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**Report Highlights:**

The Covid 19 pandemic not only affected biodiesel consumption, but also delayed the implementation of B20 mandate in Malaysia. Biodiesel production in 2021 is expected to drop by 16 percent to 1.05 billion liters, as exports are negatively impacted by the price of CPO at an all time high throughout 2021. The Government of Malaysia (GoM) has revised its B20 implementation date, originally planned for the first quarter of 2020, to mid-2021 and now to mid-2022. This date may slip further, given political uncertainties, high CPO price, and the budget deficit faced by GoM. Exports of biodiesel in 2021 are projected at 315 million liters, a decrease of 23.5 percent compared to the previous year's 412 million liters. With no domestic feedstock industry to support it, Malaysia has no fuel ethanol program, despite associated human health and climate benefits.

## Section I. Executive Summary

Biodiesel production for calendar year 2021 is projected at 1.05 billion liters. This 16 percent lower level of production, compared to the previous year, is based on a major drop in international and domestic demand for diesel transport fuel due to the COVID-19 pandemic, and a price spread favoring fossil diesel over palm oil-based biodiesel that has collapsed China's discretionary demand. The price of Crude Palm Oil (CPO) is at all-time high in calendar year 2021, and this dynamic is expected to continue until the first quarter of 2022. Government support policies have become more important to maintain demand for biodiesel, with higher crude oil (and thus higher fossil diesel) prices offset by higher biodiesel feedstock prices. Unlike some countries, the 10 percent blending rate has so far been maintained despite inflationary impact on domestic diesel prices.

The Government of Malaysia (GoM) had intended to roll out a B20 mandate (i.e., a minimum 20 percent biodiesel blend rate for standard diesel fuel) by the first quarter of 2020. However, media reports emerged in February 2020 that the GoM had delayed its B20 implementation date to mid-2021. More recent reports indicate a planned roll out by mid-2022. With CPO's price premium over fossil diesel markedly higher throughout CY2021, the cost of maintaining the B10 blend mandate has also risen. As a result, multiple analysts expect a national B20 rollout won't be realized until potentially by mid or by the end of 2022 when the move is supported by a return to price relationships more favorable for palm oil-based biodiesel.

The recent surge in CPO's price is expected to continue until the first quarter of 2022 due to reduced CPO production from a labor shortage and a downward trend in surplus supply. These factors contribute to the GoM decision not to pursue the higher B20 blend mandate which would also have further inflationary impact. It is worth noting that the main reason for GoM to introduce a higher blend mandate in 2020 is to stabilize the price of CPO and to reduce surplus supply.

Total 2021 consumption of biodiesel is forecast at 863 million liters (720 million liters from on-road use and 143 million liters from industrial use), an increase of 8 percent from the previous year. On road use of B10 increased by 8 percent as GOM gradually opens the economy, allowing more vehicles on the road. Industrial usage, however, increased by 10 percent with the introduction of a B7 biodiesel mandate for industrial users from July 2019. Industrial use is also recovering slowly as the GoM gradually reopens the economy, with full recovery expected in mid-2022.

With no expected change in blending levels, the 2021 increase in biodiesel use matches the increase in the diesel fuel pool. Biodiesel exports for the first seven months of 2021 (Jan – July) reached 178 million liters, roughly 29 percent lower than the 279 million liters recorded during the same period of 2020. The COVID-19 pandemic continues to negatively impact international diesel demand, and China's discretionary biodiesel demand is sharply reduced as shown in Table 7 and 8 below. Post forecasts total 2021 exports at roughly 315 million liters. The European Union remains the largest importer of Malaysian biodiesel.

Malaysia does not have a fuel ethanol program because it does not have the domestic feedstock industry to support it. The country has been unwilling to create a program that would heavily or solely rely on imported feedstock or ethanol, despite the benefits of such a program for improved human health and

lower carbon emissions tied to climate change. The recent increase registered in ethanol import statistics are for the pharmaceutical industry, where ethanol is used as the main ingredients for disinfection and sanitization purposes.

## Section II. Policy and Programs



### Mandates

The GoM released its National Biofuel Policy in 2006 with the stated objectives of utilizing environmentally friendly and sustainable energy sources to reduce dependency on fossil fuels, and to help stabilize the palm oil industry. In 2007, the Malaysian Parliament passed the Biofuel Industry Act, which included provisions from the National Biofuel Policy, to implement a biodiesel blend mandate. The Malaysian Palm Oil Board (MPOB) under the Ministry of Plantation Industries and Commodities (MPIC) is the agency entrusted to implement the Palm Biodiesel program in Malaysia. Although the initial plan was to implement a five percent blend (B5) by 2008, full national implementation covering both Peninsular and East Malaysia was not achieved until 2014. With growing CPO stocks and declining CPO prices, the GoM decided to increase the mandated CPO blend rate for the transportation sector from five percent to seven percent in 2015, but the B7 goal was not fully met until 2016.

To further promote domestic consumption of biodiesel in the transportation sector, the GoM released a new five-year strategy in late 2015 referred to as the “Eleventh Malaysia Plan (2016-2020)” to increase the blend rate in stages to 20 percent by 2020. Due to objections from the transportation industry reportedly related to the high cost of retrofitting vehicles to accommodate a blend rate higher than seven percent, progress on this plan has been slow.

The move to a B10 mandate, originally scheduled for 2016, was not actually achieved until February 2019. A B20 rollout was originally scheduled for the first quarter of 2020. However, media reports emerged in February 2020, stating that the Ministry of Plantation Industries and Commodities had revised its B20 implementation date to mid-2021, in stages throughout Malaysia with full implementation by July 2021. However, the state of Sarawak in Borneo (which represents a very small portion of total Malaysian fuel consumption) began a B20 mandate in September 2020. With the COVID-19 pandemic continuing to ravage the Malaysian economy (which has dramatically reduced demand for biodiesel), the high cost of maintaining a blend mandate as well as high CPO export prices in recent months (making it attractive to sell CPO overseas than blend it for biodiesel domestically), multiple analysts expect a national B20 rollout won’t be realized until mid-2022.

While the vast majority of domestically produced biodiesel is used by the transportation industry, the GoM also requires the use of it in the industrial sector (mainly to heat boilers and generate electricity). In July 2019, the GoM rolled-out a seven percent blend mandate for the industrial sector.

## Planned and Actual Roll-Out of Blending Requirements

Blend	Transportation Sector*		Industrial Sector**	
	Planned Government Roll-out	Actual Roll-Out	Planned Government Roll-Out	Actual Roll-Out
<b>B5</b>	2008	2014 (Nationwide)	None	None
<b>B7</b>	January 1, 2015	2016 (Nationwide)	Early 2019	July 2019
<b>B10</b>	Early 2019	February 1, 2019	N/A	N/A
<b>B20</b>	2020	Pending (currently scheduled for mid-2022)	N/A	N/A

Table 1.

\*Cars, trucks, vans, pickups, and small fishing vessels

\*\*Diesel boilers

## Price Support Subsidies

To ensure the nation's biofuel program is financially viable, the GoM uses an "Automatic Pricing Mechanism" (APM) to set biodiesel prices. Although the GoM has not published how the APM is calculated, researchers at the University of Technology Malaysia (UTM) estimated how the subsidy functioned when the mandate was at seven percent. Details on this widely accepted study can be found at: <http://palmoilis.mpob.gov.my/publications/OPIEJ/opiejv11n1-hanafi.pdf>.

The following table depicts biodiesel subsidies based on the UTM research and GoM published prices for the current 10 percent blend mandate.

## Estimated Subsidy on Ten Percent Blend Biodiesel from January to August 2021

Time Period	RBD Olein US\$/MT	Brent Oil Price US\$/Barrel	Estimated Diesel Price in US\$/Liter*	Estimated B10 Biodiesel price in US\$/Liter**	B10 Price in US\$/Liter Sold at Local Petrol Station ***	Subsidy (Percent difference)
Jan	989.00	54.55	0.42	0.47	0.52	9.58
Feb	1,010.50	61.96	0.48	0.52	0.52	-0.72
Mar	1,043.00	65.19	0.50	0.55	0.52	-5.62
Apr	1,056.50	64.77	0.50	0.54	0.52	-5.29
May	1,189.00	68.04	0.52	0.58	0.54	-7.52
June	1,015.50	73.07	0.56	0.60	0.54	-11.06
July	1,049.50	74.39	0.57	0.61	0.54	-13.33
Aug	1,143.50	72.49	0.56	0.60	0.52	-17.16

Table 2

\*Diesel price based on brent crude oil (petroleum) monthly price – by Index Mundi

<https://www.indexmundi.com/commodities/?commodity=crude-oil&months=60>

\*\* Estimated price based on UTM APM calculation inclusive of operational cost, oil companies' margin and station dealers' margin.

\*\*\*As of January 2019, the GoM administration has capped the maximum price of the mandated biodiesel blend at a fixed rate of 2.18 Malaysian Ringgit (RM). Exchange rate on September 07, 2021: RM 4.20 = USD \$1.00

### Estimated levy\* collected by MPOB to finance Biodiesel Mandate

	CPO produced in CY (ton)	Replanting and Biodiesel levy collected in US\$
2021e	18,000,000	\$10.16 million
2020	19,140,613	\$9.46 million
2019	19,858,367	\$9.81 million
2018	253,709,833	\$8.95 million
2017	258,951,303	\$9.14 million

\* The levy is known as “CESS” locally. 2021e indicates Estimated CY production.

To finance the development of palm oil industry, GOM collects a levy from every ton of CPO produced by millers. The CESS Order, which is stipulated under the Malaysian Palm Oil Board Act 1998 (Act 582) is a fee levied by the Malaysian government to support and develop the palm oil industry in Malaysia. Since the introduction of the levy, the amount of levy paid by millers per ton of CPO produced had been steadily increased from RM11 (\$2.60) in 2000 to RM16 (\$3.76) in 2021. Around 80 percent of the levy collected is allocated for R&D, regulatory, and promotional activities, 15 percent for replanting and biodiesel subsidies, and 5 percent for environmental protection initiatives. Details on the levy rate is available at this web link: [http://led.mpob.gov.my/?page\\_id=241](http://led.mpob.gov.my/?page_id=241).

Until December 2014, all fuels dispensed at Malaysian commercial refueling stations were subsidized by the GoM. Starting in January 2015, fuel prices began to be based on the Mean of Platts Singapore (MOPS) rolling average price of crude oil during the previous week and adjusted on a weekly basis, with price caps built in. The price of RON95 (the most frequently used unleaded vehicle gasoline in Malaysia) and B10 biodiesel are currently capped at RM 2.08/liter and RM 2.18/liter, respectively. Fuel subsidies kick in if the price of these fuels surpasses these established ceiling rates. The price of RON97 (a higher-octane gasoline option) is floated based on the market price without any cap while the price of liquified petroleum gas (LPG) has been fixed at RM 1.16 since March 2015.

### Retail Prices of Petroleum Products per Liter from July - September 2021

Period	RON95		RON97		Diesel B10		LPG	
	RM	USD	RM	USD	RM	USD	RM	USD
July 1-7	2.05	0.49	2.69	0.64	2.15	0.51	1.16	0.28
July 8-14	2.05	0.49	2.70	0.64	2.15	0.51	1.16	0.28
July 15-21	2.05	0.49	2.73	0.65	2.15	0.51	1.16	0.28
July 22-28	2.05	0.49	2.73	0.65	2.15	0.51	1.16	0.28
July 29- Aug 4	2.05	0.49	2.74	0.65	2.15	0.51	1.16	0.28
Aug 5-11	2.05	0.49	2.74	0.65	2.15	0.51	1.16	0.28
Aug 12-18	2.05	0.49	2.74	0.65	2.15	0.51	1.16	0.28
Aug 19-25	2.05	0.49	2.74	0.65	2.15	0.51	1.16	0.28
Aug 26- Sept 1	2.05	0.49	2.72	0.65	2.15	0.51	1.16	0.28
Sept 2- 8	2.05	0.49	2.72	0.65	2.15	0.51	1.16	0.28
Sept 9-15	2.05	0.49	2.73	0.65	2.15	0.51	1.16	0.28

Table 3.

Notes: Exchange rate on September 07, 2021 @ RM4.21 = USD\$1.00

In 2014, the GoM allocated 79 million USD to set up blending facilities and infrastructure to accommodate the country’s biodiesel mandate ambitions. As of November 2020, there are nine petroleum blending facilities serving 4,000 petrol stations (100% of the retail market) throughout Malaysia. Along with helping build the facilities, the allocated funds are also used to help subsidize the current ten percent blend mandate. The GoM replenishes these biodiesel funds on a regular basis by utilizing the levy collected on CPO production and proceeds from normal petroleum diesel sales.

To ensure the industry is able to cater for the need of up to a B30 mandate in future, five petroleum companies in Malaysia – Petronas, Shell, Petron Malaysia Refining, Chevron Malaysia, and Boustead Petroleum Marketing - agreed to upgrade 35 petroleum blending facilities across Malaysia from 2020 onwards. To date, nine facilities have been upgraded.

### Renewable Energy Policy and Environmental Sustainability

The implementation of the Renewable Energy (RE) policy in Malaysia is under the purview of the Ministry of Science, Technology and Innovation (MOSTI) through the Sustainable Energy Development Authority (SEDA). Further details on SEDA function, policy and programs is available at their website at [www.seda.gov.my](http://www.seda.gov.my). From the data published by SEDA, the number of approved applicants to receive RE resources offered up to the second half (H2) 2021 include:

	RE Resources	No of applicants	Capacity (MW)
1	Small Hydro	66	601.48
2	Solar PV	12,284	442.32
3	Biomass	45	400.64
4	Biogas	128	222.29
5	Geothermal	1	37
	Total	12,524	1,703.72

Table 4: total number of applicants for RE quota offered up to H2 2021

Most of the biomass and biogas applicants are from the palm oil industries as they have abundant and consistent supply of empty fruit bunch (EFB) and Palm Oil Mill Effluent (POME) as the feedstocks.

The table below shows the annual CO2 emissions reduction (in tons) from RE projects that have achieved commercial operations from 2012-2018.

RE	Year								Total (tCO2)	% of Total
	2012	2013	2014	2015	2016	2017	2018			
Solar PV	5,557.34	40,143.58	133,778.05	188,629.69	238,029.52	281,846.30	290,633.21	1,178,617.69	42.55	
Biomass	57,852.32	119,904.33	109,412.72	140,879.94	146,141.06	152,951.20	120,893.91	848,035.49	30.61	
Biogas	5,604.57	16,892.96	35,583.36	41,689.84	71,325.49	142,997.75	149,132.57	463,226.54	16.72	
Small Hydro	19,842.68	54,006.53	45,653.83	36,733.96	34,153.05	50,512.81	39,488.76	280,391.62	10.12	
Total	88,856.91	230,947.39	324,427.96	407,933.44	489,649.12	628,308.06	600,148.48	2,770,271.34	100	

Table 5: Annual CO2 emissions reduction (in Tons) from RE projects that have achieved commercial operations from 2012-2018

Source: SEDA ([www.seda.gov.my](http://www.seda.gov.my))

From the above table, the cumulative reduction of CO<sub>2</sub> emissions from the implementation of Feed In-Tariffs (FIT) in Malaysia shows a reduction of 2,770,271.34 tons of CO<sub>2</sub> over a 7 year period. Biogas and biomass, which mainly originate in the palm oil sector, contributed to the reduction of 1,311,262.03 tons of CO<sub>2</sub>.

At the 23<sup>rd</sup> Conference of the Parties to the United Nations Framework Convention on Climate Change (COP23) in November 2017, the Malaysian Minister of Water, Land, and Natural Resources highlighted Malaysia's commitment to reduce carbon emission by over 13 million tons (carbon dioxide equivalent) by 2030. One of the key mitigation actions in this "Energy Efficiency Action Plan" is the use of CPO in blended petroleum diesel (3.3.1.6- Palm oil-based fatty acid methyl ester-Biodiesel). Details of this commitment can be found at: <https://unfccc.int/documents/267685>.

During COP26, Malaysia was not one of the signatories for the Global Methane Pledge; however, Malaysia has committed to maintain at least 50 percent of its area under forest and tree cover. Based on a 2016 study, methane emissions contributed 17 percent of greenhouse emissions in Malaysia, mostly from the oil and gas industries. Instead, Malaysia focused on negotiations around the common timeframe for the Nationally Determined Contributions (NDC), discussing Article 6 of the Paris Agreement covering instruments for carbon markets, climate finance for developed countries to share of financing in combating climate change, and transparency in countries reporting on climate targets and emissions.

### **POME Management**

Palm Oil Mill Effluent (POME) is the waste from the milling process of oil palm fresh fruit bunch (FFB) to produce CPO. If untreated, POME causes water pollution and methane release to the atmosphere. Industry standard practice is to treat POME in open wastewater ponds, and once it reaches the minimum permitted level of Chemical Oxygen Demand (COD) and Biological Oxygen Demand (BOD) set by the local authority, it is released. The sludge from the pond then dried and used as fertilizer or mix as an aggregate in building materials. As this process releases GHG, especially methane gas, into the environment, some millers trapped these gases to generate electricity. This electricity may either be used at the mill or connected to the grid for surrounding community.

Based on Malaysia's biennial update report to the United Nations, in 2010 under GOM's Economic Transformation program Entry Point Project initiative on Developing Biogas Facilities at Palm Oil Mills, GoM mandated that from January 1, 2014, all new mills and all existing mills applying for expansion must install methane capture facilities or methane avoidance facilities. Funding for the facilities come from private sources, with estimated investment of USD\$0.65 billion. As of 2017, 104 out of 454 palm oil mills were fully equipped with methane capture facilities, and through this initiative an emission reduction of 2,277.84 Gg CO<sub>2</sub> eq was achieved in 2016.

In addition to methane captured, another initiative taken to reduce GHG is through filtering solid waste from POME by using filter belt press technology. The filter belt press is a device used to chemically enhance the separation of POME into a filtrate (wastewater) and a solid press cake (solid organic matter). With less or no solids from POME present in the water, the formation of methane gas is reduced and the solid press cake produced can be used as organic fertilizer.



According to a study by CPO producer KLK, Neste, International Sustainability and Carbon Certification – ISCC and IDH Sustainable Trade Initiative, this system can reduce the mill’s daily emission of CO<sub>2</sub>e by 20.6 tons, equivalent to 0.13kg of CO<sub>2</sub>e per 1 kg of CPO produced. Compared to a methane capture facility, the filter belt press technology incurred low investment and running cost and applicable to any size of mills currently in operational.

### **Gasoline and Diesel Markets**

Sales of new vehicles in 2020 dropped by 12.3 percent to 529,424, compared to 604,000 units in 2019. According to market analysts, for calendar year 2021, sales are forecast to drop to 500,000 units due to the COVID-19 pandemic and economic hardship associated with it. To stimulate the local car industry in 2020, the GoM has dramatically reduced the sales tax on new car purchases till the end of calendar year 2021.

Gasoline-powered vehicles are the most common in Malaysia, accounting for over 80 percent of new vehicle sales. Diesel-powered vehicle sales are growing slowly. Most diesel-run vehicles are trucks, buses, and pick-ups.

As stated in the “Price Support Subsidies” section above, there are two types of gasoline available in the Malaysian consumer fuel market, RON95 and the higher octane RON97. The price differential between the two has been roughly RM 0.30 or \$0.08 USD in recent months. For diesel, in addition to the ten percent blend (B10) biodiesel, many petrol retailers also offer “Euro5” diesel to consumers as an option. “Euro5” refers to the European exhaust emission standards which set limits on emissions of unhealthy pollutants from the exhaust system of motor vehicles. The other fuel source available for on-road transport is liquid petroleum gas (LPG) for vehicles retro-fitted with a natural gas propulsion system, commonly used by taxis and inter-city buses.

Although hybrid and electric vehicles gain popularity among car buyers, lack of GoM incentives, infrastructure and unfavorable tax structure limit the number of such vehicles on the road. Most of the hybrid and electric vehicles are from well-known established premium brands such as BMW, Mini, Mercedes Benz, Volvo, and Audi which are out of reach of ordinary Malaysian consumers. As of August 2021, press reports indicated just 500 charging stations spread throughout the country.

Based on research by an automotive publication company, there are less than 500 battery electric vehicle (BEV) registered in Malaysia in 2020. Lack of government incentive and unfavorable tax for BEV hindered the adoption of BEV in Malaysia.\* Unlike Indonesia, Thailand, and Singapore, Malaysia does not have clear direction and policy for the adoption of EV.

The Ministry of Transport Malaysia does not publish the number of electric or hybrid vehicle ownership in Malaysia.

\*<https://www.wapcar.my/news/how-many-evs-are-there-on-malaysia-roads-slightly-under-500-which-brand-leads-31398>



## Effect of the COVID-19 Pandemic on the Malaysian Gasoline and Diesel Market

Though the GoM relaxed the movement control policies in 2021, allowing certain portions of the economy to operate at half capacity and some at 20 percent of workforce, inter-state and district travels without police permit are still banned. This impacted the demand for domestic consumption of gasoline and biodiesel, which have yet to recover to the pre-pandemic level. Analysts expect on-road diesel use to recover around eight percent from 6.64 billion liters in 2020 to an estimated 7.17 billion liters in 2021.

### Malaysia Fuel Use History

Fuel Use History (Million Liters)										
Calendar Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021f
<b>Gasoline Pool 1/2/</b>	14,008	16,350	16,413	16,541	17,325	17,359	16,847	16,728	14,473	16,210
<b>Diesel Pool 1/</b>	10,526	10,703	11,367	10,489	10,352	10,502	10,913	10,639	9,482	10,240
On-road	7,368	7,492	7,957	7,342	7,246	7,351	7,639	7,447	6,637	7,168
Agriculture	421	428	455	420	414	420	437	426	379	410
Construction & Mining	0	0	0	0	0	0	0	0	0	0
Shipping & Rail	632	642	682	629	621	630	655	638	569	614
Industry	2,105	2,141	2,273	2,098	2,070	2,100	2,183	2,128	1,896	2,048
Heating	0	0	0	0	0	0	0	0	0	0
<b>Jet Fuel Pool 1/3/</b>	3,275	3,894	4,102	4,071	3,922	4,183	4,054	4,024	2,265	2,674
<b>Fuel Pools Total 1/</b>	27,809	30,947	31,882	31,101	31,599	32,044	31,814	31,391	26,220	29,124

Table 4.

Notes: 1/ Fuel pools are defined as fossil fuels plus all "bio-components" (biofuels) as well as MTBE if used in gasoline; 2/ Excludes 'aviation' gasoline; 3/ Interior flights + outbound international flights; f = forecast  
Source: Malaysia Energy Statistics Handbook 2020 with updated figures of 2018 fuel consumption data and estimate from EIA on fuel projection

## Section III. Ethanol

### Malaysia's Ethanol Supply and Demand

Ethanol Used as Fuel and Other Industrial Chemicals (Million Liters)										
Calendar Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021f
<b>Beginning Stocks</b>	0	0	0	0	4	4	4	4	0	2
Fuel Begin Stocks	0	0	0	0	0	0	0	0	0	0
<b>Production</b>	0	0	0	0	0	0	0	0	0	0
Fuel Production	0	0	0	0	0	0	0	0	0	0
<b>Imports</b>	10	10	11	14	11	11	11	20	20	18
Fuel Imports	0	0	0	0	0	0	0	0	0	0
<b>Exports</b>	0	0	1	0	0	0	0	11	0	0
Fuel Exports	0	0	0	0	0	0	0	0	0	0
<b>Consumption</b>	10	10	10	10	11	11	11	13	18	18
Fuel Consumption	0	0	0	0	0	0	0	0	0	0
<b>Ending Stocks</b>	0	0	0	4	4	4	4	0	2	2

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

Table 5.

Notes: *f* = forecast, beverage ethanol is excluded

Source: Trade Data Monitor, HSCODE: 220720 – ethyl alcohol and other spirits, denatured of any strength

Although there are sugarcane plantations in Malaysia, a lack of economies of scale and high costs make ethanol production using cane or molasses untenable. Beyond these considerations, the supply of sugarcane is simply insufficient for any fuel ethanol program of scale given existing domestic demand in sugar milling, molasses for feed as well as potable and industrial uses for ethanol. A small amount of ethanol using POME is produced in palm plantations throughout the country to generate electricity. However, this production is not on a commercial scale. Malaysia has been unwilling to create a fuel ethanol program that would be heavily or solely reliant on imported feedstock or ethanol despite benefits of such a program that would improve air quality to provide health benefits and lower carbon emissions tied to climate change.

## Section IV. Biodiesel

### Malaysia's Biodiesel Supply and Demand

Biodiesel (Million Liters)										
Calendar Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021f
<b>Beginning Stocks</b>	18	27	62	42	76	70	150	155	405	444
<b>Production</b>	235	510	475	743	595	854	1,100	1,778	1,249	1,050
<b>Imports</b>	0	0	0	0	0	0	0	0	0	0
<b>Exports</b>	31	190	95	194	91	256	560	663	412	315
<b>Consumption</b>	195	285	400	515	510	518	535	865	798	863
<b>Ending Stocks</b>	27	62	42	76	70	150	155	405	444	316
Balance Check	0	0	0	0	0	0	0	0	0	0
Production Capacity (Million Liters)										
Number of Biorefineries	14	13	18	18	17	16	15	19	19	19
Nameplate Capacity	2,101	2,120	3,109	2,527	2,248	2,239	2,174	2,426	2,426	2,442
Capacity Use (%)	11.2%	24.1%	15.3%	29.4%	26.5%	38.1%	50.6%	73.3%	51.5%	43.0%
Feedstock Use for Fuel (1,000 MT)										
Crude Palm Oil (CPO)	216	469	437	684	535	786	1,012	1,636	1,149	966
Market Penetration (Million Liters)										
Biodiesel, on-road use	195	285	400	515	510	518	535	745	665	720
Biodiesel, industrial use	0	0	0	0	0	0	0	120	133	143
Diesel Pool, on-road use 1/	7,368	7,492	7,957	7,342	7,246	7,351	7,639	7,447	6,637	7,168

Blend Rate (%)	2.6%	3.8%	5.0%	7.0%	7.0%	7.0%	7.0%	10.0%	10.0%	10.0%
Diesel Pool, total 1/	10,526	10,703	11,367	10,489	10,352	10,502	10,913	10,639	9,482	10,240

Table 6.

Notes: 1/ Fuel pools are defined as fossil fuels plus all "bio-components" (biofuels) blended with fossil diesel;

f = forecast

Source: MPOB – Biodiesel Export and Production Capacity data,

MPIC – Biodiesel Imports data

Malaysia Biodiesel Association – Biodiesel Production

Malaysia Energy Commission – Diesel Pool,

FAS Kuala Lumpur Analysis – Consumption, Ending Stocks and Feedstock Use.

## Production

With a reported 19 processing plants online in 2020, production of biodiesel in Malaysia is significantly below full annual capacity of 2.5 billion liters. Due to industry overcapacity, the GoM is not issuing licenses for new processing plants and Post does not expect further expansion over the next multiple years.



Palm Methyl Ester (biodiesel)



Palm Oil Fresh Fruit Bunch (feedstock)

Total national production of biodiesel for calendar year 2021 is projected at roughly 1.05 billion liters. This significantly lower level of production, compared to the previous year at 1.249 billion liters and 1.778 billion liters the year before that, is based on a major drop in international & domestic demand due to economic slowdown resulting from the COVID-19 pandemic. Also impacting the incentive to produce B10 biodiesel is the current large price differential between CPO and fossil diesel.

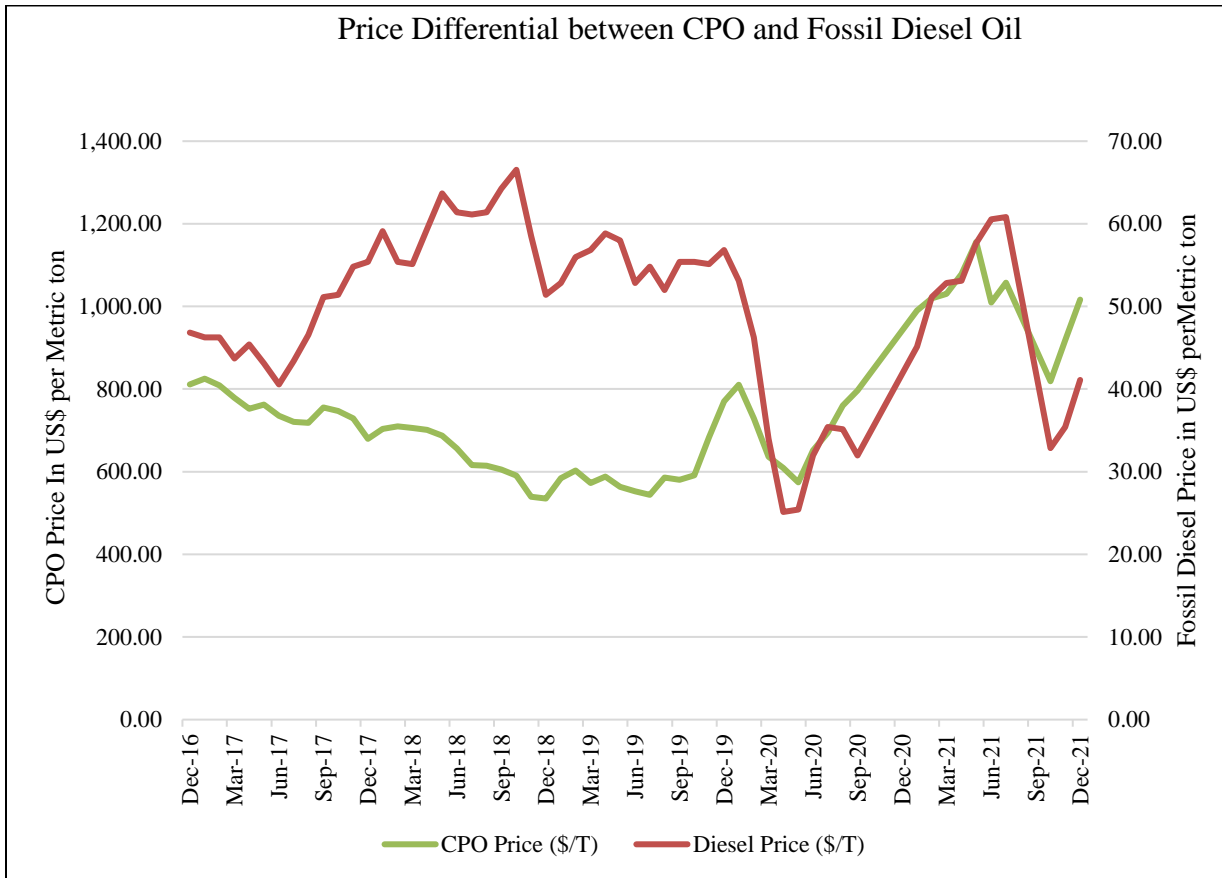


Table 7.  
Source: Indxmundi.com

**Consumption**

Total calendar year 2021 consumption of biodiesel is forecast at 863 million liters (720 million liters from on-road use and 143 million liters from industrial use), an increase of 8 percent from the previous year, due to some growth in the diesel pool and power demand with the gradual opening up of economic sectors by GOM.

**Trade**

According to MPOB data, exports for the first seven months of calendar year 2021 (Jan – July) reached 178 million liters, 28.5 percent lower than the 249 million liters recorded during the same period of 2020. The COVID-19 pandemic continues to negatively impact international diesel demand and China’s discretionary demand has sharply reduced due to price spreads favoring fossil diesel use over palm-oil biodiesel. Post forecasts total calendar year 2021 exports at 315 million liters. The European Union remains the largest importer of Malaysian biodiesel, accounting more than 70 percent of total biodiesel export.

**Export of Biodiesel to major destinations: 2020/2019 (Million liters)**

Country	2020	2019	Difference (vol)
European Union	306	483	-177
Peru	45	0	45
China	33	137	-104
Japan	16	18	-2
Singapore*	6	0	6
Switzerland	5	6	-1
Hong Kong	1	0	1
South Korea	0.1	0.1	0
USA	0.03	0.03	0
India	0.02	4	-3.98
Australia	0	0.02	-0.02
Indonesia	0	15	-15
Taiwan	0	0.1	-0.1
Vietnam	0	0.16	-0.16
Others	0.002	0.02	-0.018
Total	412.152	663.43	-251.278

\*Mainly for re-export

Table: 8 Source: MPOB

In early 2018, the European Parliament (EP) voted to ban the use of palm oil in biofuels by 2020. In June 2018, after objections from palm oil producing countries and weighing other considerations tied to EU internal market dynamics, EP agreed to a plan that phases out the use of palm oil in biodiesel and renewable diesel in transport fuels. Under the revised resolution, the use of palm oil is capped at the 2019 level until 2023 and then subsequently reduced to zero by 2030. Additionally, under the new resolution, all palm oil products for the biodiesel industry exported to the EU are required to be certified sustainable by a “single sustainability certification scheme.” In January 2021, Malaysia initiated a World Trade Organization (WTO) dispute against the EU’s renewable energy policies, which Malaysia claims discriminate against palm oil and palm oil-based biofuels. A panel was established in July 2021. This dispute is currently running in parallel to a similar WTO case initiated by Indonesia in December 2019.

Although most plantations in Malaysia are RSPO certified, smallholders, on the other hand are not. To comply with EU “single sustainability certification scheme” GoM introduced the Malaysian Sustainable Palm Oil (MSPO) under the purview of the Malaysian Palm Oil Certification Council (MPOCC). Details information on MSPO’s seven principles of standards can be found at MPOCC website (<https://www.mpocc.org.my/>)

According to industry analysts, the significant Malaysian biodiesel exports to China during the first half of 2019 were due to the price of palm oil significantly cheaper than the price of fossil diesel fuel during the time period. This price spread accounts for any emergence of any large-volume ‘discretionary’ sales to China which has no biodiesel mandate. The crude palm oil Bursa Malaysia front-month price averaged more than \$70-80 USD/metric ton cheaper than the ICE Gasoil (Diesel) ARA (Rotterdam/Ghent) front-month price from May 2018 through September 2019. Analysts report that

Chinese traders typically import Malaysian and Indonesian biodiesel for blending purposes in the Chinese market when this so called “PO-GO” price spread falls below the minus \$70-\$80 price threshold. Starting November 2019, the PO-GO price spread rapidly moved into positive territory, by August 2020 had surpassed the low \$300 USD/metric ton range (the highest recorded since 2012), and by November had reached an average value of \$489 USD/metric ton.

## **Section V. Advanced Biofuels**

Although research of second-generation renewable fuels from palm biomass and biogas has been ongoing since 2002, product development and commercialization have been hindered by a lack of investment and a low oil price environment following the oil price collapse of 2014.

## **Appendix**

### **Operating Biodiesel Plants in Malaysia, 2019**

- 1 Bremfield Sdn. Bhd. Pulau Indah, Selangor
- 2 Carotino Sdn Bhd Pasir Gudang, Johor
- 3 FGV Biotechnologies Sdn Bhd Kuala Lumpur
- 4 Fima Biodiesel Sdn Bhd Port Klang, Selangor
- 5 Future Prelude Sdn Bhd Port Klang, Selangor
- 6 Genting Biodiesel Sdn Bhd Kuala Lumpur
- 7 Green Edible Oil Sdn Bhd Sandakan, Sabah
- 8 Gulf Lubes Malaysia Sdn Bhd Pulau Indah, Selangor
- 9 KLK Bioenergy Sdn Bhd Shah Alam, Selangor
- 10 Nexsol (Malaysia) Sdn Bhd Pasir Gudang, Johor
- 11 PGEO BioProducts Sdn Bhd Pasir Gudang, Johor
- 12 Sime Darby Oils Biodiesel Sdn Bhd Carey Island, Selangor
- 13 SOP Green Energy Sdn Bhd Miri, Sarawak
- 14 SPC Biodiesel Sdn Bhd Kuala Lumpur
- 15 Vance Bioenergy Sdn Bhd Pasir Gudang, Johor
16. PGEO BioProducts Sdn Bhd – Pasir Gudang, Johor
17. Excelvite Sdn Bhd – Ipoh Perak
18. Supervitamins Sdn Bhd - Masai Johor
19. Petron Malaysia Refining and Marketing – Sitiawan, Perak

*Source: MPOB*

## **Attachments:**

No Attachments