2	2	18	1	0	0	0	0
Imports	0	1	0	0	2	0	2	5	96	5
Fuel Imports	0	0	0	0	0	0	0	0	95	0
Exports	49	81	59	86	94	67	71	64	158	64
Fuel Exports	3	3	2	2	18	1	0	0	95	0
Consumption	132	134	135	135	135	136	137	137	138	139
Fuel Consumption	0	0	0	0	0	0	0	0	0	0
Ending Stocks	36	41	52	39	14	16	15	14	14	11
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
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 (%)	3%	3%	2%	2%	18%	1%	0%	0%	0%	0%
Feedstock Use for Fuel (1,000 MT)										
Molasses	13	11	6	7	72	4	0	0	0	0
Market Penetration (Million Liters)										
Fuel Ethanol	0	0	0	0	0	0	0	0	0	0
Gasoline	23,863	26,447	29,276	30,511	30,925	31,528	31,986	33,548	34,353	35,246
Blend Rate (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

Section V. Biodiesel

Consumption

Indonesian biodiesel consumption is driven by the blending mandate program, and supported by funds from CPO exports levy. Consumption is primarily used for the on-road transportation sector, with a small fraction used for electricity generation.

Following lower blend mandates set in earlier years and never fully implemented, Indonesia launched the B20 mandate in the PSO transportation sector in 2016. In September 2018, facing a weakening rupiah and widening current account deficit the GOI extended the B20 mandate into Non-PSO transportation with little warning for industry. As a result of the expansion an additional allocation of 940 million liters was created for 2018 Q4 delivery. GOI appointed 19 producers to deliver biodiesel to more than 120 distribution points across the country. From the outset the deliveries faced logistical challenges, especially in eastern provinces. Several vessels were unable to arrive on schedule due to weather issues and high number of distribution points. Under the new regulation (MEMR Regulation

41/2018), producers can be fined IDR 6000 per liter if they are unable to deliver FAME on schedule. The same amount of penalty can be charged to fuel retailers if they sell unblended regular diesel. In late 2018, eleven companies consisting of nine biodiesel producers and two fuel retailers were fined a total IDR 360 billion ($25 million USD) for failing to meet distribution and blending requirements.

Biodiesel consumption in electricity sector remains limited despite state-run electric utility PLN already using B30 in some generators. The limited use of biodiesel for electric production is the result of most diesel power plants being used primarily to meet demand only during peak hours and the cost advantage of coal-fired power plants. The conversion of power plants to coal use over the past several years has also limited the opportunity for biodiesel.

In late 2018, a CPO-only powered plant was commissioned in Belitung after completing several months of trial. MEMR then issued new regulation (MEMR Regulation 53/2018) allowing such a power plant to be categorized as a renewable energy source and allowing PLN to buy its electricity. Industry sources indicate about 50 – 60 percent of generators could be converted affordably to run on CPO, provided the generator was used for the whole day. However, since many are "peaker" plants, they would not meet the definition of renewable under the new regulation.

As result of B20 expansion to the non- PSO sector, biodiesel consumption increased by 54 percent to 3.95 billion liters in 2018. GOI set the 2019 biodiesel allocation to 6.19 billion liters for both PSO and Non-PSO.

Table 10. Biodiesel Allocation 2015-2019

Allocation Period	No Supplier	Total Allocation (billion liters)	Sector
November 2015 - April 2016	12	1.87	PSO
May - October 2016	16	1.53	PSO
November 2016 - April 2017	17	1.53	PSO
May - October 2017	20	1.37	PSO
November 2017 - April 2018	21	1.41	PSO
May - October 2018	19	1.46	PSO
September- December 2018	19	0.94	Non-PSO
January- December 2019	19	6.19	PSO, Non-PSO

***Source**: MEMR*

Post expects 2019 consumption to reach 6.2 billion liters based on no change in the recent growth rate for transport diesel and fully successful implementation of the CPO fund. Some additional factors that may affect 2019 consumption include:

- GOI has begun conducting B30 road tests in June 2019. If early test results are positive, B30 implementation for Non-PSO transport could be accelerated ahead of the currently 2020 implementation as outlined in MEMR Regulation 12/2015. Industry contacts have suggested the government has yet to convince major automotive manufacturers.

- Increased sales to the lucrative export market may lower local consumption as producers seek to generate more profits on the spread between higher crude oil prices and depressed CPO prices.

The CPO Fund balance is able to support the biodiesel mandate program throughout 2019. Because of the narrower price spread in 2018, there are more remaining funds available than 2017. However, GOI policy to change the export levy into a price-based scheme in December 2018 and temporary suspend the levy from March to May 2019 runs the risk of depleting the fund should the spread increase. No funds have been collected since December 2018 to February 2019 (due to low price) and March to May 2019 due to temporary suspension.

One interesting result of the B20 expansion is an increase in state-run energy company Pertamina's diesel stocks. Local diesel production is now meeting national demand and existing contracts have led to a surplus diesel imports. An industry source noted that GOI is no longer issuing import permits for diesel to private fuel-retailers, instead pushing them to purchase Pertamina diesel stocks.

Production

Post revises production data from 2014-2017 lower and 2018 higher. Previous production figures utilized MEMR data that relied on a self-reporting among producers. Post has confirmed that not all producers follow the self-reporting guidelines and in their absence MEMR uses capacity estimates to determine production. Since many producers in previous years have overestimated their capacity to receive larger GOI allocations, this has led to an exaggeration in total national production.

Post expects Indonesia biodiesel production to increase 43 percent to 8 billion liters in 2019 on the full expansion of B20 mandate into the non-PSO sector and continued high demand from overseas markets. Updated 2018 biodiesel production figure suggests 5.6 billion liters.

Indonesian biodiesel production registered capacity has grown from 4.9 billion liters in 2012 to 11.5 billion liters in 2017 and essentially stabilized for now with little change in 2018 and 2019. Current capacity exceeds full implementation of B20 mandate program and estimated export demand. The capacity is expected to increase to 12.5-13 billion liters in 2021 as several producers are planning to expand their facilities.

Despite significant production growth, some producers with stand-alone plants (without any pre-treatment facility) experienced issues procuring refined palm oil, especially during the early implementation of the blending mandate.

Trade

Indonesia biodiesel exports reached 1.772 billion liters in 2018, jumping from 187 million liters the previous year. About half of all shipments were to EU country destinations, followed by China with 750 million liters in total. Other exports destinations include Peru, India and South Korea.

Post expects Indonesia biodiesel exports to remain strong at 1.8 billion liters in 2019 based on continued EU and China demand. From January – March 2019, shipments reached 203 million liters, a doubling from the same period in 2018. The increase has been encouraged by the new export levy structure beginning in December 2018 and temporary suspension up to May 2019. Malaysia's suspension of palm oil export duties through December 2019 is decreasing the spread with Indonesia palm oil prices and may push Indonesia to continue suspending the export levy through the end of the year.

In 2018, trade data indicates Indonesia imported 28 million liters of biodiesel from Malaysia, a small fraction of national production and use. The import occurred in first month of the extension of mandate program to non-PSO sector and was likely used to make up for initial production shortages.

Indonesia, along with Argentina, are the largest exporters of biodiesel. The EU, United States and on occasionally China have been their largest overseas markets.

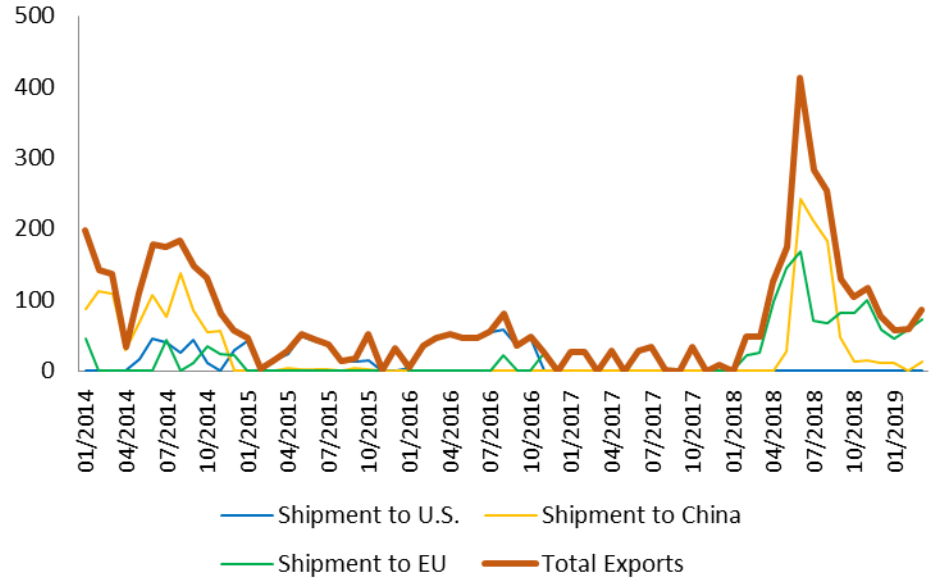
During 2015-2017, exports were sharply lower than previous years mainly because the EU limited imports by imposing high duties that were overturned in 2018.

Indonesian exports of biodiesel to the U.S. ended in November 2016. Subsequently, the U.S. Department of Commerce and U.S. International Trade Commission imposed high preliminary duties. Biodiesel exports from Indonesia are now subject to AD duties of up to 277 percent and CVD duties of up to 65 percent. With duties this high, the arbitrage window for Indonesian biodiesel exports to the United States will remain closed as long as the duties remain in place.

In February 2018, GOI responded to the United States' AD/CVD determinations by bringing the case to the World Trade Organization (WTO). The Ministry of Trade (MOT) contends the methodologies for calculating dumping and assigning dumping margins are inconsistent with WTO rules. Other government officials have cited the AD/CVD case in reference to draft regulations that would restrict the import of U.S. soybeans, the number one U.S. agricultural export to Indonesia.

In response to EU RED II policy to cap and then phase out high-risk ILUC biofuels which principally targets biofuels made from palm oil, a MOT official in March 2019 noted that Indonesia is assembling a team that will bring the case to the WTO.

Figure 6. Indonesia biodiesel monthly shipments 2014-2019 (million liter)



***Source**: GTA*

Production, Supply and Demand Statistics

Biodiesel (Million Liters)										
Calendar Year	2010	2011	2012	2013	2014r	2015r	2016r	2017r	2018r	2019e
Beginning Stocks	22	16	29	27	11	97	94	110	152	58
Production	780	1,812	2,270	2,950	3,500	1,200	3,500	2,800	5,600	8,000
Imports	0	0	5	24	0	0	0	0	28	0
Exports	563	1,440	1,608	1,942	1,569	343	476	187	1,772	1,800
Consumption	223	359	669	1,048	1,845	860	3,008	2,572	3,950	6,200
Ending Stocks	16	29	27	11	97	94	110	152	58	58
BalanceCheck	0	0	0	0	0	0	0	0	0	0
Production Capacity (Million Liters)										
Number of Biorefineries	22	22	22	26	26	27	30	32	31	31
Nameplate Capacity	3,921	3,921	4,881	5,670	5,670	6,887	10,898	11,547	11,357	11,357
Capacity Use (%)	19.9%	46.2%	46.5%	52.0%	61.7%	17.4%	32.1%	24.2%	49.3%	70.4%
Feedstock Use for Fuel (1,000 MT)										
Crude Palm Oil (CPO)	718	1,667	2,088	2,714	3,220	1,104	3,220	2,576	5,152	7,360
Market Penetration (Million Liters)										
Biodiesel, on-road use	178	287	535	838	1,476	665	2,621	2,272	3,650	5,900
Diesel, on-road use	27,125	26,030	29,528	28,649	27,220	25,433	25,372	27,843	28,785	29,621
Blend Rate (%)	0.7%	1.1%	1.8%	2.9%	5.4%	2.6%	10.3%	8.2%	12.7%	19.9%
Diesel, total use	36,450	37,497	37,743	36,124	34,651	30,912	30,039	31,441	32,196	33,033

***Source and note**: MEMR, GTA (trade data), Post estimation; r= revised (in red color), e=estimate,*

Section VI. Advanced Biofuels

A trial for "green fuels" co-processing was completed by MEMR, Bandung Institute Technology (ITB) and facilitated by Pertamina in December 2018. The co-processing aims to utilize palm oil to produce renewable (drop-in) gasoline, diesel and jet fuel, which have similar properties with fossil gasoline, diesel and jet fuel. Pertamina continues to run the pilot project and has begun updating three refineries. A plant to produce the catalyst for fuel co-processing is being planned and is expected to be commissioned in 2020.

In January 2019, Pertamina and Italian company ENI signed an agreement to develop a renewable fuels refinery for producing hydro'treated vegetable oil (HVO) in Indonesia. This agreement allows ENI facilities to process Indonesia CPO to produce HVO in the short term while ENI assists Pertamina to develop a greenfield renewable fuel refinery in Indonesia.

Section VII. Notes on Statistical Data

Fuel Use History

Gasoline, diesel and jet fuel use history figures in Table 9 are based on MEMR Handbook of Energy & Economic Statistics of Indonesia 2018, specifically for 2010-2017. Year 2018 and 2019 are Post estimates.

Bioethanol

Bioethanol market index prices in Figure 5 based on MEMR publications. MEMR calculate Bioethanol market index price using molasses reference price. "Premium" refers to an Indonesian gasoline blend with RON 88 quality.

Month	Molasses Price (IDR/kg)			Bioethanol Market Index Price (IDR/liter)			Gasoline 88 (Premium) Price (IDR/liter)		
	2017	*2018*	*2019*	*2017*	*2018*	*2019*	*2017*	*2018*	*2019*
Jan	1,864	1,625	1,611	11,049	10,090	10,274	6,550	6,550	6,550
Feb	1,864	1,625	1,611	11,036	10,059	10,235	6,550	6,550	6,550
Mar	1,864	1,625	1,611	11,026	10,083	10,167	6,550	6,550	6,550
Apr	1,864	1,625	1,611	11,028	10,140	10,178	6,550	6,550	6,550
May	1,864	1,625	1,611	11,028	10,147	10,195	6,550	6,550	6,550
Jun	1,864	1,625	1,611	11,020	10,210	10,201	6,550	6,550	6,550
Jul	1,830	1,533		10,874	9,900		6,550	6,550	
Aug	1,830	1,556		10,885	10,010		6,550	6,550	
Sep	1,731	1,626		10,475	10,337		6,550	6,550	
Oct	1,660	1,619		10,168	10,377		6,550	6,550	
Nov	1,625	1,619		10,074	10,457		6,550	6,550	
Dec	1,625	1,611		10,088	10,362		6,550	6,550	

Source: *MEMR*

Biodiesel

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

Biodiesel market index prices in Figure 1 collected from MEMR publications. The following table compiles CPO reference prices used to calculate the biodiesel market index price published monthly by MEMR. Diesel price, called "Solar" price refers to PSO diesel fuel.

Month	CPO Reference Price (IDR/kg)			Biodiesel market index price (IDR /liter)			Diesel price (Solar), PSO (IDR/liter)		
	2017	**2018**	**2019**	**2017**	**2018**	**2019**	**2017**	**2018**	**2019**
Jan	9,082	7,841	5,872	9,362	8,000	6,371	5,150	5,150	5,150
Feb	9,238	7,810	6,628	9,493	7,962	7,015	5,150	5,150	5,150
March	9,089	8,029	7,101	9,358	8,161	7,403	5,150	5,150	5,150
April	8,463	8,230	7,078	8,815	8,356	7,387	5,150	5,150	5,150
May	8,129	8,118	7,026	8,520	8,261	7,348	5,150	5,150	5,150
Jun	8,210	7,954	6,598	8,230	8,140	6,977	5,150	5,150	5,150
July	8,016	7,740		8,131	7,949		5,150	5,150	
Aug	7,712	7,300		7,871	7,600		5,150	5,150	
Sept	7,822	6,932		7,965	7,294		5,150	5,150	
Oct	8,462	6,957		8,518	7,341		5,150	5,150	
Nov	8,411	6,794		8,490	7,227		5,150	5,150	
Dec	8,406	6,086		8,491	6,589		5,150	5,150	

Source: *MEMR*

The following table shows CPO reference price used by MOT to determine both CPO export duty and Palm Methyl Ester (PME) / biodiesel export duty.

Month	CPO Reference Price (USD/MT)			CPO Exports Duty (USD/MT)			PME Export Duty (USD/MT)		
	2017	2018	2019	2017	2018	2019	2017	2018	2019
Jan	788	697	503	3	0	0	0	0	0
Feb	816	694	565	18	0	0	0	0	0
March	826	709	596	18	0	0	0	0	0
April	763	712	568	3	0	0	0	0	0
May	732	703	573	0	0	0	0	0	0
Jun	723	687	547	0	0	0	0	0	0
July	726	678		0	0		0	0	
Aug	698	632		0	0		0	0	
Sept	697	604		0	0		0	0	
Oct	740	602		0	0		0	0	
Nov	738	578		0	0		0	0	
Dec	743	549		0	0		0	0	

Source: *MOT and MOF*