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Thailand

Biofuels Annual

2012

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Report Highlights:
TH2064 The Government has modified its 15-year Alternative Energy Development Plan which has fallen short of achieving its short-term target. Ethanol production will likely continue to increase in 2012 and 2013 driven by strong export demand. Biodiesel production is estimated to grow steadily in 2012 and 2013 reflecting the implementing of mandatory B5 biodiesel use.

Post:
Bangkok

Executive Summary:
The Government has new 10-year Alternative Energy Development Plan (2012-2021) to replace its old 15-year plan (2008-2022) which has fallen short of achieving its short-term targets, particularly in ethanol consumption. The new plan leaves the ethanol consumption target unchanged at 9.0 million liters/day by 2021 which is still a challenge as current consumption is around 1.1 million liters/day. Meanwhile, the biodiesel consumption target is revised up from 4.5 million liters/day to 5.97 million liters/day by 2021while current production capacity is at 1.62 million liters/day.

Ethanol production will likely increase to 1.9 million liters/day in 2012, and to 2.1 million liters/day in 2013, as compared to 1.4 million liters/day in 2011. The anticipated increase in production will be driven by strong export demand. Ethanol exports are expected to increase to 300 – 350 million liters in 2012-2013, which accounts for around 45.0 percent of total ethanol production, up significantly from 27.0 percent in 2011. Meanwhile, ethanol consumption is expected to increase approximately 10.0 percent annually to 1.13 million liters/day in 2012, and 1.23 million liters/day in 2013, driven by the bigger price difference with Octane 91 regular gasoline following the government policy to promote gasohol consumption. This anticipated increase in ethanol consumption is far below the Government's short-term ethanol consumption target of 2.0 million liters/day by the end of 2012 in anticipation of the delay of the cancellation of Octane 91 regular gasoline sales that will be effective on October 1, 2012. However, ending stocks of ethanol will likely decline to an optimal level in 2013 in anticipation of strong ethanol export demand in 2012 - 2013.

Based on a recent survey done by FAS, crude palm oil (CPO) production for 2012 is likely to decrease by 10-15 percent from 1.83 million tons in 2011 to 1.5-1.6 million tons mainly because the impact of a reduction in average yields of fresh fruit bunch (FFB) should outstrip that of increased harvested area. This level of CPO production however should be enough to meet a demand for use in biodiesel production in 2012. Biodiesel production in 2012 is pegged at 860 million liters in 2012 and continues to grow to 890 million liters in 2013, reflecting an implement of mandatory B5 biodiesel use in these two years.

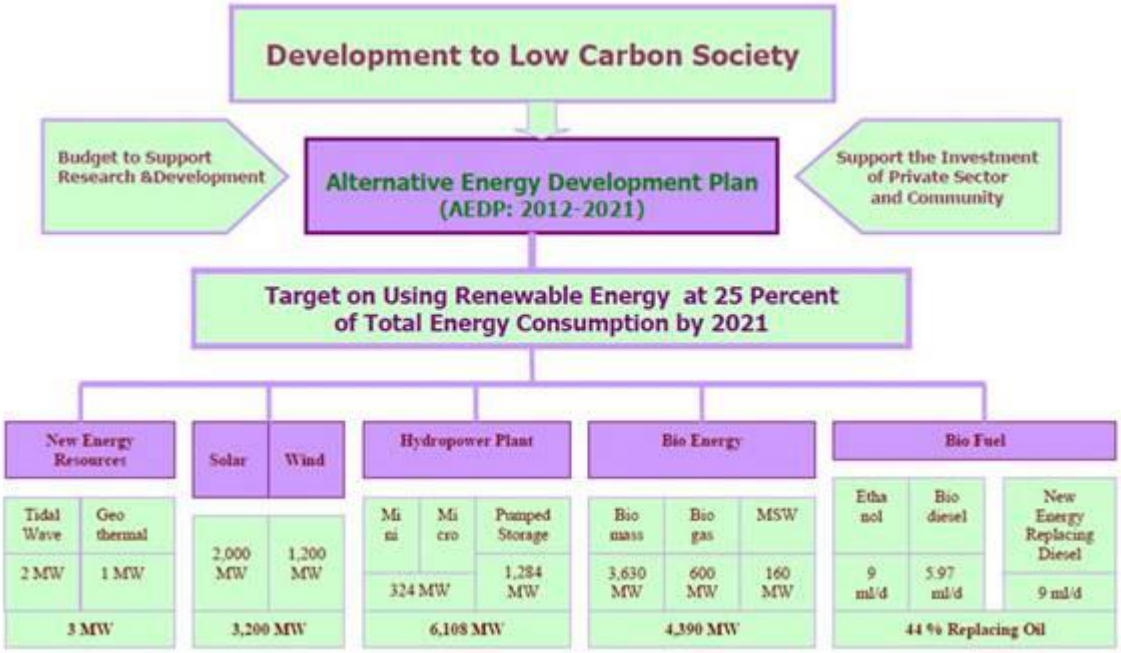
There has been no change in policies from the previous annual report regarding biomass energy and advanced energy. Thailand currently promotes biomass energy for heat and power generation through the granting of licenses to approved private companies to sell electricity to the Electricity Generating Authority of Thailand (EGAT). In the meantime, a molasses-based ethanol using second generation biofuels in form of cane bagasse remains in the experimental stage.

Author Defined:

1. Policy and Programs

The Government replaced its old 15-year Alternative Energy Development Plan (2008 - 2022) with the 10-year Alternative Energy Development Plan (2012 – 2021) which was approved by the cabinet on

December 27, 2011. The new plan is set to increase the share of renewable and alternative energy from the existing 9.4 percent of total energy consumption to 25 percent by 2021, as compared to 20 percent in its old target. The objective is mainly to reduce oil imports which account for approximately 80 percent of total oil consumption. Also, the plan aims to strengthen domestic energy security, to promote integrated green energy utilization in communities, to enhance the development of alternative energy industries, and to research and develop renewable energy technology for competitiveness in the global market.



1.1 Ethanol

The new 10-year Alternative Energy Development Plan (2012-2021) is set to increase ethanol consumption to 9.0 ml/day by 2021, unchanged from the old 15-yr plan (2008-2022) which has fallen short of achieving its short-term target of 3.0 million liter/day as actual ethanol production is only 1.43 million liters/day in 2011. Also, ethanol producers face a surplus of around 40-50 million liters/day as actual ethanol consumption has been stable at around 1.0 – 1.1 million liters/day since 2009 due to a government decisions to reverse its formerly planned policy of mandating compulsory use of gasoline/ethanol mixes.

Table 1.1: 10-year Ethanol Production Plan (2012 - 2021)

unit: million liters/day

	Old 15-Year Ethanol Plan (2008-2022)						New 10-Year Ethanol Plan (2012 - 2021)	
	Short Term				Medium Term	Long Term	2012	2021
	2008	2009	2010	2011	2012 - 2016	2017 - 2022		
Target	3.0	3.0	3.0	3.0	6.2	9.0	-	9.0
On-line Plants' Capacity	1.6	1.7	2.9	2.9	-	-	3.72	-
Actual Production	0.92	1.10	1.16	1.43	-	-	1.76 [1/]	-

Note: [1/] Average capacity utilization during Jan. - Feb. 2012

Source: Ministry of Energy

In an effort to make the new plan operational, the Government has the strategic plans on both the supply and demand sides. On the production side, the plan still focuses on the supply of existing feedstock by improving an average yield of sugarcane above 15 tons/rai (94 tons/hectare) with total production of 105 million tons/year, and that of cassava above 5 tons/rai (31 tons/hectare) with total production of 35 million tons/year by 2021. On the demand side, the cabinet approved the government plan on December 27, 2011 to terminate the sales of Octane 91 regular gasoline by October 1, 2012. Also, the Government will subsidize E20 gasohol (a blend of 20% ethanol and 80% gasoline) from the State Oil Fund, at 3.0 baht/liter (36 US cents/gallon) cheaper than Octane 95 gasohol. In addition, the plan will provide an incentive for gasoline stations to expand the E20 gasohol sales by giving 0.5 baht/liter (6 US cents/gallon) marketing margin above the Octane 91 regular gasoline sales. The Government continues to support the manufacturing of Eco-car (E20 vehicles) and flex-fuel vehicles (FFV) which are compatible with E85 gasohol (a blend of 85% ethanol and 15% gasoline) by reducing excise tax for automobile manufacturers by 50,000 baht/vehicle (US$ 1,587/vehicle) for FFV and 30,000 baht/vehicle (US$ 952/vehicle) for Eco-car. Moreover, the Government will liberalize the ethanol laws and regulation, which is still governed by the Liquor Act, for ethanol sales in the future. The plan supports a budget for research that enhances ethanol demand, especially for old vehicles and motorcycles.

1.2 Bio Diesel

The Government revised up its B100 consumption target to 5.97 million liters/day by 2021, as compared to 4.50 million liters/day in the old Biodiesel Development Plan. The plan focuses on both supply and demand sides. On the supply side, the Government will promote the expansion of oil palm acreage to a targeted 5.5 million rai (880,000 hectares) with total oil palm harvested areas of 5.3 million rai (848,000 hectares). Average yield is targeted at 3.2 tons/rai/year (20tons/hectares/year) and the crushing rate of crude palm should be above 18.0 percent by 2012. The plan will increase the production capacity of crude palm oil above 3.05 million tons/year. On the demand side, the Government will balance its compulsory production of biodiesel with domestic palm oil demand. The plan will introduce pilot projects for B10 or B20 blend use by fleet trucks and fishery boats. In addition

due to current insufficient feedstock for biodiesel production, the Government will support research and development on "The Future New Fuel for Diesel Substitution" which encourages the development of new energy crops (jatropha and micro algae), diesohol (blending ethanol with diesel), and oil conversion technology (Bio Hydrofined Diesel: BHD, and Biomass to Liquid: BTL) during 2014-2017. The target for new commercial production capacity is 2 million liters/day in 2018 and up to 25 million liters/day by 2021.

2. Ethanol

2.1 Production

In 2012, the number of operating ethanol plants will likely increase to 21 plants with total production capacity of 3.715 million liters/day, up from 19 plants with production capacity of 3.065 million liters/day in the previous year (Table 2.1). The new ethanol plants will be cassava-based plants. There are six new cassava-based ethanol plants due for completion within 2012 with total production capacity of 2.220 million liters/day. Two of these are expected to operate as export plants. One manufacture has an export contract of 100.0 million liters/year with a partner in China for delivery in October 2012 onwards. In 2012, total ethanol production is expected to increase to 695 million liters (1.9 million liters/day), up 33.7 percent from 520 million liters (1.4 million liters/day) in the previous year (Table 2.2).

Table 2.1: Ethanol Plants in Thailand

Ethanol Plants	Registered Plants		Under-Construction Plants[1/]		On-line Plants[2/]	
by Feed Stocks	Number of Plants	Capacity (Million Liters/Day)	Number of Plants	Capacity (Million Liters/Day)	Number of Plants	Capacity (Million Liters/Day)
1. Sugarcane (S)	1	0.20	-	-	1	0.20
2. Molasses (M)	15	2.69	-	-	5	0.78
3. Cassava (C)	24	8.39	6	2.22	5	0.78
4. (M)/(S)/(C)	8	1.23	-	-	8	1.31
Total	**48**	12.51	**6**	**2.22**	**19**	**3.07**

Note: 1/ As of February 2012
2/ As of November 2011

Source: Department of Alternative Energy Development and Efficiency, Ministry of Energy

Table 2.2: Ethanol - Conventional and Advanced Fuels (Million Liters)

Calendar Year	2006	2007	2008	2009	2010	2011	2012 (Estimate)	2013 (Forecast)
Production, Total	**135**	**192**	**336**	**401**	**426**	**520**	**695**	**785**
Advanced Only	0	0	0	0	0	0	0	0
Imports	0	0	0	0	0	0	0	0
Exports	0	14.9	65.8	15.6	48.2	139.3	300.0	350.0
Consumption	116	159	309	390	372	370	410	450
Ending Stocks	67.8	85.9	47.6	42.4	47.6	57.5	41.6	26.4
Production Capacity (Conventional Fuel)								
No. of Biorefineries	5	7	11	11	19	19	21	21
Capacity (Million liters/day)	0.78	0.96	1.6	1.7	2.9	2.9	3.72	3.72
Capacity Use (%)	48	54	58	65	40	50	51	58
Production Capacity (Advanced Fuel)								
No. of Biorefineries	-	-	-	1	1	1	1	1
Capacity (Million liters/day)	-	-	-	0.01	0.01	0.01	0.01	0.01
Co-product Production (1,000 MT)	-	-	-	-	-	-	-	
Feed Stock Use - Conventional (1,000 MT)								
Sugarcane	25	57	60	160	194	486	530	550
Molasses	441	614	1,216	1,202	1,054	1,553	2,162	2,445
Cassava	164	240	197	557	925	768	819	945

In the first four month of this year, ethanol plants are operating at an average of 1.89 million liters/day, up 32.2 percent from an average of 1.43 million liters/day in 2011. Molasses-based ethanol dominates ethanol production, operating at 1.44 million liters/day, up 38.0 percent from an average of 1.05 million liters/day in the previous year. Seventy percent of ethanol plants have sugar mills as their core business. A downward trend in molasses prices due to a bumper sugarcane crop in MY2011/12 of nearly 100 million tons (TH2041, Sugar Annual 2012) is making it more attractive to use in ethanol production. The sole sugarcane-based ethanol plant is operating at around 0.18 million liters/day, up 74.4 percent from an average production of 0.10 million liters/day using 0.5 million tons of sugarcane in the previous year. The sugarcane used in this plant is cultivated in an area of 50,000 rai (8,000 hectares), which is unsuitable for the production of edible crop due to the hazardous nature of the land. Meanwhile, cassava-based ethanol plants are operating at 0.14 million liters/day, down 50.0 percent from an average of 0.28 million liters/day in the previous year. This is due to high cassava prices caused by the government Cassava Pledging Program which was implemented between February 1 – May 31, 2012. The intervention price of cassava is set at 2.75 baht/kg ($87/MT) which is 50.0 percent above market prices. Some cassava-based ethanol plants stopped their operation as their ethanol production cannot compete with molasses-based ethanol which is approximately 27.0 percent cheaper.

In 2013, total ethanol production is forecast to increase 13.0 percent to 785 million liters (2.1 million liters/day) in anticipation of strong import demand from China and the Philippines. However, the operating ethanol plants will continue to face challenges as they will be operating at less than half of their full capacity, as domestic demand for gasohol is limited by the existing of Octane 91 regular gasoline, accounting for around 45.0 percent of total gasoline consumption, as many consumers are inclined to pay the premium on regular gasoline. Also, the government plan to terminate Octane 91 regular gasoline sales by October 1, 2012 remains challenged by the resistance of the refineries. Five out of the total six refineries are not ready to shift from Octane 91 regular gasoline production to

gasohol production by October 2012. They are negotiating with the Government to delay the plan until 2014, or else the Government will have to subsidize the additional costs of imported petroleum products for gasohol production during their production restructuring process.

2.2 Consumption

In 2012 ethanol consumption is expected to increase to 410 million liters or 1.13 million liters/day, up approximately 10.0 percent from the previous year, due to an increase in E10 Octane 91 and E20 gasohol consumption driven by bigger price difference with Octane 91 regular gasoline following the government policy to promote gasohol consumption. Presently, the retail price is 5-6 baht/liter (60-72 US cents/gallon) cheaper for E10 Octane 91 gasohol, and 7.0 baht/liter (84 US cents/gallon) cheaper for E20 gasohol, as compared to 3 baht/liter (36 US cents/gallon) and 4 baht/liter (48 US cents/gallon), respectively during the end of 2011 (Table 2.4). In addition, the E20 gasohol stations will likely increase to 1,200 stations by the end of 2012, as compared to the existing 875 stations.

In the first four months of this year, E10 Octane 91 gasohol (a blend of 10% ethanol and 90% gasoline) consumption increased to 660 million liters (5.5 million liters/day), up 8.2 percent from the previous year (Table 2.3). The market share of E10 Octane 91 gasohol increased to around 48 percent of total gasohol consumption, as compared to 40 percent in the previous year. Also, E20 gasohol consumption increased to 90 million liters (0.7 million liters/day), up 32.4 percent from the previous year due to the government price subsidy for E20 gasohol from the State Oil Fund, causing E20 gasohol to be cheaper than regular gasoline by 17.4 percent. Consumption of E20 gasohol accounted for approximately 7.0 percent of total gasohol consumption, up from around 5.0 percent in the previous year.

Table2.3: Thailand's Gasoline Consumption (Unit: Million Liters)

Type of Gasoline	2007	2008	2009	2010	2011	% change 2011/2010	Jan. - Apr. 2011	Jan. - Apr. 2012	% change 2012/2011
Gasoline	**5,573**	**3,729**	**3,054**	**3,035**	**3,119**	**2.8**	**952**	**1,131**	**18.8**
Regular (octane 91)	4,467	3,388	2,877	2,958	3,077	4.0	939	1,115	18.7
Premium (octane 95)	1,106	341	177	77	42	-45.5	13	16	23.1
Gasohol	**1,763**	**3,392**	**4,470**	**4,383**	**4,213**	**-3.9**	**1,508**	**1,364**	**-9.5**
- Gasohol E10 Octane 91	244	924	1,415	1,552	1,860	19.8	610	660	8.2
- Gasohol E10 Octane 95	1,519	2,439	2,972	2,692	2,122	-21.2	828	607	-26.7
- Gasohol E20	-	29	83	137	222	62.0	68	90	32.4
- Gasohol E85	-	0.02	0.25	2.11	9.10	331.3	1.9	6.9	263.2
Total	**7,336**	**7,120**	**7,524**	**7,418**	**7,332**	**-1.2**	**2,460**	**2,495**	**1.4**

Source: Energy Policy and Planning Office, Ministry of Energy

Table 2.4: Price Structure of Petroleum Product in Bangkok (as of June 7, 2012)

	Premium gasoline (octane 95)	Regular gasoline (Octane 91)	Gasohol			
			E10 Octane 91	E10 Octane 95	E20	E85
Ex-Refinery Factory Price	22.9357	22.4423	22.5722	22.8372	22.6511	20.5764
Excise Tax	7.0000	7.0000	6.3000	6.3000	5.6000	1.0500
Municipal Tax	0.7000	0.7000	0.6300	0.6300	0.5600	0.1050
State Oil Fund	5.9000	5.9000	0.9000	2.5000	-0.5000	-12.3000
Conservation Fund	0.2500	0.2500	0.2500	0.2500	0.2500	0.2500
Wholesale Price (WS)	36.7857	36.2923	30.6522	32.5172	28.5611	9.6814
Value Added Tax (VAT)	2.5750	2.5405	2.1457	2.2762	1.9993	0.6777
WS+VAT	39.3607	38.8328	32.7978	34.7934	30.5604	10.3590
Marketing Margin	4.9900	1.7918	2.1329	1.9034	2.9155	10.3000
VAT	0.3493	0.1254	0.1493	0.1332	0.2041	0.7210
Retail Price	44.70	40.75	35.08	36.83	33.68	21.38

Note: Exchange rate = 31.6295 baht/$

Source: Petroleum Division, Enery Policy and Planning Office, Ministry of Energy

In 2013 ethanol consumption is forecast to increase to 450 million liters (1.23 million liters/day), up around 10.0 percent from the previous year. This anticipated increase is far below the Government's short-term ethanol consumption target of 2.0 million liters/day by 2012. It assumes that will not be able to completely suspend all Octane 91 regular gasoline sales by October 1, 2012 as presently planned. Presently, the consumption of Octane 91 regular gasoline remains high at around 9.2 million liters/day, accounting for approximately 45 percent of total gasoline consumption (Table 2.3). The increases that do occur then will be driven solely by bigger price difference between E10 and E20 gasohol and Octane 91 regular gasoline as set by the Government through the State Oil Fund. Also, E20 gasohol consumption will likely continue its growth in anticipation due to increases in the number of E20 vehicles and E20 gasohol stations as a result of the Government's tax incentive for Eco-car manufacturers and the price subsidy for E20 gasohol.

2.3 Trade

Ethanol exports (HS2207.10.00) more than tripled in 2011 to 167 million liters, as compared to 48.2 million liters in the previous year. The increase reflected import demand from the Philippines to fulfill its E10 gasohol mandate that became effective August 6, 2011. Ethanol exports continued to grow during January – March 2012 to 84.0 million liters, as compared to 22.7 million liters in the same period of the previous year again primarily to the Philippines where the operation of its new ethanol plants has been delayed. Philippines local ethanol plants reportedly supply only 30 percent of its domestic demand. Total ethanol exports are forecast to increase to 300 million liters in 2012 due to continue import demand from the Philippine. Meanwhile, there will be no imports of ethanol for gasohol production in 2012 due to sufficient domestic supplies and a tariff of 2.5 baht/liter (roughly 30 US cents/gallon) on imported ethanol.

In 2013, ethanol exports will likely increase to 350 million tons in anticipation of strong import demand from the Philippines and China. Ethanol exports to China are expected to increase significantly as a new Thai export-oriented ethanol plant with a production capacity of 400,000 Liters/day will likely be fully operated after its commissioning in the last quarter of 2012. This ethanol plant is a cassava-based ethanol with an export contract of 100 million liter/year to China.

Table 2.5: Thailand's Exports of Ethanol [1/]

Unit: Million Liters

	2008	2009	2010	2011	2012 (Jan-Mar)
Philippines	1.5	-	5.5	61.3	36.5
Singapore	12.3	3.1	19.3	68.5	19.6
Japan	10.4	7.4	20.0	16.5	8.6
Australia	2.5	-	-	2.1	-
Taiwan	3.2	3.1	1.2	3.2	1.5
Indonesia	2.0	-	-	0.0	-
Europe	25.8	0.0	-	-	-
South Korea	-	-	2.1	12.8	16.0
Other	8.1	2.0	0.0	2.6	2.1
Total	**65.8**	**15.6**	**48.2**	**167.0**	**84.3**

Note: 1/ Based on 19 on-line ethanol plants exporting 95% purity ethanol

Source: Department of Alternative Energy Development and Efficiency, Ministry of Energy

2.4 Stocks

In 2012, ethanol stocks will likely decline to around 42.0 million liters, down 28 percent from the previous year, due to significant increase in export demand. Ending stocks of ethanol in 2013 are expected to be at an optimal level based on oil reserve requirement of 5.0 percent of sales, which will be around 20-30 million liters, as export demand will likely remain strong despite anticipated increase in ethanol production from new ethanol plants.

2.5 Market for Ethanol Used as Other Industrial Chemicals

Unlike fuel ethanol, production of non-fuel ethanol is controlled by the government. The Liquor Distillery Organization (LDO) which is under the Excise Department of the Ministry of Finance monopolized industrial grade ethanol production in Thailand with production capacity of approximately 60,000 liters/day. Industrial grade ethanol accounts for around 30 percent of total non-fuel ethanol production. In 2012-13 industrial grade ethanol production is forecast to increase to 19 - 20 million liters, up around 2.0 – 3.0 percent annually. The LDO plans to invest in new facilities that will triple capacity due to growing domestic demand for industrial grade ethanol, particularly for medical/pharmacy uses, paints, and cosmetics. Presently, domestic demand for industrial grade ethanol is approximately 50,000 liters/day.

There is only one ethanol plant that exports. It has a production capacity of 230,000 tons with facilities for beverage- and industrial-grade ethanol production. Most of its exports are beverage grade ethanol to Japan, Korea, and China.

Table 2.6 Estimated Ethanol Used as Other Industrial Chemicals (Million Liters)

	2006	2007	2008	2009	2010	2011	2012	2013
Production	17.8	18.3	17.4	21.0	16.0	19.0	19.5	20.0
Imports	1.4	2.0	3.7	6.5	5.4	6.1	6.0	6.0
Exports	3.7	4.7	6.2	10.9	4.4	9.3	7.0	7.5
Consumption	15.0	16.3	14.6	15.4	16.5	17.3	18.2	19.1
Stocks	1.5	0.8	1.0	2.2	2.7	1.1	1.5	0.9
Production Capacity								
Capacity (liters/day)	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000
Capacity Use (%)	82	85	80	97	74	88	90	93

3. Biodiesel

3.1 Production

Biodiesel - Conventional & Advanced Fuels (Mil. Liters)								
Calendar Year	2006	2007	2008	2009	2010	2011	2012	2013
Production, Total	2	68	448	610	660	630	860	890
Advanced Only								
Imports	0	0	0	0	0	0	0	0
Exports	0	0	0	0	0	0	0	0
Consumption	2	62	447	609	646	630	850	890
Ending Stocks	0	6	7	8	22	22	32	32
Production Capacity - Conventional								
No. of Biorefineries	3	5	9	14	13	13	13	13
Capacity (Mil. Liters)	219.0	475.0	840.0	1,970.0	1,970.0	1,970.0	1,970.0	1,970.0
Capacity Use (%)	1%	14%	53%	31%	34%	32%	44%	45%
Production Capacity - Advanced								
No. of Biorefineries	0	0	0	0	0	0	0	0
Capacity (Mil. Liters)	0	0	0	0	0	0	0	0
Capacity Use (%)	0%	0%	0%	0%	0%	0%	0%	0%
Feedstock Use - Conventional (1,000 MT)								
Palm Oil	2	72	475	575	618	592	808	837
Feedstock B								
Feedstock C								
Feedstock D								
Feedstock Use - Advanced (1,000 MT)								
Feedstock A								
Feedstock B								
Feedstock C								
Feedstock D								

B100 or unblended biodiesel in Thailand is currently produced from feedstock from the palm oil

industry- i.e. crude palm oil (CPO), refined bleached deodorized (RBD) palm oil, palm stearin and free fatty acids of palm oil (FFA). B100 production is solely determined by domestic demand for blended biodiesel, currently compulsory at B5 since January 1, 2012. Thailand does not import or export B100, it does however export CPO.

Reflecting increased demand from mandatory B5 use and growing diesel consumption, B100 production is expected to grow from 630 million liters in 2011 to 860 million liters in 2012 and to 890 million liters in 2013.

Based on a recent survey done by FAS, crude palm oil (CPO) production for 2012 is likely to decrease by 10-15 percent from 1.83 million tons in 2011 to 1.5-1.6 million tons mainly because a reduction in average yields of fresh fruit bunches (FFB) should outstrip increased harvested area. According to palm oil crushers, FFB productivity in 2012 is estimated to drop as a result of dry conditions in 2010 and a natural reduction in productivity a year after palm plantation reaped record yields in 2011. However, trade sources believed that this level of CPO production should be enough to meet demand for use in B100 production.

There has been no new B100 plant come on line since 2010. Thirteen active producers have altogether a current production capacity of 5.4 million liters per day or 1,970 million liters per annum. Prices for B100 to petroleum refineries remained unchanged from the last update in 2011 as the few petroleum refineries are able to dictate prices. Actual prices paid to CPO B100 producers are about 10 percent or 2-3 baht/liter (20-36 US cents/gallon) below government reference prices1/. Prices for stearin B100 are sold at 1-2 baht/liter (12-24 US cents/gallon) below CPO B100 due to a presence of "cloud point" appearance in stearin-derived B100.

1/ Reference prices are calculated and announced on a weekly basis by Energy Policy and Planning Office (EPPO), Ministry of Energy, to reflect B100 production coat at a certain period. The government uses these reference prices to calculate an Oil Fund fee. However, both B100 producers and buyers use the reference prices as a basis for negotiating actual prices for their trade.

3.2 Consumption

B100 consumption will increase in 2012 by 35 percent, from 630 million liters in 2011 to 850 million liters, mainly because mandatory B5 use was reinstated in January 2012 and total diesel consumption should grow by 5-6 percent in 2012. Growth in B100 consumption is anticipated to slow down to 3-4 percent in 2013 since the B5 mandatory use will remain unchanged.

Table 3.2: Price Structure of B3 Biodiesel in Bangkok (as of June 7, 2012)

	B3 Biodiesel
Ex-Refinery Factory Price	23.7088
Excise Tax	0.0050
Municipal Tax	0.0005
State Oil Fund	2.1000
Conservation Fund	0.2500
Wholesale Price (WS)	26.0643
Value Added Tax (VAT)	1.8245
WS+VAT	27.8889
Marketing Margin	1.5338
VAT	0.1074
Retail Price	29.53
Note: Exchange rate = 31.6295 baht/$	

Source: Petroleum Division, Enery Policy and Planning Office, Ministry of Energy

3.3 Trade

Thailand has not imported or exported any B100 products as the government restricts trade by not issuing import/export permits for B100. This is done to protect domestic palm growers.

3.4 Ending Stocks

B100 production is supplied to domestic petroleum oil refineries on a contract basis; B100 producers try to keep their production limited to cover the contract amounts. As a result, the country's stocks, held by either B100 producers or petroleum oil refineries, are low at 20-30 million liters or about ten days of utilization.

4. Advance Biofuels

A molasses-based ethanol plant has opened a second production line using second-generation biofuels in the form of cane bagasse is currently operational. This pilot project has been established between Thai Roong Ruang Group, one of the largest sugar mills in Thailand, the Japanese government, and the Thai government. The operation remains in the experimental stage with a production of 10,000 liters/day. The full capacity will be 120,000 liters/day once it is fully developed.

5. Biomass for Heat and Power

In Thailand, biogas derived from animal manure for power generation and cooking is done at the farm level usually for own household needs. Larger developments have been undertaken on power generation from landfill biogas. The Energy Conservation Promotion Fund (ENCON), a government agency, has supported several projects through of soft loans, monetary subsidies, R&D support, and assistance for feasibility studies.

Thailand has also promoted biomass energy for heat and power generation in recent years through the granting of licenses to approved private companies in order to sell electricity to the Electricity Generating Authority of Thailand (EGAT) under the Small Producer Program (SPP) and Very Small Producer Program (VSPP). SPP is applied for a facility which can supply not more than 10 MW of electricity while VSPP is for not more than 1 MW. The government provides incentives to these small power producers through enhance purchase prices and a soft loan program. As a result, a large number of small renewable energy projects have emerged in many areas of Thailand. Feedstock used for these projects is mainly agricultural wastes including bagasse from sugar mills, paddy husk from rice mills, woodchips from paper factories, and empty palm bunches from palm oil crushing mills.

The Energy Policy and Planning Office (EPPO) recently reported that 77 small producers (SP) are approved to sell 4,009 MW of electricity to EGAT, of which 59 producers are currently supplying 2,533 MW in total. It was also reported that 950 very-small producers (VSP) are currently approved to sell 4,438 MW of electricity, of which only 226 producers are supplying 597 MW in total.

End of report