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Malaysia

Biofuels Annual

2014

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Report Highlights:
Biodiesel production almost doubled in 2013 to keep pace with expansion of distribution areas complying with the B5 mandate and also to meet demand in the export market. Nonetheless, output remains well below capacity. Production in 2014 will have to increase again to fulfill full implementation of the B5 mandate. Palm oil prices vis-à-vis petroleum prices, combined with domestic fuel subsidies, continue to hinder expansion in biodiesel production.

Post:
Kuala Lumpur

Table of Contents

I. Executive Summary:

After continuous delays in implementing the B5 mandate, the Government of Malaysia (GOM) announced in early 2014 that July 2014 would be the new target for finally implementing the mandate throughout Malaysia. However, as of June 2014, it still appears this goal will not be fulfilled as several locations still don't have distribution capability, particularly in East Malaysia. East Malaysia palm methyl ester (PME) producers are requesting to be paid more for their PME to compensate for what they describe as greater logistical challenges; specifically, PME producers are seeking an additional $31/ton to cover greater transport and handling costs. As a result of this impasse, it is unclear when/if GOM will achieve nationwide implementation of the B5 mandate.

Full implementation would mean about 500,000 tons of PME production needed: 350,000 tons in West Malaysia and 150,000 tons in East Malaysia.

Exchange Rate: US$1=RM3.10 (Jun 03, 2013)

II. Policy and Programs

Under the National Biofuel Policy released on 21st March 2006, the GOM's objectives are to use environmentally friendly and sustainable energy sources to reduce dependency on fossil fuels and to stabilize and boost palm oil prices. According to this plan, biofuels are to be produced for transport, industry, and export; and GOM will develop home grown biofuel technology and second generation biofuels. In 2007, Parliament passed the Biofuel Industry Act, which included provisions for the Ministry of Plantation Industries and Commodities to implement a biodiesel blend mandate.

Initially, GOM planned for a B5 (5 percent PME blend) to be followed by a B7 and finally a B10. However, because of rising palm oil prices, GOM did not seriously attempt to implement the mandate until 2012/13. With petroleum prices around $100/ton, whenever CPO surpassed $800/ton, production of biodiesel became unattractive, and most biodiesel plants ceased production. Furthermore, while PME production capacity increased rapidly, blending and distribution infrastructure remained underdeveloped and insufficient to implement the nationwide mandate. As a result, since 2007, GOM has continued to delay enforcement of any biodiesel mandate, and has made the rollout only in stages. Early this year, GOM announced that B5 would be available throughout the country by July 2014. However, as of June 2014, distribution in East Malaysia had still not been fulfilled. The problems implementing B5 put in doubt prospects for ever having a B7, much less a B10 mandate.

Consumption of B5 Biodiesel in Malaysia in 2013

	B5 (in tons)
Subsidized transport sector for whole Malaysia	320,000
Non subsidized commercial sector – Manufacturing & Logistic	180,000
Potential consumption throughout Malaysia	500,000
Actual current consumption in Peninsular Malaysia – 8 states where B5 Biodiesel available.	155,000
Additional potential Consumption throughout Malaysia inclusive non-subsidized commercial sector if fully implemented	345,000
CPO production in 2013	19,216,459
Actual current % of biodiesel used in 2013	0.8%
Potential possible % of biodiesel used throughout Malaysia in 2013	2.60%

Source: Malaysian Palm Oil Board (MPOB)

Fuel Use Projections (Liters - `000)									
Calendar Year	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
Gasoline Total	24,399,026	25,009,001	25,634,226	26,275,082	26,931,959	27,605,258	28,295,389	29,002,774	29,972,784
Diesel Total	8,537,239	8,750,670	8,969,437	9,193,672	9,423,514	9,659,102	9,900,580	10,148,094	10,401,796
On-road	5,549,205	5,687,935	5,830,134	5,975,887	6,125,284	6,278,416	6,435,377	6,596,261	6,761,167
Agriculture	1,109,841	1,137,587	1,166,027	1,195,177	1,225,057	1,255,683	1,287,075	1,319,252	1,352,233
Construction/mining	426,862	437,533	448,472	459,684	471,176	482,955	495,029	507,405	520,090
Shipping/rail	1,109,841	1,137,587	1,166,027	1,195,177	1,225,057	1,255,683	1,287,075	1,319,252	1,352,233
Industry	341,490	350,027	358,777	367,747	376,941	386,364	396,023	405,924	416,073
Heating	0	0	0	0	0	0	0	0	0
Jet Fuel Total	4,390,612	4,724,298	5,083,345	5,469,679	5,885,375	6,332,664	6,813,946	7,331,805	7,889,022
Total Fuel Markets	37,326,876	38,483,969	39,687,008	40,938,433	42,240,848	43,597,024	45,009,915	46,482,673	48,018,661

Lower sales tax and new incentives for energy efficient cars led to an increase in motor vehicles sales of 4.5 percent, with a 655,793 units in 2013 compared to 627,753 in 2012. Car sales are forecast to grow at 5 percent through 2016, before slowing to 2.5 percent from 2017 till 2020. Diesel power vehicles account for less than 20 percent of registered motor vehicles.
In 2013, Malaysia's aircraft movements increased about 4.6 percent. The opening of new low Cost Carrier Terminal in May 2014, which acts as regional hub for budget airlines, is expected to contribute to an expected 5.8 expansion in aircraft activity through 2025.

III. Ethanol production

There is no significant production of ethanol in Malaysia using biomass. Many companies are exploring the use of palm oil mill effluent (POME), fronds, empty fruit bunches (EFB), and other palm biomass as feedstock or biogas to produce ethanol, but more research is required as the process and technology is not yet commercially viable. The logistics in moving sufficient biomass from production areas to refining sites is also still a significant challenge to overcome.

IV. Biodiesel

Production.
Biodiesel production increased from 140,983 tons in 2012 to 330,032 tons in 2013, of which 175,032 tons was for export and 155,000 tons for domestic use. The jump in production was due to increase in demand for exports markets and expansion of B5 distribution domestically. Output is still well below industry capacity, with only 10 biodiesel plants in operation.

With full implementation of B5 in 2014, production is forecast to grow and to continue growing through 2015 as GOM has planned to rollout B7 upon successful implementation of B5 mandate. With full implementation of B5, production may reach 500,000 tons, although higher palm oil prices would hinder this forecast.

Consumption
Depending on how thorough the B5 mandate is enforced, GOM might introduce a B7 mandate in 2015, driving consumption above 500,000 tons per annum. However, it is still very difficult to predict the pace of implementation. As a result, consumption is forecast to hover between 200,000 to 400,000 tons over the next few years.

Trade
Exports of biodiesel jumped 6 fold in 2013 with strong demand from the European Union (EU) and China. Collectively the EU and China imported 161,864 tons or 92 percent of the exports. The increase in exports to the EU in 2013 was due to a relative decline in the competitiveness of supplies from Indonesia. Exports during the first 5 months of 2014 was 30,755 tons, which was well off the pace of the previous year. Based on this pace, total exports are forecast at 110,000 tons 2014.

Stocks

There are no significant changes in stocks.

Biodiesel (Liters - `000)									
Calendar Year	2007	2008	2009	2010	2011	2012	2013	2014	2015

Beginning Stocks	0	0	23,540	17,117	4,720	3,544	3,544	3,543	3,543
Production	434,800	107,441	261,294	94,160	60,027	165,937	388,447	423,720	704,831
Imports	144,571	141,310	0	0	0	0	0	0	0
Exports	527,195	214,341	267,717	105,470	58,849	34,113	206,013	129,470	117,700
Consumption	52,176	10,870	0	1,087	2,354	131,824	182,435	294,250	588,500
Ending Stocks	0	23,540	17,117	4,720	3,544	3,544	3,543	3,543	2,174
Production Capacity									
Number of Biorefineries	15	23	27	28	20	29	29	29	29
Nameplate Capacity	1,121,829	2,019,556	2,610,465	2,746,829	2,746,829	2,746,829	2,746,829	2,746,829	2,746,829
Capacity Use (%)	38.8%	5.3%	10.0%	3.4%	2.2%	6.0%	14.1%	23.4%	25.7%
Feedstock Use (1,000 MT)									
Crude Palm Oil	400	480	222	80	51	140	349	591	591
Market Penetration (Liters - `000)									
Biodiesel, on-road use	52,176	10,870	0	1,087	2,174	131,824	116,758	182,435	376,640
Diesel, on-road use	3,267,550	3,925,350	3,617,900	4,241,900	4,453,995	4,676,695	4,910,529	5,156,056	5,413,859
Blend Rate (%)	1.6%	0.3%	0.0%	0.0%	0.0%	2.8%	2.4%	3.5%	7.0%
Diesel, total use	5,563,000	5,622,000	5,467,000	5,027,000	6,039,000	5,566,000	6,526,000	6,852,300	6,852,300

BIOFUEL STATISTICS

Table 1:Retail Price of Motor Fuels in Malaysia (per liter)		
	Subsidized Retail Price	Without Subsidies or Sales Tax Exemptions
Gasoline*	US$0.68 (RM2.10)	US$1.09 (RM3.28)
Petroleum Diesel	US$0.65 (RM2.00)	US$1.02 (RM3.08)

*RON95
US$1=RM3.10 (Jun 03, 2013)

Revisions to the PSD Table can be found below. The BTN Trade code 382490900 (other chemical Products) contains other product besides palm oil diesel.

Biodiesel production/consumption/trade (1,000 Metric Ton)					
	2010	**2011**	**2012**	**2013**	**2014**
Biodiesel					
Beginning stocks	15	4	3	2	2
Production 1/	80	51	140	330	360

Imports	0	0	0	0	0
Total supply	95	55	143	332	362
Exports	90	50	29	175	110
Consumption	1	2	112	155	250
Ending stocks	4	3	2	2	2

Table 5: BIODIESEL PLANTS REGISTRATED IN MALAYSIA 1/

1	AJ Oleo Industries Sdn. Bhd.	Segamat, Johor
2	AM Biofuel Sdn. Bhd.	Pasir Gudang, Johor
3	CarotinoSdn.Bhd.	Pasir Gudang, Johor
4	YPJ Palm International Sdn. Bhd.	Pasir Gudang, Johor
5	Malaysia Vegetable Oil Refinery Sdn. Bhd.	Pasir Gudang, Johor
6	Nexsol (Malaysia) Sdn. Bhd.	Pasir Gudang, Johor
7	PGEO BioproductsSdn. Bhd.	Pasir Gudang, Johor
8	PZ Bioenery Sdn Bhd	Pasir Gudang, Johor
9	Supervitamins Sdn Bhd	Pasir Gudang, Johor
10	Vance Bioenergy Sdn. Bhd.	Pasir Gudang, Johor
11	Mission Biofuels Sdn. Bhd / Felda	Kuantan, Pahang
12	Mission Biotechnologies Sdn. Bhd / Felda	Kuantan, Pahang
13	Plant Biofuels Corporation Sdn. Bhd.	Kuantan, Pahang
14	CarotechBerhad (Chemor Plant)	Chemor, Perak
15	CarotechBerhad (Lumut Plant)	Setiawan, Perak
16	Lereno Sdn. Bhd.	Setiawan, Perak
17	KL-Kepong OleomasSdn. Bhd.	Port Klang, Selangor
18	Man Jang Bio Sdn. Bhd.	Port Klang, Selangor
19	Intrack Technology (M) Sdn. Bhd.	Rawang, Selangor
20	Sime Darby Biodiesel Sdn. Bhd.-Carey Island	Pulau Carey, Selangor
21	Sime Darby Biodiesel Sdn. Bhd.-PanglimaGarang	Teluk Panglima Garang, Selangor
22	Artistic Support Sdn Bhd (FIMA Biodiesel S/B)	Port Klang, Selangor
23	Weschem Technologies Sdn. Bhd.	Batang Kali, Selangor
24	KLK Bioenergy Sdn. Bhd. (ZoopSdn. Bhd.)	Shah Alam, Selangor
25	Future Prelude Sdn. Bhd.	Port Klang, Selangor
26	Kris Biofuels Sdn Bhd	Port Klang, Selangor
27	Gomedic Sdn Bhd	Port Klang, Selangor
28	Innovans Bio Fuel Sdn. Bhd.	Port Klang, Selangor
29	Greentech Chemical Sdn Bhd (Completed)	Port Klang, Selangor
30	Global Bio-Diesel Sdn. Bhd.	Lahad Datu, Sabah
31	Green Edible Oil Sdn. Bhd. (Green Biofuels)	Sandakan, Sabah

32	SPC Bio-diesel Sdn. Bhd.	Lahad Datu, Sabah
33	Platinum Greens Chemical (Platinum Biofuels)	Seremban, Negeri Sembilan
34	Senari Biofuels Sdn. Bhd. (Global Bonanza)	Kuching, Sarawak

Sources: MPOB: BIODIESEL PLANT IN OPERATION IN MALAYSIA

Table 5 shows the biodiesel plants currently registered in Malaysia. However, only few are operating.

Export Trade Matrix

COUNTRY	2012 Quantity (Tons)
European Union	21,832
Indonesia**	3,960
Taiwan	2,299
China P.R	330
Australia	311
India	188
Singapore**	42
Reunion Island	21
TOTAL	**28,983**

COUNTRY	2013 Quantity (Tons)
European Union	141,532
China P.R	20,332
Indonesia**	8,278
Taiwan	2,343
South Korea	1,227
India	764
Australia	334
Japan	162
Singapore**	40
Thailand	20
TOTAL	**175,032**

Source: Malaysian Palm Oil Board (MPOB)
**Mainly for re-export

V. Advanced Biofuels

Although research on 2nd generation of Biodiesel from palm biomass and biogas has been ongoing since

2002, product development has been hindered by lack of investment. In addition, the high cost of transporting the feedstock, and alternative usage of the feedstocks for other high value items, such as pharmaceutical grade sugar, has so far limited interest in the advanced biofuels.

VI. Biomass for heat and power

Biogas (MW)						
Calendar Year	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Biogas Landfill / Sewage	93.00	14.00	16.00	9.00	36.00	N/A
Biomass Field Crops/Manure	372.00	421.00	447.00	446.00	454.00	N/A
Total	465.00	435.00	463.00	455.00	490.00	0.00

Data from Energy Commission Malaysia - www.st.gov.my (2006-2010). Data for 2011 is not available.

Biogas (MWh)			
Calendar Year	**2012**	**2013**	**2014**
Biogas Landfill / Sewage	2,896.83	2,988.80	0.00
Biomass Field Crops/Manure	99,533.87	92,467.06	0.00
Total	102,430.70	95,455.86	0.00

Data from Sustainable Energy Development Agency Malaysia - www.seda.gov.my (2012-2013)

As of 2013, fifty-seven mills have biogas facilities, 16 biogas under construction, and 150 facilities were under planning. Most of electricity generated from biomass and biogas in palm mills is used to generate power for mill operations and surrounding estate houses.