Required Report: Required - Public Distribution

Date: November 06,2019

Report Number: MY2019-0009

Report Name: Biofuels Annual

Country: Malaysia

Post: Kuala Lumpur

Report Category: Biofuels

Prepared By: Abdul Ghani Wahab

Approved By: William Verzani

Report Highlights:

Biodiesel production in 2019 is expected to increase by roughly 36 percent (compared to the previous year) to 1.69 billion liters due to increases in domestic use and exports. The Government of Malaysia (GOM) roll-out of a ten percent blend mandate early in 2019 boosts year-over-year domestic use from 660 million liters to an estimated record 940 million liters. Malaysian exports of biodiesel in 2019 are projected at a record 750 million liters as a result of robust demand from the European Union and China.

Executive Summary:
Biodiesel production for calendar year 2019 is projected at 1.69 billion liters. This higher level of production, compared to the previous year, is based on the Government of Malaysia's (GOM) introduction of a ten percent blend mandate (B10) in early 2019 and increased demand from the EU and China for low cost palm oil biodiesel.

With the intention to introduce a B20 mandate in 2020, GOM is reviewing how to best ensure the price of feedstock for biodiesel (palm methyl ester) is manageable and not a burden to consumers. Although GOM has yet to finalize the exact plan, consultation with stakeholders is ongoing and a special committee to monitor the transition to a B20 mandate has been formed.

With an increase in the blend rate to ten percent, total calendar year 2019 consumption of biodiesel is forecast at 940 million liters, up 42 percent compared to the previous year. With no year-over-year increase in the size of the diesel pool, the usage increase is entirely due to the blend rate hike. Exports for the first six months of calendar year 2019 reached 367 million liters, roughly 35 percent higher than the 271 million liters recorded during the same period of 2018. Based on this data and an expectation of continued robust demand, especially from the European Union and China, total 2019 exports are forecast to reach 750 million liters.

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 less harsh 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". As the matter remains politically sensitive to both Malaysia and Indonesia, the details of the resolution were left "yet to be agreed" by EU member countries.

According to industry analysts, the significant uptick in Malaysian biodiesel exports to China in 2018 and the first half of 2019 is largely due to the price of palm oil being significantly cheaper than the price of regular diesel fuel during the time period. This is a key factor in sales to China which has no biodiesel mandate and thus sales to this country only arise driven by non-mandated "discretionary" demand. 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 to September 2019 (latest data available). Analysts report that Chinese traders typically import Malaysian and Indonesian biodiesel for blending purposes in the Chinese market when this $70-$80 price threshold is crossed.

Malaysia does not have a fuel ethanol program because it does not have the domestic feedstock industry to support it, and has been unwilling to create a program that would be heavily or solely reliant on imported feedstock or ethanol despite benefits of such a program that would lower carbon emissions tied to climate change.

Policy and Programs

The Government of Malaysia (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 (CPO) 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.

Although the initial plan was to initiate a five percent (B5) blend by 2008, full national implementation covering both Peninsular and East Malaysia was not achieved until 2014. Market analysts report that with growing CPO stocks and declining CPO prices, GOM decided to increase the mandated CPO blend rate for the transportation sector from five percent to seven percent in 2015 (the B7 goal was met in 2016).

In late 2015, to further promote domestic consumption of biodiesel in the transportation sector, GOM released a new five-year strategy 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 related to the high cost of retrofitting vehicles to accommodate a blend rate higher than seven percent, progress on this plan has been slow. For example, the B10 roll-out originally scheduled for 2016, was not achieved until February 2019.

Planned and Actual Roll-Out of Blending Requirements

	Transportation Sector*		**Industrial Sector****	
Blend	**Planned Government Roll-out**	**Actual Roll-Out**	**Planned Government Roll-Out**	**Actual Roll-Out**
B5	2008	2014 (Nationwide)	None	None
B7	January 1, 2015	January 1, 2015***	Early 2019	Pending
B10	2016	February 1, 2019	N/A	N/A
B20	2020	Pending	N/A	N/A

**Cars, trucks, vans, pickups and small fishing vessels*
***Diesel boilers*
****Although the B7 mandate was incrementally rolled-out in 2015, nationwide implementation was not achieved until 2016*

While the vast majority of domestically produced biodiesel is used by the transportation industry, GOM is also aiming to utilize it in the industrial sector (mainly to heat boilers and generate electricity). The planned GOM roll-out of a seven percent blend mandate in the industrial sector, which was originally scheduled for early 2019, is still pending.

Price Support Subsidies

To ensure the nation's biofuel program is financially viable, GOM uses an "Automatic Pricing Mechanism" (APM) to set biodiesel prices. Although 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 February to July 2019

Time Period	RBD Olein US$/MT	Oil Price US$ per Barrel	Estimated Diesel Price in US$ per Liter *	Estimated B10 Biodiesel Price in US$ per Liter**	B10 Price in US$ per Liter Sold at Local Petrol Station***	Subsidy (percent difference)
February 2019	556.50	61.13	0.469	0.473	0.523	9.62
March 2019	521.50	63.79	0.489	0.488	0.545	10.44
April 2019	533.50	68.58	0.527	0.522	0.523	0.18
May 2019	502.00	66.83	0.513	0.507	0.523	3.03
June 2019	503.00	59.76	0.459	0.458	0.523	12.35
July 2019	488.00	61.48	0.472	0.469	0.523	10.34

** based on diesel price based on 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.*

****Since May 2018, the GOM administration has set the price of the mandated biodiesel blend at a fixed rate of 2.18 Malaysian Ringgit (RM). Exchange rate on October 16, 2019: RM 4.19 = USD $1.00*

With the intention to introduce a B20 mandate in 2020, GOM is reviewing how to best ensure the price of feedstock for biodiesel (palm methyl ester) is manageable and not a burden to consumers. Although GOM has yet to finalize the exact plan, consultation with stakeholders is ongoing and a special committee to monitor the transition to a B20 mandate has been formed. A local media report with details of the GOM B20 initiative can be found at: https://www.malaymail.com/news/malaysia/2019/06/13/primary-industries-minister-special-committee-formed-to-monitor-b20-biodies/1761809

Up until December 2014, all fuels dispensed at Malaysian commercial petrol stations were subsidized by GOM. Starting in January 2015, fuel prices began to be based on the rolling average price of crude oil during the previous week and adjusted on a weekly basis. With the new GOM administration, which

took over in May 2018, the prices of diesel and RON95 (the most frequently used unleaded vehicle gasoline in Malaysia) were once again fixed and remain so to date (please see the table below).

Retail Price of Petroleum Products per Liter from August – October 2019

Period	RON 95	RON 97	B10 (Biodiesel)	LPG
Aug 3- 9	RM 2.08	RM 2.54	RM 2.18	RM1.16
Aug 10- 16	RM 2.08	RM 2.49	RM 2.18	RM1.16
Aug 17-23	RM 2.08	RM 2.49	RM 2.18	RM1.16
Aug 24-30	RM 2.08	RM 2.51	RM 2.18	RM1.16
Aug 31-Sept 6	RM 2.08	RM 2.50	RM 2.18	RM1.16
Sept 7- 13	RM 2.08	RM 2.50	RM 2.18	RM1.16
Sept 14- 20	RM 2.08	RM 2.53	RM 2.18	RM1.16
Sept 21-27	RM 2.08	RM 2.67	RM 2.18	RM1.16
Sept 28- Oct 4	RM 2.08	RM 2.79	RM 2.18	RM1.16
Oct 5- 11	RM 2.08	RM 2.60	RM 2.18	RM1.16
Oct 12-18	RM 2.08	RM 2.67	RM 2.18	RM1.16

Exchange rate October 16, 2019: RM4.19 = USD $1.00

In 2014, GOM allocated US$79 million to set up blending facilities and infrastructure to accommodate the country's biodiesel mandates. As of October 2019, there are six petroleum blending facilities serving 3,500 petrol stations (100% of the retail market) throughout Malaysia. Along with building the facilities, the allocated funds are also used to help subsidize the current ten percent blend mandate. GOM replenishes these biodiesel funds on a regular basis by utilizing CPO export taxes and proceeds from normal petroleum diesel sales.

Renewable Energy Policy and Environmental Sustainability

Based on research conducted by the Malaysian Palm Oil Board (MPOB), implementation of the previous seven percent blend mandate reportedly reduced greenhouse gas emissions by as much as 1.05 million tons per year. There have been no updates provided by MPOB on how the current ten percent blend mandate impacts greenhouse gas emissions.

At the 23rd Conference of the Parties to the 1992 United Nations Framework Convention on Climate Change (COP23) in November 2017, the Malaysian Minister of Natural Resources and Environment 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 palm-based biodiesel in blended petroleum diesel. Details of this commitment can be found at: http://www.miti.gov.my/miti/resources/Article_on_Malaysia_UNFCCC_Paris_Agreement.pdf?mid=572

Gasoline and Diesel Markets

Sales of new vehicles in 2018 increased nearly four percent to 599,000 compared to 577,000 units in 2017. According to market analysts, for calendar year 2019, sales are forecast to increase marginally to 600,000 units. 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.

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 ranged from $0.05 to $0.20 USD in recent months, depending on the price of global crude oil. For diesel, in addition to 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. Another 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.

Fuel Use History and Projections

Fuel Use History (Million Liters)										
Calendar Year	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019***
Gasoline Total	11,103	9,470	10,358	14,699	14,766	14,870	15,576	15,621	15,791	15,974
Diesel Total	10,078	10,467	10,522	11,492	12,739	11,266	11,282	11,461	11,634	11,820
On-road	8,163	8,478	8,523	9,309	10,319	9,125	9,138	9,283	9,424	9,432
Agriculture	907	942	947	1,034	1,147	1,014	1,015	1,031	1,047	1,048
Construction & Mining	0	0	0	0	0	0	0	0	0	0
Shipping & Rail	202	209	210	230	255	225	226	229	233	233
Industry	806	837	842	919	1,019	901	903	917	931	932
Heating	0	0	0	0	0	0	0	0	0	0
Jet Fuel Total	562	238	596	708	746	740	713	1,644	1,775	1,917
Total Fuel Markets	21,743	20,175	21,476	26,899	28,251	26,876	27,571	28,726	29,200	29,536

Source: IEA.org- Oil Products Consumption for Malaysia
** = FAS/Kuala Lumpur estimate*

Ethanol

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 palm oil mill effluent (POME) is produced in palm plantations throughout the country to generate electricity. However, this production is not on a commercial scale.

Biodiesel

Biodiesel Supply and Demand

Biodiesel (Million Liters)										
Calendar Year	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019***
Beginning Stocks	0	0	0	0	0	0	0	0	0	0
Production	130	204	271	507	611	660	730	917	1,245	1,690
Imports	0	0	0	0	0	0	0	0	0	0
Exports	97	54	31	192	95	204	94	267	585	750
Consumption	33	150	240	315	516	456	636	650	660	940
Ending Stocks	0	0	0	0	0	0	0	0	0	0
Balance Check	0	0	0	0	0	0	0	0	0	0
Production Capacity (Million Liters)										
Number of Biorefineries	13	13	14	15	16	18	17	16	15	15
Nameplate Capacity	2,050	1,363	2,101	3,010	2,726	2,647	2,350	2,340	2,272	2,300
Capacity Use (%)	6.3%	15.0%	12.9%	16.8%	22.4%	24.9%	31.1%	39.2%	54.8%	73.5%
Feedstock										
Crude Palm Oil (CPO)	120	188	249	466	562	607	672	844	1,145	1,555
Market Penetration (Million Liters)										
Biodiesel, on-road use	33	150	240	315	516	456	636	650	660	940
Diesel, on-road use	8,163	8,478	8,523	9,309	10,319	9,125	9,138	9,283	9,424	9,432
Blend Rate (%)	0.4%	1.8%	2.8%	3.4%	5.0%	5.0%	7.0%	7.0%	7.0%	10.0%
Diesel, total use	10,078	10,467	10,522	11,492	12,739	11,266	11,282	11,461	11,634	11,820

Source: MPOB for trade data
** = FAS/Kuala Lumpur estimate*

Production

With a reported 15 processing plants online (a decrease of one from the previous year), production of biodiesel in Malaysia is still significantly below full annual capacity of 2.3 billion liters. Industry analysts report that the one biodiesel plant that has come offline over the past year is (at least temporarily) producing other oleochemicals. Due to this industry overcapacity, GOM is no longer issuing licenses for new processing plants and Post does not foresee further expansion for the next multiple years.

Production for calendar year 2019 is projected at 1.69 billion liters. This higher level of production, compared to the previous year, is based on GOM's introduction of the ten percent blend mandate (B10) during the year and growing biodiesel demand in foreign markets.

Palm Methyl Ester (biodiesel)

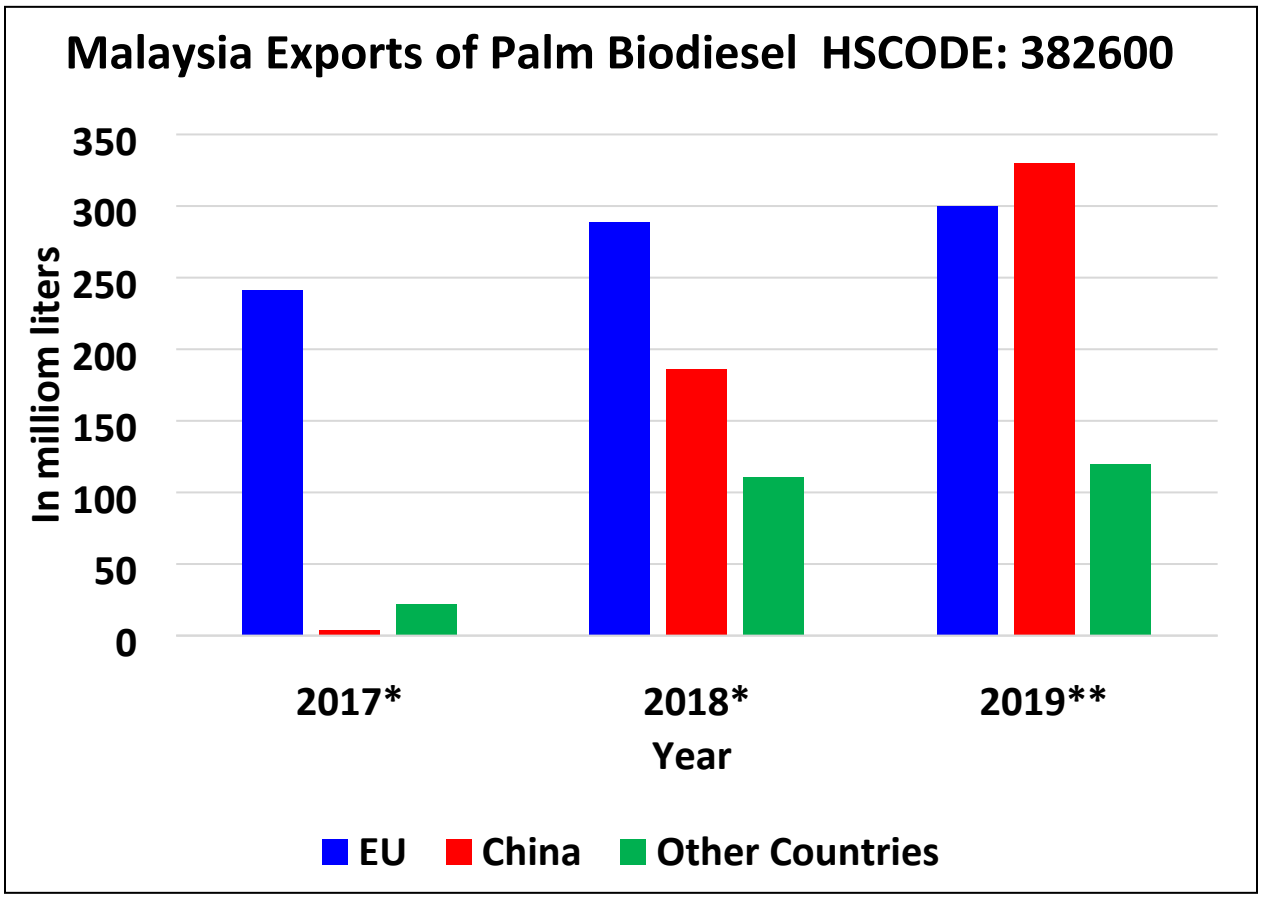
Palm Oil Fresh Fruit Bunch (feedstock)

Consumption

With the blend rate increased to ten percent early in the year, total calendar year 2019 consumption of biodiesel is forecast at 940 million liters.

Trade

According to MPOB data, exports for the first six months of calendar year 2019 reached 367 million liters, roughly 35 percent higher than the 271 million liters recorded during the same period of 2018. Based on this data and an expectation of continued robust demand, especially from the European Union and China, total 2019 exports are forecast to reach 750 million liters.



**MPOB export data*
***Malaysia export data from Trade Data Monitor and FAS/Kuala Lumpur estimate*

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 less harsh 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". As the matter remains politically sensitive to both Malaysia and Indonesia, the details of the resolution were left "yet to be agreed" by EU member countries.

According to industry analysts, the significant uptick in Malaysian biodiesel exports to China in 2018 and the first half of 2019 is largely due to the price of palm oil being significantly cheaper than the price of regular diesel fuel during the time period. This is a key factor in sales to China which has no biodiesel mandate and thus sales to this country only arise driven by non-mandated "discretionary" demand. 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 to September 2019 (latest data available). Analysts report that Chinese traders typically import Malaysian and Indonesian biodiesel for blending purposes in the Chinese market when this $70-$80 price threshold is crossed.

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.

Appendix

Operating Biodiesel Plants in Malaysia		
	Name	**Location**
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 Bio-Diesel Sdn Bhd	Kuala Lumpur
7	Green Edible Oil Sdn Bhd	Ssandakan, 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

Source: MPOB

Attachments:

No Attachments