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Approved by:
Emiko Purdy
U.S. Embassy

Prepared by:
Perfecto G. Corpuz

Report Highlights:
Philippine bio-diesel plants currently have excess production capacity to comply with the National Bio-Fuels Law, which mandates the use of a one percent bio-diesel blend this month and a 2 percent blend within two years. For bio-ethanol, the same law requires the use of 5 percent bio-ethanol blended gasoline by 2009, to increase to a 10 percent blend by 2011. Compliance will be determined by the scheduled construction and completion of the appropriate number of plants. Timely completion will be enhanced by the issuance of the specific GRP-agency implementing guidelines in relation to its role in the National Bio-Fuels Program. Complementing the timely completion would be increased consumer acceptance on the benefits of bio-fuels use, which is likely to accelerate due to the continued rise in world oil prices.

Includes PSD Changes: No
Includes Trade Matrix: No
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EXECUTIVE SUMMARY

Republic Act 9367 (RA 9367) or the Bio-Fuels Law, signed early this year, mandates the use of bio-diesel and bio-ethanol blended fuels in all motor vehicles starting May this year and in 2009, respectively. RA 9367 also creates the National Bio-Fuels Board (NBB), an inter-agency body headed by the Department of Energy (DOE) Secretary, tasked to oversee the implementation of the country's National Bio-Fuels Program (NBFP).

Specific roles of each department or agency that compose the NBB were recently issued and will take effect this month. Implementing guidelines of the specific and concerned department, however, have not been released. Currently, not all diesel-powered vehicles are using the bio-diesel blended fuel although its use is expected to accelerate once the specific operational regulations are finalized and issued. Until that time, investors are likely to hold on to investment funds, which could be a reason for possible delays in the completion of several bio-ethanol facilities.

Domestic bio-fuels production is currently limited to coco methyl ester (CME) or coco diesel, which is also exported and used in the manufacture of cosmetics and other toiletry items. The use of CME blended diesel will likely be attained as current CME production capacity exceeds the mandated demand levels. Production of bio-ethanol using sugarcane as feedstock, on the other hand, will only commence in 2008, in time for its mandated use in 2009. Several bio-ethanol plants are currently under construction but their scheduled completion, inclusive of their corresponding feedstock supply-base, is uncertain.

Current awareness by the average consumer on the benefits of the use of bio-fuels is low and for as long as petroleum-fuel is cheaper, resistance to the adoption of bio-fuel use is expected to remain firm. Renewed and recent increases in crude oil prices are expected to enhance increased knowledge about the subject, and consequently, its use.

POLICY

President Gloria Macapagal-Arroyo early this year signed into law RA 9367 or the Bio-Fuels Law (refer to GAIN 7004). RA 9367 mandates the use a one percent bio-diesel blend within 3 months (May 2007) by all diesel-powered vehicles, and subsequently a 2 percent blend within 2 years. The Bio-Fuels Law likewise requires the use of gasoline with a blend of 5 percent bio-ethanol within 2 years, to increase to 10 percent within 4 years with the approval of a NBB to be created under the law. The full text of RA 9367 is provided in:

http://www.doe.gov.ph/AF/BioethanolPolicies.htm

In May 2007, the DOE Secretary signed the "Rules and Regulations Implementing Republic Act No. 9367" (IRRs) contained in Department Circular No. DC2007-05-0006. The IRRs specifies, among others, the composition and responsibilities of the NBB, an inter-agency body to be chaired by the Secretary of the DOE and composed of the Secretaries of the Departments of Trade and Industry (DTI), Science and Technology (DOST), Finance (DOF), Labor and Employment (DOLE), and the Department of Agriculture (DA) and its attached agencies, i.e., the Sugar Regulatory Administration (SRA) and the Philippine Coconut Authority (PCA). The DA, SRA and PCA are responsible for the feedstock supply of the National Bio-Fuels Program, according to the Circular. The full text of the IRRs is provided in the following site:

http://www.doe.gov.ph/Laws%20and%20Issuances/DC%202007-05-0006.pdf

The IRRs will take effect June 2007 and provide general guidance in the implementation of the Bio-Fuels Law. Guidelines specific to the individual department or agency concerned, however, have not yet been released and are currently being finalized. It is a complicated task as it involves many components that deal with many variable factors. Delays in the issuance of the specific guidelines, however, may slow investment inflows and jeopardize the timely compliance with RA 9367.

PRODUCTION

Sugarcane and coconuts are the preferred Philippine bio-fuel feedstocks. Domestic bio-fuels production, however, is currently limited to CME. CME is derived from coconut oil (CNO), which is extracted from copra, the dried meat of the coconut. The Philippines is the world's largest producer of CNO, and next to Indonesia, is the second largest in coconut production. An estimated 329 million coconut trees are planted in roughly 3 million nationwide. There are about 60 CNO mills with an aggregate production capacity of about 4.5 million MT. Copra crush capacity is roughly double the average annual copra production of about 2 million MT. CNO is the single largest Philippine agricultural export with shipments exceeding a million tons in recent years, the majority of which are destined for the U.S. There are currently 3 large coco diesel producers in the country, duly accredited by the DOE, with a combined production capacity of 160 million liters annually. Three other facilities have also applied for accreditation last year, according to the DOE.

Commercial production of bio-diesel likely started in 2004 in response to Memorandum Circular No. 55 (MC 55) signed by President Gloria Macapagal-Arroyo which mandated its use in all GRP diesel (refer to RP4019). As mentioned in GAIN 6019, however, its adoption was low. MC 55 could be considered a pilot test and bio-diesel production through 2007 is expected to surge in view of RA 9367.

For bio-ethanol, sugarcane is presently the preferred feedstock as it provides the highest ethanol-yield per hectare compared to corn, cassava and sweet sorghum, according to the SRA. Like coconut, sugarcane is also a major Philippine crop with average annual production at over 2 million MT in recent years. In 2006, sugarcane output accounted for roughly 4 percent of the value of overall Philippine agricultural production. The local sugar industry is considered a 'mature' industry and is well organized.

Feedstock	Yield per Hectare, tons	Liters Ethanol/ton	Liters Ethanol Yield per hectare per year
Corn	2.39	370	1768*
Cassava	7.75	180	1395
Sweet Sorghum	50**	60	6000*
Sugarcane	65	70	4550

* two (2) crops per year
** Experimental values at this point

Source: Sugar Regulatory Administration

A sugarcane area of 59,000 hectares will be needed to produce about 3.8 million MT of sugarcane bio-fuel feedstock (at 4,550 liters of ethanol per hectare) in order to meet the 5 percent minimum bio-ethanol blend demand by 2009, according to SRA estimates. For a 10 percent blend, approximately 10.3 million MT of sugarcane feedstock produced from an estimated 158,500 hectares of sugarcane is required. As mentioned in the POLICY Section, production assumptions are expected to change as a result of further refinement of implementing guidelines by the DA-SRA.

In a recent forum, the SRA presented projections through crop year 2010-11 on the number of plants, their rough schedules of construction and operation, and the corresponding areas needed for feedstock production to support their corresponding bio-ethanol operations (refer to following table). Bio-ethanol plants are either adjunct facilities or stand-alone plants. Adjunct facilities are appended to existing sugar mills and need at least 18 months to build. It costs an estimated P1.5 billion ($32.3 million) inclusive of a P700-million ($15.5 million) agricultural investment for its feedstock supply-base, according to the SRA. The San Carlos City distillery, the plant currently under construction and scheduled to operate in 2008-2009, on the other hand, is a stand-alone plant which usually take 24-30 months to construct. It will require an estimated 7,000 hectares of sugarcane (at the current productivity level) to support its operations and will cost about P2 billion ($43.0 million) inclusive of the agricultural investment.

In the same presentation, the SRA noted that investors were interested in putting up an additional 6 bio-ethanol facilities that were projected to be operational during the 2009-1010 period. Production capacities are unknown, however, and actual construction has not yet started. Considering the time needed to establish a mill, the timing of operations is of concern. Assuming that no bio-ethanol plant other than San Carlos City facility is completed by 2009, local bio-ethanol output would be short by approximately 238 million liters.

Ethanol Distilleries - Timetable & Target Areas as of March 21, 2007						
Distillery Location	Crop Year Start		Configuration	Cane Hectarage		
	Construction	Operation		Existing	Expansion	TOTAL
San Carlos, Neg. Occ.	2006-2007	2008-2009	Stand Alone	5,000		5,000
Bukidnon	2007-2008	2009-2010	Stand Alone	2,000	9,000	11,000
Tarlac*	2008-2009	2009-2010	Upscaled-Molasses			0
Davao	2008-2009	2009-2010	Stand Alone	3,500	3,500	7,000
Bataan	2008-2009	2009-2010	Stand Alone		7,000	7,000
Neg. Occ. (2)**	2008-2009	2009-2010	Stand Alone	4,000		4,000
Zamboanga del Norte	2008-2009	2009-2010	Stand Alone		6,250	6,250
Pampanga	2008-2009	2010-2011	Stand Alone	3,500	3,500	7,000
Cagayan	2008-2009	2010-2011	Stand Alone	3,000	4,000	7,000
Bogo	2008-2009	2010-2011	Stand Alone	6,500	2,000	8,500
Balayan	2008-2009	2010-2011	Stand Alone	4,500	2,500	7,000
Tamlang, Neg. Or.	2008-2009	2010-2011	Stand Alone		7,000	7,000
Bicol	2008-2009	2010-2011	Stand Alone	6,500	1,500	8,000
Zambales	2008-2009	2010-2011	Stand Alone		7,000	7,000
Palawan	2009-2010	2011-2012	Stand Alone		7,000	7,000
			TOTAL	38,500	60,250	98,750

*Upscaling of existing distillery using molasses as feedstock, hence no effect on existing sugarcane area.
**Utilizing sugarcane, molasses and "D" sugar as feedstock, "D" sugar will be used during lean periods of sugarcane production.

Source: Sugar Regulatory Administration

Current research and development efforts on bio-fuel feedstock alternatives are being undertaken at the University of the Philippines in Los Baños (UPLB). Specifically, it is studying the use of bio-diesel derived from Jatropha, and bio-ethanol from cassava and sweet sorghum. Studies on these alternatives are likely being pursued to free volumes earmarked for the sugar and coconut oil domestic and export markets.

CONSUMPTION

Last year, over half of the supply of total domestic energy reportedly came from oil and coal; geothermal power, 21 percent; biomass, 17 percent; and natural gas, 4 percent, according to unverified press reports. Energy sourced from ethanol, coco-diesel, solar, wind, hydroelectricity and other renewable sources reportedly accounted for only 1 percent.

The Philippines has an estimated 5.2 million registered vehicles, the majority of which are Japanese flex-fuel vehicles. According to the DOE, these vehicles are designed to run on both unleaded gasoline and alcohol fuel, usually ethanol, up to a 20 percent blend. Questions regarding the compatibility of bio-fuels with existing motor engine when the Chamber of Automobile Manufacturers of the Philippines, Inc. (CAMPI), a member of the World Fuel Charter Committee, declared that petroleum-fuel engines are compatible with the WWC blend of up to 10 percent bio-ethanol and up to five percent bio-diesel. Bio-fuel standards are provided for by the Philippine National Standards. It should be noted, however, that CME, an oleochemical, is also used in the manufacture of soaps, detergents, shampoos and other toiletries and cosmetic items.

Philippine petro-diesel consumption is estimated at 7 billion liters this year, and expected to grow annually at 5 percent in the next 5 years. At the mandated one-percent bio-diesel blend, the annual local CME demand would be roughly about 70 million liters. Double this volume would approximate the 2 percent bio-diesel blend mandated requirement required after 2 years. The current CME production capacity indicates that compliance with the one percent and 2 percent bio-diesel blends within the mandated time frame is highly likely. At present, however, not all diesel-powered vehicles currently are running on the mandated CME-blended diesel. The use of CME blended-diesel is expected to significantly increase starting June this year as a result of the implementation of the bio-diesel component of RA 9367.

For bio-ethanol, the DOE has projected Philippine gasoline demand to reach 5.1 billion liters next year and the SRA projects bio-ethanol demand to be at 268 million liters at the 5 percent mandated level. By 2011, the estimated total CME demand would be about 721 million liters representing an estimated 10 percent bio-ethanol blend.

TRADE

CME (HS 3824.90.90) tariffs are currently at 3 percent, unchanged from the 2006 level. Trade data from the World Trade Atlas (WTA), however, apply only to HS 3824.90.00 or Other Chemical Products and Preparations of the Chemical Industry. Trade figures in the Statistical Section represent the estimated CME volumes that are intended for CME research and development prior to implementation of RA 9367, and for actual bio-diesel use. Imports are much lower than WTA figures to give allowance for CME imports for use other than bio-diesel purposes. China dominated overall imports of 'other chemical products' during both years.

Imports under the aforementioned tariff heading last year reached 29.5 MT for a slight increase from the 28.9 MT level in 2005. The average price of the 2006 imports was $1,940 per MT, slightly down from the average price of $2,010 the previous year. Exports of 'other chemical products' in 2006, on the other hand, grew 31 percent from 1,719 MT in 2005 to 2,248 last year, the majority of which were destined for Australia. Average export price per MT was at $1,910, slightly down from the average price in 2005.

For bio-ethanol, tariffs are currently at one percent, by virtue of Executive Order No. 449 issued on July 2005, significant lower than the 10 percent duty the previous year. The tariff reduction was reportedly to enhance availability of domestic bio-ethanol supply as well as to encourage oil companies to start making bio-ethanol available at the pump stations.

Bio-ethanol, according to the Philippine Tariff Commission, falls under HS 2207.20.11. Trade data from the WTA, however, only provides information for HS 2207.20.00. Imports under this heading cover denatured ethyl alcohol and other spirits and reached 11.6 MT for a decline from the 18.0 MT level the previous year. The average price per kilo was recorded at $0.60 last year, down from the average price per kilo of $0.66 in 20055. Depending on the progress of construction of the projected bio-ethanol plants required to meet the mandated demand by 2009, bio-ethanol imports are likely to surge late 2008 to ensure the smooth implementation of the bio-ethanol component of the National Bio-Fuels Law.

Exports of denatured alcohol and other spirits reached 252 MT last year, significantly down from the 890 MT export level in 2005. Japan was the dominant destination of exported denatured alcohol in 2005 and 2006 with an average export price of $1.25 per kilo and $1.64 kilo, respectively.

STOCKS

Although CME commercial production likely started as early as 2004, ending stocks only appeared 2006 or shortly before RA 9367 was approved. Indicative of this is the apprehension by some oil companies in complying with the one-percent CME blended diesel as scheduled citing the inadequacy of existing infrastructure for their retail operations. It would not have been prudent for CME manufacturers/processors to aggressively produce CME and maintain stocks without assurance of compliance with legislated quality standards.

For bio-ethanol, stocks are expected only by end-2009, which is the year commercial operations of the first bio-ethanol plant/s are expected to commence.

MARKETING

There are about 300 CME distributors nationwide and oil companies are the main local buyers of bio-diesel. To avoid price disruptions when CME-blended fuel is sold, some oil companies have declared their intention to subsidize the additional cost of distribution and retail operations of the CME-blended fuel. Prices of CME-blended diesel ranged from P31.37 ($0.67) to P34.65 ($0.75) per liter, which was the price range of the Department of Energy based on its April 21 monitored rates, according to press reports. Meanwhile, conventional diesel is about P34 ($0.73) per liter.

For bio-ethanol, a recent study by a professor from the UPLB reportedly reveals that the cost of producing bio-ethanol in the country is about P35 ($0.75) per liter, higher than the landed cost of imported bio-ethanol from Brazil (P24.40 or $0.52 per liter) and Australia (P26.60 or $0.57 per liter). Local unleaded gasoline currently is currently about P39 ($0.84) per liter.

Current awareness by the average consumer on the benefits of the use of bio-fuels is low as petroleum-fuel is still cheaper. Provisions for an educational campaign on the benefits of its use are included in the DOE-IRRs and this, coupled with the renewed rise in petroleum prices are expected to raise increased awareness and support.

STATISTICAL SECTION

Figures in the following tables are Post estimates except trade figures, which have been based on World Trade Atlas data. For purposes of clarity, however, as CME traditionally is used for the production of soaps, detergents and other cosmetic products, numbers in the Bio-fuel production/Consumption/Trade Table are estimates of CME produced specifically for bio-diesel.

Quantity of Feedstock Use in Bio-Fuel Production in MT						
		2003	2004	2005	2006	2007
Bio-diesel						
Vegetable Oil						
	Soybean Oil	0	0	0	0	0
	Rapeseed Oil	0	0	0	0	0
	Palm Oil	0	0	0	0	0
	Coconut Oil	0	500	1,000	5,000	35000
	Animal Fats	0	0	0	0	0
	Recycled Vegetable Oil	0	0	0	0	0
	Other	0	0	0	0	0
Ethanol						
	Corn	0	0	0	0	0
	Wheat	0	0	0	0	0
	Sugarcane	0	0	0	0	0
	Sugar beat	0	0	0	0	0
	Rye	0	0	0	0	0
	Molasses	0	0	0	0	0
	Wood	0	0	0	0	0
	Cassava/tubers	0	0	0	0	0

Bio-fuel Production/Consumption/Trade (million liters)					
	2003	2004	2005	2006	2007
Bio-diesel/ethanol					
Beginning stocks*	0	0	0	0	1
Production	0	1	1	5	35
Imports	0	1	1	1	1
Total supply	0	2	2	6	37
Exports	0	0	0	1	1
Consumption	0	2	2	4	30
Ending stocks*	0	0	0	1	6