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Indonesia

Biofuels Annual

Indonesia Biofuels Annual 2018

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Report Highlights:
Indonesia biodiesel production is forecast slightly higher in 2018, as the Public Service Obligation (blending mandate) program continues and exports rise. Indonesia does not import biodiesel. Biodiesel consumption was slightly down in 2017, but expected to increase in 2018 assuming the mandate will be extended to the mining industry and diesel trains. Indonesia biodiesel exports dropped to a mere 187 million liters in 2017, the lowest level since 2006. Post expects 2018 biodiesel exports to rise to one billion liters following the removal of EU anti-dumping duties and sales growth to other markets.

Post:
Jakarta

Section I. Executive Summary

While the biodiesel industry has grown dramatically since 2006, ineffective support programs and insufficient supply chain infrastructure have caused biodiesel use to fall far short of aggressive mandates (use goals) and the nascent fuel ethanol market completely disappeared after 2009.

In 2015, Indonesia established a new, more effective financial support mechanism for biodiesel blending, and reaffirmed blending mandates for the Public Service and Non-Public Service transportation sector as well as for industry and power generation. Of these, the only two where some progress toward meeting the mandate has occurred are most importantly the 1) the Public Service Obligation (PSO) for Transportation which accounts for about 90% of the country's diesel use, and secondly 2) electrical power. Support is provided to biodiesel producers by covering the price gap between biodiesel and fossil diesel utilizing revenue collected from a palm oil export levy.

The Ministry of Energy and Mineral Resource (MEMR) reports Indonesia's 2017 biodiesel production at 3.416 billion liters, a slight decrease from the 2016 level. Post expects 2018 biodiesel production will partially recover to 3.9 billion liters as domestic use rises and exports increase following the EU's settlement of a WTO anti-dumping case in March 2018 and sales increases to other markets. Significant challenges remain for biodiesel exports. Recent U.S. anti-dumping and countervailing duties have shut Indonesia out of the U.S. market for the next five years, and the EU's emerging Renewable Energy Directive (RED) II (covering 2020-2030 biofuels policy) is expected to set a cap on the use of crop-based biofuels and may eliminate palm oil use in biofuels from the program by 2030. The EU followed by the United States are the world's largest biodiesel markets. Barred from a larger presence in these markets (as well as most other mid-size markets where there is little to no trade opportunity), there is little chance Indonesia will return to its record annual export sales near or above 1.5 billion liters (2011-14) in the near future unless unexpected developments open the markets of China and India.

Biodiesel consumption is expected to increase to 3.3 billion liters in 2018 as the diesel pool grows and the blending mandate is progressively extended to the mining and rail transport sectors. Of further note, in July 2018, the Minister of Industry, Airlangga Hartarto, noted that President Joko Widodo "Jokowi" had requested the blending mandate be increased to 30 percent to help overcome protectionist policies in overseas markets. Though his comments were not specific, he was likely referring specifically to the PSO sector.

Indonesia's molasses based bioethanol industry continues to face challenges. Currently, there is no fuel-grade ethanol production 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 incentives covering price disparity as well as feedstock constraints.

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. These amounts roughly translate to 13.9 billion liters and 52.3 billion liters of biofuels production, respectively.

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.

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 29 percent of total national GHG emissions 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.

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 Biodiesel

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 Indonesian Biodiesel Mandatory Target as Stated in Regulation 12/2015

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*

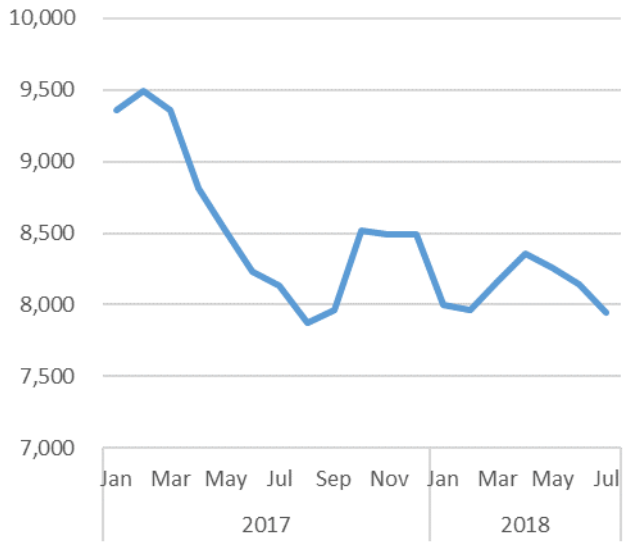
Table 3 Indonesia Bioethanol Mandatory Target as Stated in Regulation 12/2015

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

Source: *MEMR*

Public Service Obligation (PSO) refers to obligation carried out by state-owned companies to serve public needs. Usually, activities under PSO mechanisms are non-commercial, non-profit oriented.

Figure 1 Indonesia Biodiesel Market Index Price 2017-2018 (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).

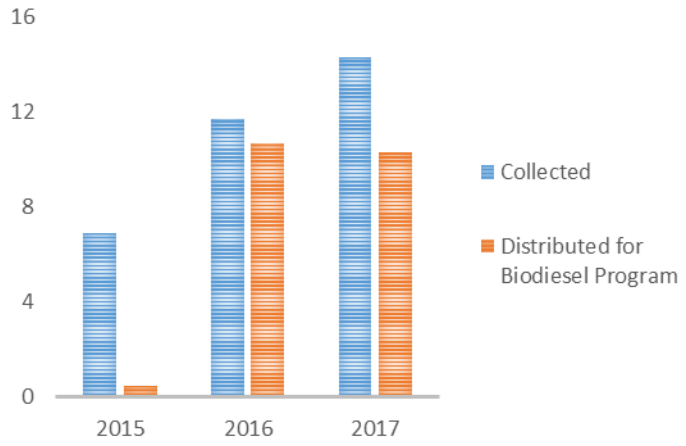
MEMR further revised the formula for the biodiesel market index price in May 2017. The new formula lowers the biodiesel conversion factor from 125 USD/MT to 100 USD/MT, implying a decrease in the amount paid per unit through biodiesel fund to the producers. As stated in the MEMR regulation 2026, the revision aims to increase both "production efficiency" as well as biofuel consumption.

Financial Supports

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 2015-2017 the fund collected USD 2.3 billion (IDR 32.9 trillion), and has disbursed for biodiesel incentive USD 1.7 billion (IDR 24.71 trillion) from 2015 to April 2018.

Figure 2 Funds Collected from Palm Oil Export Levy and Distributed for Biodiesel Program

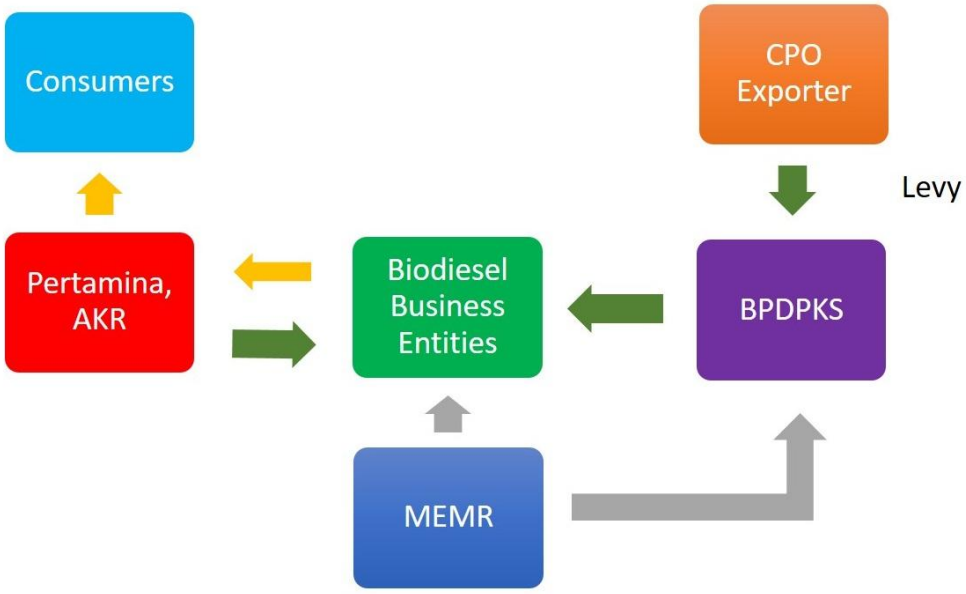
(IDR trillion)



Source: media reports, BPDPKS

Every six months, MEMR announces biodiesel allocation quantities for biodiesel business entities (producers) who are eligible to supply state-owned Pertamina and AKR (a private company that receives distribution assignment from GOI for PSO diesel). Eligible producers are awarded volume based on their capacity. MEMR is responsible for verifying the delivery of biodiesel from producer to Pertamina/AKR. BPDPKS uses the verification result to disburse funds to the producers *(see Figure 2).*

Figure 3 Indonesia Biodiesel Support Fund Mechanism



***Source**: BPDPKS*

Duty Rates, Export Taxes and Export Levy

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 4 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 5 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 exports 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.

The Export Levy on CPO and biodiesel, based on MOF regulation 133/2015, is a fixed flat rate.

Table 6 Export duties on CPO and Biodiesel

HS Code	Description	Export Tax (USD per ton)	Levy (USD per ton)
1511.1000	Crude palm oil (CPO)	0 - 200	50
3826.0090	Biodiesel contains Palm methyl ester (PME) more than 96.5 percent	0 - 64	20

Note: See table on export duties in the last section "Notes on Statistical Data."

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 emerging RED II, weighs heavily on the Indonesian biofuels sector, and is a constant source of complaints among high-level GOI officials to their EU counterparts. The RED II will reportedly (text is not yet available) set out the criteria for certification of two categories of crop-based biofuels in relation to the indirect land-use change (ILUC) risk:

1. **High ILUC risk**: Biofuels produced from crops in areas where there has been significant recent expansion of the production area into land with high carbon stock (wetlands, peat lands and forests).

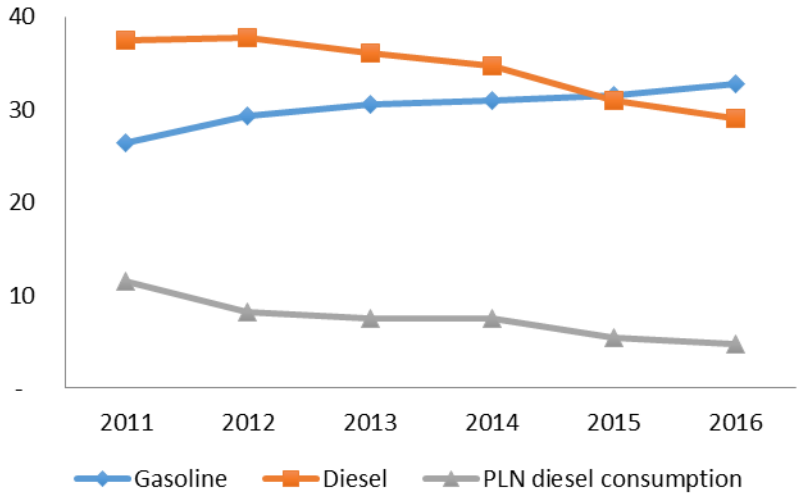
2. **Low ILUC risk**: low indirect land-use change risk

The GOI continues to oppose EU attempts to regulate biofuels and has engaged other palm producing countries to counter the measures, recently winning support from Malaysia's new Prime Minister.

Section III. Gasoline and Diesel Pools

Total Indonesian fuel sales are slightly lower in the last few years compared to record highs set in 2012-14 with declines in diesel used in transport and stationary power for industry more than offsetting upward trends in gasoline and jet fuel pools. Conversion to coal-fired power plants by PLN has lowered diesel consumption for stationary power.

Figure 4 Gasoline and Diesel Consumption 2011-2016 (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 up 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 2016	Price as of January, 2017	Price as of July, 2018

Gasoline RON 88	Premium	66.5 percent	6550	6550
Gasoline RON 90	Pertalite	17.8 percent	7350	7800
Gasoline RON 92	Pertamax	14.6 percent	8050	9500
Gasoline RON 95	Pertamax Plus	0.9 percent	8750	N.A
Gasoline RON 98	Pertama Turbo	0.2 percent	9100	10700

Note: Pertamina began to switch from Pertamax plus to pertamax turbo in 2017. 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 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 are 73 points of sale established under this program in 2018 and will increase to about 170 points in 2019.

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

Type of Diesel	**Brand**	**Sale share 2016**	**Price as of January, 2017**	**Price as of July, 2018**
Diesel CN 48 (ADO, HSD)	Solar, Biosolar	95 percent	5150	5150
Diesel CN 51	Dexlite	0.4 percent	7200	9000
Diesel CN 53	Pertamina Dex	0.3 percent	8500	10500

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

In response to recent crude oil price increases, GOI announced a plan to increase the fuel subsidy for diesel from IDR 500 per liter to IDR 1000 per liter. 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	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017e**	**2018e**
Gasoline Total	22,132	23,863	26,447	29,276	30,511	30,925	31,528	32,706	33,034	33,365
Diesel Total	33,625	36,450	37,497	37,743	36,124	34,651	30,912	28,974	29,264	29,557
All Surface transports	24,216	27,125	26,030	29,528	28,649	27,220	25,433	24,307	25,666	26,146
Industry	9,409	9,325	11,467	8,215	7,474	7,431	5,479	4,667	3,598	3,411
Jet Fuel Total	2,762	3,530	3,270	3,901	4,162	4,231	4,340	4,668	4,715	4,762

Total Fuel Markets	58,519	63,842	67,214	70,920	70,797	69,807	66,779	66,349	67,013	67,684

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

Section IV. Ethanol

Consumption

Indonesia's 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 supported by the state-budget fund, this pilot program may target only high-octane gasoline where the price difference with ethanol is narrower. Industry sources indicate the plan is still under discussion between Pertamina and local ethanol producers.

Non-FGE demand originates from various industries including perfumes, cosmetics, pharmaceutical and chemical solvents. Post expects consumption of this industrial grade ethanol (IGE) to reach 138 million liters in 2018 as it continues to trend upwards.

Production

FGE production become 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 industrial ethanol production to increase from 195 million liters in 2017 to 200 million liters in 2018.

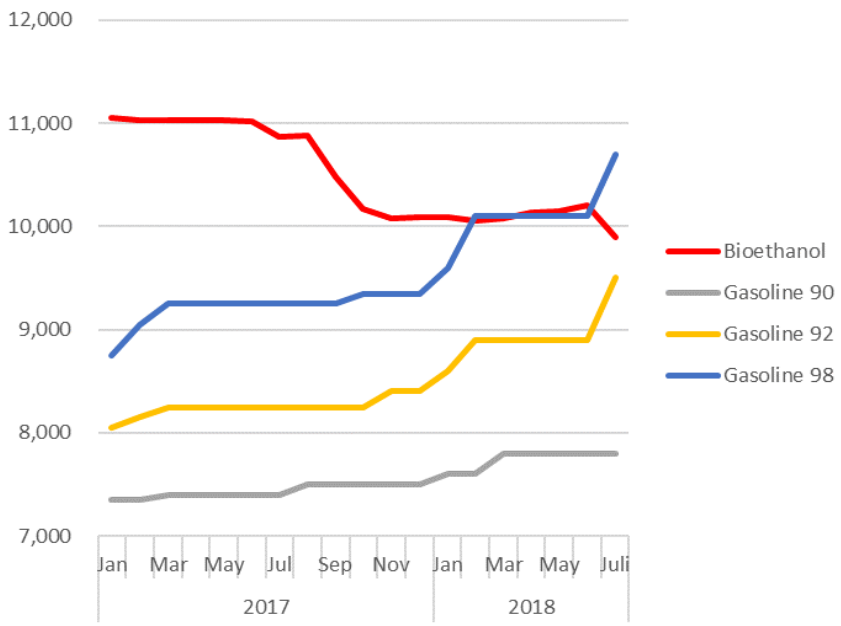
Indonesia's 2018 ethanol refinery capacity, both active and idle, remains unchanged at 408 million liters. Only 3 out of 14 plants remain capable to produce FGE, with total FGE capacity at 100 million liters.

Molasses is the feedstock for Indonesia ethanol production. More than 60 sugarcane mills are currently active and produce molasses. Indonesia sugarcane industry is expected to produce 2.2 million tons sugar in 2018/19 from 29.5 million tons of sugarcane (Sugar: World Market and Trade), resulting 1.475 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 complete with ethanol industry.

Indonesia's import restrictions on cheaper, more widely available 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 molasses price. The Bioethanol price fell from IDR 11,049 per liter in January 2017 to IDR 10,210 in June 2018.

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



Source: MEMR, BPH Migas

Trade

Indonesian ethanol exports decreased 10 percent in 2017, from 71 million liters in 2016 to 64 million liters. Industry sources cite increasing prices for molasses in 2017 as well as leading cause of the decline. Most ethanol exports were shipped to the Philippines or Japan. Trade data shows, during Jan-April 2018 period ethanol exports reached 21 million liters, 12 percent higher than the corresponding period in 2017. Post expects ethanol exports to reach 65 million liters in 2018.

Indonesia currently does not import any fuel-grade ethanol and only very limited volumes for other industrial uses. The 30 percent duty on ethanol not only benefits local ethanol distillers, but also the domestic sugar industry, which provides the molasses feedstock. Import opportunities are further limited by a general lack of competition, Pertamina's dominance in the energy sector, and GOI's greater focus on biodiesel supported by the world's largest palm industry. As with many commodities, GOI agricultural policy of "self-sufficiency" remains an over-arching barrier to trade. Even at competitive prices, it seems unlikely Indonesia would embrace ethanol imports, as has been the case with both rice and corn for feed use. Recent declines in the rupiah and concerns over U.S. trade actions have only increased Indonesia's tendency towards protectionist policies and shifted economic focus further towards import substitution.

Production, Supply and Demand Statistics

Ethanol Used as Fuel and Other Industrial Chemicals (Million Liters)										
Calendar Year	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018f**
Beginning Stocks	31	42	36	42	52	39	14	16	15	14
Fuel Begin Stocks	0	0	0	0	0	0	0	0	0	0
Production	172	175	220	205	207	202	205	205	195	200
Fuel Production	2	0	0	0	0	0	0	0	0	0
Imports	0	0	1	0	0	2	0	2	5	5
Fuel Imports	0	0	0	0	0	0	0	0	0	0
Exports	33	49	81	59	86	94	67	71	64	65
Fuel Exports	0	0	0	0	0	0	0	0	0	0
Consumption	128	132	134	135	135	135	136	137	137	138
Fuel Consumption	1	0	0	0	0	0	0	0	0	0
Ending Stocks	42	36	42	52	39	14	16	15	14	16
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
Production Capacity (Million Liters)										
Number of Refineries	12	14	14	15	15	13	14	14	14	14
Nameplate Capacity	288	342	392	378	408	408	408	408	408	408
Capacity Use (%)	60%	51%	56%	54%	51%	50%	50%	50%	48%	49%
Feedstock Use for Fuel (1,000 MT)										
Molasses	7	0	0	0	0	0	0	0	0	0
Market Penetration (Million Liters)										
Fuel Ethanol	1	0	0	0	0	0	0	0	0	0
Gasoline	22,132	23,863	26,447	29,276	30,511	30,925	31,528	32,706	33,034	33,365
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.

The PSO transportation sector (on-road transport) accounts for nearly 90 percent of biodiesel consumed in Indonesia. Whereas the Non-PSO transport sector has a zero percent blend rate and has yet to implement B20, the PSO transport is meeting its 20 percent mandatory blend target.

State-run electric utility PLN is already using B30; however, the effective blending rate is between 8 and 12 percent depending on whether a comparison is made with diesel use in all power generation or only diesel used in high-speed diesel (HSD). PLN usage is primarily in diesel power plants located in remote areas.

In 2017, biodiesel consumption fell 14 percent to 2.572 billion liters due to a technical issue on military vehicles found during the third allocation period. GOI then lowered biodiesel allocation to 1.37 billion liters for May to October 2017 delivery.

Table 10 Biodiesel Allocation 2015-2018

Allocation	Period	No Supplier	Total Allocation (billion liters)
1st	Nov 2015 - April 2016	12	1.87
2nd	May - Oct 2016	16	1.53
3rd	Nov 2016 - April 2017	17	1.53
4th	May - Oct 2017	20	1.37
5th	Nov 2017 - April 2018	21	1.41
6th	May - Oct 2018	19	1.46

***Source**: MEMR*

GOI is preparing to implement B15 for mining (industry sector mandate) and B5 for train transport (Non-PSO sector mandate) this year.

Post expects 2018 consumption to reach 3.3 billion liters, assuming normal conditions, relatively stable domestic demand for transport diesel, and the continued implementation of the CPO fund. Some additional factors that may affect 2018 consumption include:

- GOI plans to implement B25 for PSO transport sector in 2019. This plan aligns with Regulation 12/2015, which indicates that the B30 mandate is scheduled for 2020.

- GOI plans to expand the biodiesel mandate to include mining industry and train sector. A rail test is being conducted by state-owned train company (KAI) on long-haul, heavy train locomotives to see the impact of B20 use on engine performance. GOI expects the trial to complete in July 2018.

In the meantime, funds from the export levy continue to accumulate. Although there is a mandate for 20 percent biodiesel in the PSO transport, non-PSO transport, industry and electricity sector, the disbursement of funds from the BPDPKS fund is only authorized for PSO transport and electricity. The disbursement of funds requires a higher-level government decree beyond the mandated regulation. As a result, until now the mandate for non-PSO transport and industry has not been enforced. This appears likely to change as the government looks to tap the fund to extend subsidized biodiesel production to other sectors and further utilize excess biodiesel production capacity.

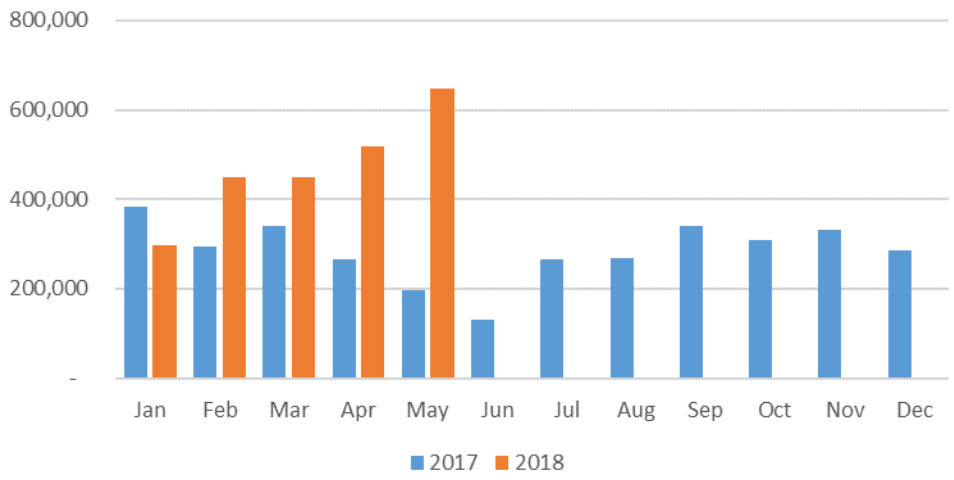
Production

Based on MEMR data, Indonesia biodiesel production decreased from 3.656 billion liters in 2016 to 3.416 billion liters in 2017. The declining production in 2017 was closely linked with the reduction in domestic consumption since almost 95 percent of production was consumed domestically.

Production during January to May 2018 reached 2.3 billion liters, 59 percent higher than corresponding period in 2017. Post expects 2018 production to reach 3.9 billion liters due to increased overseas

demand (mostly from Europe to meet RED goals, but some of which may come from discretionary blending with higher crude oil prices) and the expectation of higher domestic use.

Figure 6 Indonesia Biodiesel Production (KL)



***Source**: Aprobi*

Recently MEMR released new biodiesel allocations for May to October 2018 delivery period with total quantity of 1.46 billion liters. A total of 19 producers received contracts for this period with volume allocations varying from 38 to 220 million liters.

Indonesian biodiesel production capacity has grown from about 4.9 billion liters in 2012 to about 11.5 billion liters in 2017. While capacity has grown significantly since 2012, actual production growth has been much slower resulting in a notable decline in capacity use now estimated around 30 percent.

Low production capacity use demonstrates that producers rely heavily on subsidy scheme to run profitable operations. The overall market viability depends heavily on the global price of crude oil but also CPO prices. Indonesian biodiesel prices decreased 13 percent from early 2017 to June 2018, following the movement of CPO price. Decreasing biodiesel price creates opportunity to narrow the amount of incentive covered by BPDPKS, especially as oil prices fall, which has recently been the case.

Trade

Indonesia does not import biodiesel other than small amounts from Malaysia on occasion. However, Indonesia is one of the largest world exporters, and competed with Argentina as the top exporter from 2011 thru 2014. The EU, United States and on occasion China have been its largest overseas markets. Last year, exports suffered a severe decline and the worst showing in many years with arbitrage to the EU open only part of the year and no sales to the United States.
Indonesian biodiesel exports in 2017 fell to the lowest level since 2006, reaching only 187 million liters.

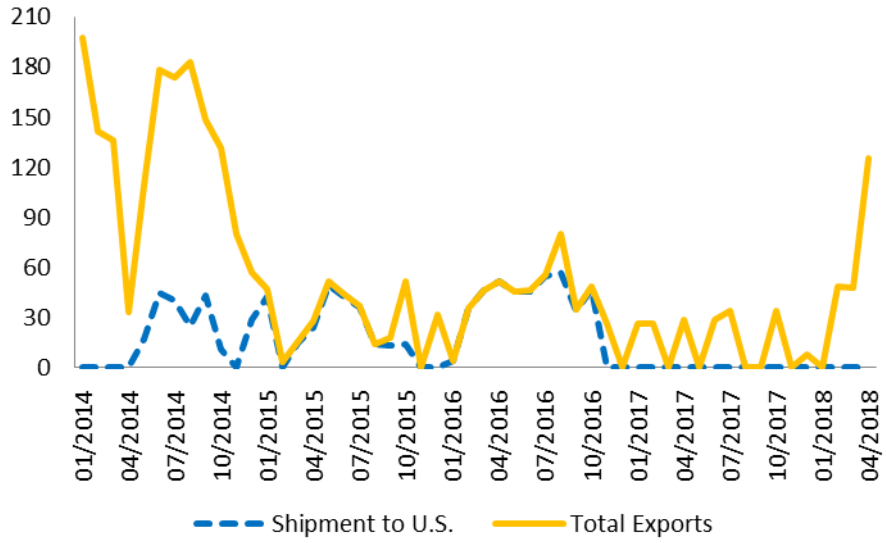
Exports will recover to some extent this year. Trade data indicates shipments during January to April 2018 have already reached more than 200 million liters. Industry sources reported shipments to EU resumed in May, following the EU's settlement of a WTO anti-dumping case in March 2018. In addition to Spain and Italy, biodiesel exports destinations in early 2018 include Peru and Malaysia. Post

expects 2018 exports to reach one billion liters supported largely by large gains to Europe and other markets.

Indonesian exports of biodiesel to the U.S. ended in November 2016, following a lapse in the $1/gallon blender tax credit. Subsequently, the U.S. Department of Commerce and U.S. International Trade Commission launched antidumping (AD) and countervailing duty (CVD) investigations, and imposed high preliminary duties, which have now been finalized. 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 be closed until 2022 if the duties remain in place.

In February 2018, GOI responded to the 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.

Figure 7. Indonesia biodiesel monthly shipments 2014-2016 (million liter)



***Source**: GTA*

Stocks

Indonesia biodiesel stocks are up sharply since 2014, following sharply lower export sales and the start of the new mandate program in late 2015. However, allocations under new mandate program have been running below expectations, especially on non-subsidy diesel, which has in turn kept stocks high and rising. Much higher exports in 2018 should lower stocks somewhat.

Production, Supply and Demand Statistics

Biodiesel (Million Liters)										
Calendar Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018f
Beginning Stocks	15	22	16	29	27	11	559	1,009	1,181	1,839
Production	330	780	1,812	2,270	2,950	3,962	1,653	3,656	3,416	3,900
Imports	0	0	0	5	24	0	0	0	0	0
Exports	204	563	1,440	1,608	1,942	1,569	343	476	187	1,000
Consumption	119	223	359	669	1,048	1,845	860	3,008	2,572	3,300
Ending Stocks	22	16	29	27	11	559	1,009	1,181	1,839	1,439
BalanceCheck	0	0	0	0	0	0	0	0	0	0
Production Capacity (Million Liters)										
Number of Biorefineries	20	22	22	22	26	26	27	30	32	31
Nameplate Capacity	3,128	3,921	3,921	4,881	5,670	5,670	6,887	10,898	11,547	11,357
Capacity Use (%)	10.5%	19.9%	46.2%	46.5%	52.0%	69.9%	24.0%	33.5%	29.6%	34.3%
Feedstock Use for Fuel (1,000 MT)										
Crude Palm Oil (CPO)	304	718	1,667	2,088	2,714	3,645	1,521	3,363	3,143	3,588
Market Penetration (Million Liters)										
Biodiesel, on-road use	95	178	287	535	838	1,476	665	2,621	2,272	2,950
Diesel, all surface transport	24,216	27,125	26,030	29,528	28,649	27,220	25,433	24,307	25,666	26,146
Blend Rate (%)	0.4%	0.7%	1.1%	1.8%	2.9%	5.4%	2.6%	10.8%	8.9%	11.3%
Diesel, total use	33,625	36,450	37,497	37,743	36,124	34,651	30,912	28,974	29,264	29,557

Source and note: MEMR, GTA (trade data), Post estimation

Section VI. Advanced Biofuels

The development of 2nd generation biofuels is led by Indonesia Institute of Science (LIPI). Research is mainly focused on producing lignin cellulose ethanol from palm solid wastes, and harnessing waste products from palm oil plantations. The institute currently operates a small plant capable of producing fuel-grade ethanol from empty palm fruit bunches.

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 2017, specifically for 2009-2016. Year 2017 and 2018 are Post estimates based on Indonesia economic growth (2017) and World Bank (2018) forecasts.

Bioethanol

Bioethanol market index prices in Figure 5 based on MEMR publications. MEMR calculate Bioethanol market index price uses 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	2017	2018	2017	2018
Jan	1,864	1,625	11,049	10,090	6,550	6,550
Feb	1,864	1,625	11,036	10,059	6,550	6,550
Mar	1,864	1,625	11,026	10,083	6,550	6,550
Apr	1,864	1,625	11,028	10,140	6,550	6,550
May	1,864	1,625	11,028	10,147	6,550	6,550
Jun	1,864	1,625	11,020	10,210	6,550	6,550
Jul	1,830	1,533	10,874	9,900	6,550	6,550
Aug	1,830		10,885		6,550	
Sep	1,731		10,475		6,550	
Oct	1,660		10,168		6,550	
Nov	1,625		10,074		6,550	
Dec	1,625		10,088		6,550	

Source: *MEMR*

Biodiesel

Production and consumption figures are based on MEMR statistics. Trade figures are based on Global Trade Atlas (GTA), 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 biodiesel market index price that 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	2017	2018	2017	2018
Jan	9,082	7,841	9,362	8,000	5,150	5,150
Feb	9,238	7,810	9,493	7,962	5,150	5,150
March	9,089	8,029	9,358	8,161	5,150	5,150
Apri	8,463	8,230	8,815	8,356	5,150	5,150
May	8,129	8,118	8,520	8,261	5,150	5,150
Jun	8,210	7,954	8,230	8,140	5,150	5,150
July	8,016	7,740	8,131	7,949	5,150	5,150
Aug	7,712		7,871		5,150	
Sept	7,822		7,965		5,150	
Oct	8,462		8,518		5,150	
Nov	8,411		8,490		5,150	
Dec	8,406		8,491		5,150	

Source: *MEMR*

The following table shows CPO reference price that 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	2017	2018	2017	2018
Jan	788	697	3	0	0	0
Feb	816	694	18	0	0	0
March	826	709	18	0	0	0
Apri	763	712	3	0	0	0
May	732	703	0	0	0	0
Jun	723	687	0	0	0	0
July	726	678	0	0	0	0
Aug	698		0		0	
Sept	697		0		0	
Oct	740		0		0	
Nov	738		0		0	
Dec	743		0		0	

Source: *Ministry of Trade (MOT) and MOF*