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Biofuels Annual

Philippine Biofuels Situation and Outlook

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Report Highlights:
There have been no major issues complying with the Philippine biodiesel mandated blend requirements since 2007. Adequate feedstock and biorefineries will make compliance possible even at a higher blend by 2011. For ethanol, lack of investments largely due to current volatility of ethanol and oil prices, as well as the need for a more clarified energy policy is expected to result in inadequate ethanol production in 2010. Ethanol consumption will remain weak during the year due to insufficient supply. Compliance with a higher ethanol blend by next year is remote as ethanol imports will no longer be allowed starting early 2011. As a result, the mandated ethanol blend will likely be adjusted to that level which local production can supply. By this time, and under the newly elected Philippine government, a revised energy development program including biofuels use is expected to be in place.

Post: **Commodities:**
Manila

Executive Summary:
The Philippine Energy Plan (PEP) is the country's blueprint for energy development and on April 2010, the Department of Energy (DOE) concluded consultations on the proposed PEP for the period 2009-2030. The proposed PEP includes adjustments in diesel and gasoline demand assumptions although operational plans have not been established. More refinements are expected and pending its approval and issuance, likely later this year or early 2011, the previous PEP 2007-2014 will be the basis of this report.

Intermittent power outages as a result of power supply problems (compounded by the scarcity of water to power existing hydroelectric plants due to the El Nino dryspell in 2010) have become increasingly frequent. As a result, there appears to be a shift from long-gestating renewable energy (RE)-power facilities in favor of perceived more conventional power plants, including nuclear power. The strategic use of nuclear power as an energy source is a highlight in the PEP 2009-2030.

For the transport sector, diesel is the dominant fuel used and compliance with the mandated biodiesel blend since 2007 has been relatively smooth using locally produced biodiesel. Local feedstock supply (coconut methyl ester or CME) is sufficient for the adequate number of refineries/capacities. A higher mandated biodiesel blend in 2011 is possible although the appropriate standards have yet to be established.

On the other hand, compliance with the ethanol mandate remains problematic mainly due to supply availability and price volatility. There are also some distribution gaps. Currently there are only three (3) ethanol production facilities operating (2 sugarcane and one mollases-based) with a combined annual production capacity of about 69 million liters (MLi). Another facility with a production capacity of 30 MLi is reportedly due for commercial operations in 2011 although local production will remain significantly below the mandated demand. Despite the low local production, ethanol imports since last year have been below-than-expected according to data from the Global Trade Atlas (GTA).

On the demand side, there has been a smooth transition from the one (1) percent to two (2) percent CME blend in 2009. Ethanol demand, on the other hand, remains weak subject to availability and affordable pricing. The approval of Executive Order (EO) 877 on April 2010 allowing the importation of used engines and parts for motor vehicles is also expected to dampen consumption in the medium term. Complicating the situation is the reported issuance this month by the outgoing Arroyo Administration of an EO eliminating the 3 percent tariff on imported crude oil, among other products. This is expected to further weaken competitiveness of biofuels relative to petroleum fuel. Despite this, ethanol demand will considerably increase in 2010, but will remain below the mandated equivalent, compared to the previous year's level due to increased supply and the mandated blending with petrofuel. Demand the following year, however, will decline due to the drastic decline in supply as biofuel imports will no longer be allowed.

Before 2011, the National Biofuels Board (NBB) will likely not endorse a 10 percent mandated ethanol blend. Instead, The NBB may recommend that the mandate stay at the current 5 percent, or recommend a lower level that will approximate what local production can supply. What this blend will be has become a source of uncertainty for the potential investors. For biodiesel, there is no such importation policy inferring that local supply is adequate and hence, not expected to be an issue.

Despite the less-than-expected ethanol importation last year, the local industry continues to push for a higher 20 percent duty (from 1 percent) for imported ethanol. A study on overall MFN tariffs, including those for ethanol, is ongoing and a decision expected to be issued later this year. Likewise reportedly to be issued around the same time is the implementation mechanics for feed-in tariffs for power from RE resources.

Economic policy is intimately intertwined with politics in the Philippines and perhaps the most significant of all policy uncertainties is the policy direction of the incoming government. Incoming President Benigno Aquino III is perceived to be pragmatic and Post expects overall Philippine energy and biofuels policy not to significantly deviate from the previous administrations' thrust. It may take more time, however, for investor confidence and overall business climate to normalize.

Disclaimer: This report presents the situation and outlook for biofuels in the Philippines. It presents the views of the author and does not reflect the official views of the U.S. Department of Agriculture (USDA). Official host government statistics on biofuels are not readily available in many instances and this report is based on analytical assessments, not official data.

Policy and Programs:

A timeline on Philippine energy policy developments until the signing of the Biofuels Act of 2006 is provided is attached (Philippine Energy Milestones).

On January 12, 2007, President Gloria Macapagal-Arroyo signed into law Republic Act 9367 (RA 9367) or the Biofuels Act. The latter mandates a minimum one percent biodiesel blend into all diesel fuels within 3 months from the effectivity of the law, to increase to a 2 percent blend 2 years later. RA 9367 likewise mandates that 2 years after taking effect, at least five (5) percent ethanol shall comprise the annual total volume of gasoline sold and distributed by oil companies in the country, subject to the requirement that all ethanol blended gasoline shall contain a minimum of 5 percent ethanol by volume. Within four (4) years after the law takes effect, the NBB shall determine the feasibility and recommend to the DOE to mandate a minimum of ten (10) percent blend of ethanol by volume into all gasoline fuel distributed and sold all oil companies in the country.

RA 9367 directs the DOE to take the lead and prepare the Philippines Biofuel Program consistent with the PEP. RA 9367 was published on January 22, 2007 and took effect on February 6, 2007. The corresponding implementing rules and regulations (IRRs) of RA 9367 were released on May 17, 2007 in the DOE's Department Circular No. 2007-05-0006 (see Attached).

The complete text of RA 9367 may be found in:

http://www.lawphil.net/statutes/repacts/ra2007/ra_9367_2007.html

To encourage investments into the biofuels industry, RA 9367 provides the following incentives without prejudice to existing benefits under current rules:

a) Specific tax per liter on local and imported biofuels is zero (0);
b) The sale of raw material used in the production of biofuels shall be Value Added Tax (VAT) exempt;
c) All water effluents considered as "reuse" are exempt from wastewater charges; and
d) Government financial institutions shall, in accordance with their respective charters or applicable laws, accord high priority to extend financial support.

In support of RA 9367 and its IRRs, on October 8, 2008, Joint Administrative Order No. 2008-1, Series of 2008 or the Guidelines Governing the Biofuel Feedstock's Production, and Biofuels and Biofuel Blends Production, Distribution and Sale under RA 9367 was signed. The guidelines clarified the rules on the conversion of agricultural lands for biofuel feedstock production. In general terms, agricultural areas are not to be utilized for biofuel feedstock production, according to the guidelines. The full text of Joint Administrative Order No. 2008-1, Series of 2008 is provided in:

http://www.doe.gov.ph/Laws%20and%20Issuances/JAO%20No.%202008-1.pdf

Then in December 16, 2008, President Arroyo signed Republic Act 9513 (RA 9513) or the Renewable Energy Act of 2008. RA 9513 establishes the framework for RE resource development and its utilization. RA 9513 mandates the DOE to be the lead agency and also creates the National Renewable Energy Board which is to "perform such other functions, as may be necessary, to attain the objectives of this Act". RA 9513 has as its declared policies the following:

(a) Accelerate the exploration and development of RE resources to achieve energy self-reliance, through the adoption of sustainable energy development strategies to reduce the country's dependence on fossil fuels;

(b) Increase the utilization of RE and promote its commercial application by providing fiscal and non-fiscal incentives;

(c) Encourage the development and utilization of renewable energy resources as tools to effectively prevent or reduce harmful emissions and thereby balance the goals of economic growth and development with the protection of health and the environment; and

(d) Establish the necessary infrastructure and mechanism to carry out the mandates specified in this Act and other existing laws.

Section seven (7) of RA 9513 mandates a feed-in tariff system for electricity produced from renewable energy resources as a fiscal incentive within a year after taking effect. To date, the mechanics needed

to install such a system, however, are not yet in place (see Ethanol, Trade). The said tariff is an incentive scheme giving higher rates to power sourced from renewable energy sources over traditional fossil-fired power plants.

RA 9513 also contains several sections in relation to incentives provided for RE developers, farmers and other stakeholders. Under *Section 15. Incentives for RE Projects and Activities* the following incentives/benefits are provided:

(a) Income Tax Holiday (ITH) for the first 7 years of its commercial operations;

(b) Duty-free Importation of RE machinery, equipment and materials within the first 10 years;

(c) Special Realty Tax Rates on equipment and machinery shall not exceed 1.5 percent of their original cost less accumulated normal depreciation or net book value.

(d) The Net Operating Loss Carry-Over of the RE developer during the first 3 years from the start of commercial operation shall be carried over as a deduction from gross income for the next 7 taxable years immediately following the year of such loss;

(e) After 7 years of income tax holiday, all RE Developers shall pay a 10 percent corporate tax on its net taxable income;

(f) RE developers may apply for accelerated depreciation tax books and be taxed based on such if an RE project fails to receive an ITH before full operation;

(g) The sale of fuel or power generated from renewable sources of energy, as well as purchases of local supply of goods, properties and services needed for the development, construction and installation of RE plant facilities, shall be subject to zero percent -VAT;

(h) Cash Incentive of Renewable Energy Developers for Missionary Electrification. - A renewable energy developer shall be entitled to a cash generation-based incentive per Kgwatt hour rate generated, equivalent to 50 percent of the universal charge for power needed to service missionary areas where it operates the same, to be chargeable against the universal charge for missionary electrification;

(i) Tax Exemption of Carbon Credits. - All proceeds from the sale of carbon emission credits shall be exempt from any and all taxes;

(j) Tax Credit on Domestic Capital Equipment and Services. - An RE operating contract holder who purchases machinery, equipment, etc., from a domestic manufacturer are entitled to a tax credit equivalent to 100 percent of the value of the value-added tax and custom duties that would have been paid on the RE machinery, equipment, materials and parts had these items been imported.

Under Section 21 covering *Incentives for RE Commercialization,* the benefits accorded to priority investment areas are extended to the RE sector. Specifically, RE manufacturers, fabricators and

suppliers of locally-produced RE equipment are entitled to:

(a) Tax and duty-free importation of components, parts and materials.

(b) Tax Credit on Domestic Capital Components, Parts and Materials. - A 100 percent tax credit of the value-added tax and customs duties that would have been paid on the components, parts and materials had these items been imported shall be given to an RE equipment manufacturer, fabricator, and supplier who purchases RE components, parts and materials from a domestic manufacturer:

(c) ITH and exemption for 7 years for accredited RE manufacturers, fabricators and suppliers of RE equipment; and

(d) Zero-rated value added tax transactions with local suppliers of goods, properties and services.

Farmers engaged in the plantation of biomass resources (Section 22) shall be entitled to duty-free importation and VAT-exemption on all types of agricultural inputs, equipment and machinery.

Rebates for the tax paid for the purchase of RE equipment for residential, industrial, or community use are also provided by RA 9513 to encourage the adoption of RE technologies. The appropriate period for granting the tax rebates shall be prescribed by the Department of Finance (DOF), according to RA 9513.

Section 31 of RA 9513 or the provision on *Incentives for RE Host Communities/Local Government Units (LGUs)*, on the other hand, entitles RE host communities/LGUs to 80 percent of the share from royalty and/or government share of from RE projects and activities for use directly as electricity consumption subsidy for end users in the RE host communities/LGUs whose monthly consumption do not exceed 100 kwh.

The complete text of RA 9513 may be viewed at:

http://www.lawphil.net/statutes/repacts/ra2008/ra_9513_2008.html

There have been intermittent power outages as a result of power supply-demand imbalances starting 2009 which were compounded by the scarcity of water to power existing hydroelectric plants in 2010 (due to the El Nino dryspell). As a result the power interruptions have become increasingly frequent, particularly in the Visayas and Mindanao regions.

The PEP is the Philippine energy sector's blueprint for energy development and on April 2010, the DOE concluded consultations on the proposed PEP covering the period 2009-2030. It is noteworthy for considering nuclear power as an energy source although there are legal impediments to its use. The Philippines has a nuclear plant (constructed during the Marcos dictatorship) but it was never used. used. Nuclear power has since then been outlawed by the Philippine constitution during the Presidency of Corazon Aquino in the late 1980s. The draft PEP 2009-2030 also includes adjustments in diesel and gasoline demand assumptions although operational plans have not been established. More refinements are expected and pending its approval and issuance, likely later this year or early 2011, the previous PEP 2007-2014 will be the basis of this report.

Economic policy is intimately intertwined with politics in the Philippines and perhaps the most significant of all policy uncertainties is the overall policy direction of the incoming government. National and local elections were held on May 10, 2010 and a new administration will officially assume office by July 1, 2010. Although incoming President Benigno Aquino III is perceived to be pragmatic, specific economic policies are still unclear. While Post expects overall Philippine energy and biofuels policy not to significantly deviate from the previous administrations' thrust, it may take more time for overall business climate to normalize.

Bioethanol and Biodiesel:

CONVENTIONAL ETHANOL

Production

In the Philippines, bioethanol refers to ethanol (C_2H_5OH) produced from feedstock and other biomass. Ethanol fuel refers to the hydrous and anhydrous ethanol denatured for use as motor fuel with quality specifications in accordance with the Philippine National Standards (PNS). The potential feedstocks for Philippine ethanol production are sugarcane, molasses, cassava and sweet sorghum.

The following feedstock to ethanol conversion rates for sugarcane, sweet sorghum and cassava were obtained from the most recent Biofuels Feedstock Program (BFP) prepared by the Philippine Agricultural Development and Commercial Corporation (PADCC) of the local Department of Agriculture (DA). The PADCC is the designated agribusiness and development arm of the DA that oversees the BFP. According to the DA-BFP, a ton (MT) of sugarcane will yield 70 liters (Li) of ethanol; sweet sorghum at 50 Li and cassava a yield rate of 180 Li of ethanol. Contacts from the academe find the 70 Li ethanol yield for sugarcane on the high side, however, and say 60 Li would be more realistic. Post uses a 65 Li conversion rate in the Table. For bagasse, a sugarcane co-product, Post uses a 300 kilos (kg) recovery rate per ton cane.

ETHANOL FEEDSTOCK	Li/MT	Yield (MT/Has.)
Sugarcane	70	65
Sweet sorghum	50	100
Cassava	180	8

Source of Basic Data: DA Biofuels Feedstock Program, PADCC-DA

Despite the incentives and benefits provided by RA 9367 and RA 9513, investments into ethanol production have been insufficient. An ethanol plant involves considerable outlay (estimated at P4 billion or $89 million average investment per plant of 30 million Li annual capacity) and a more

predictable policy environment is preferred by potential investors/financers.

There are currently only 3 ethanol production facilities operating (2 sugarcane and 1 molasses-based) with a combined annual production capacity of about 69 MLi, up from the previous years' 2 plants with a capacity of 39 MLi. According to the DA-BFP, at least 9 distilleries with a minimum annual capacity of 30 MLi must have been operating last year to satisfy the 5 percent -blend requirement. This year, to meet the required blend, 17 to 20 distilleries with the same capacity are needed, according to the DA-BFP. A fourth ethanol plant possibly may operate in 2011 and as result, local ethanol output is again projected to increase from the 2010 level. The combined capacity of the 4 plants is projected at 100 MLi annually. Despite the increasing production trend, however, local ethanol production is not expected to meet local demand through 2011.

A major investor, in March 2010, announced its decision to put off plans of putting up a 100,000 Li/day ethanol project reportedly due to, among other things, "current ambiguities in the implementation of the Biofuels Act ". The same investor is reportedly concentrating in the construction of a coal-fired power plant in the same area. Even more recently, according to a press article, another potential ethanol producer announced it would also pull out investments in another ethanol project due to inadequate support from the government.

Banks are also reportedly not very keen on lending for ethanol projects unless oil companies sign up for long-term supply contracts. Most oil companies, however, are also in the business of ethanol trading and are therefore not inclined to enter into such local supply agreements given the current price volatility of sugar and oil, according to media reports.

Local sugar millers are adopting a practical position by pushing for power co-generation. Industry contacts say they are reportedly looking for new equipment, i.e., boilers that will enable them to produce more energy with the same volume milled. Co-generation, according to industry contacts, will provide considerable cost-savings and provide opportunities for additional income.

Consumption

The following table outlines the total demand by fuel type (in KTOE) through 2011 using data from the Philippine DOE.

Total Demand by Fuel (K TOE) 2009-2030			
	2009	**2010**	**2011**
Gasoline	2893	2405	2369
Diesel	5461	5101	5265
Ethanol	45	137	285
CME	119	98	144

TOTAL GAS DEMAND	2938	2542	2654
% Ethanol/Gas Blend	1.53	5.39	10.74
TOTAL DIESEL DEMAND	5580	5199	5409
% CME/Diesel Blend	2.13	1.88	2.66

Source of Basic Data: Alternative Fuels and Energy Technology Division, Philippine Department of Energy

Post used the conversion rate1,267 Li : 0.64 TOE as provided in the reporting instructions to construct the following table. Despite the slight variances in the percentage ethanol to gas blend (i.e., 5.39 percent and 10.74 percent ethanol/gas blend by 2010 and 2011, respectively, compared to the current mandated blend of 5 percent and possible 10 percent during the same period), local mandated ethanol demand will exceed local production through 2011.

Total Demand by Fuel (MLi) 2009-2011			
	2009	**2010**	**2011**
Gasoline	5727.24	4761.15	4689.89
Diesel	6892.98	6438.58	6645.59
Ethanol	89.09	271.22	564.21
CME	150.20	123.70	181.76
TOTAL GAS DEMAND	5816.33	5032.37	5254.10
% Ethanol/Gas Blend	1.53	5.39	10.74
TOTAL DIESEL DEMAND	7043.19	6562.28	6827.35
% CME/Diesel Blend	2.13	1.88	2.66

Source: Post's estimates

On the demand side, although data is not readily available, the majority of Philippine cars are Japanese flex-fuel vehicles that are gasoline-powered. Unconfirmed reports estimate that around 40 percent of all registered vehicles in the Philippines still run with carburetors on their engines. As mentioned in the previous annual report (GAIN 9019), a company may sell 50 percent of its gasoline at E10 and the other half unblended and still be compliant to RA 9367. This complicates implementation of RA 9367 as it requires periodic inspection of oil stations by the DOE.
By 2011 however, all gasoline sold should have a minimum 10 percent ethanol (if recommended by the NBB and approved by the DOE.

E10 is the popular ethanol blend locally and sells for around P44-45/Li ($0.98-1.00/Li) in the major urban areas. Conventional gasoline is sold for around P49.50 ($1.10/Li). E10, however, is not available in most provinces. Concerns over the compatibility of gasoline powered motor engines to

ethanol-blended fuel exist and there have been complaints that vehicles running on E10 are underpowered. There are only a handful of electric cars in the Philippines.

There are 3 major oil companies (aka the "Big 3") that dominate the local fuel industry, namely Petron, Shell and Chevron. The sale and distribution of ethanol also reportedly requires some adjustments in the existing conventional fuel handling and storage infrastructure. The "what and where" of these supply links are not known, and the appropriate adjustments, according to industry contacts, have not all been undertaken. In addition, more competition from imported petroleum fuel is expected as a result of the recent issuance of EO 890 eliminating the 3 percent tariff on imported crude oil and refined petroleum products.

Biofuels demand was bolstered on June 14, 2007 (or a few months after the enactment of the Biofuels Act) when Ford Philippines opened its first Southeast Asian Flexible Fuel Engine Plant in Sta. Rosa, Laguna. The engine plant reportedly can produce 1.8 Li and 2 Li flex-fuel engines and has a capacity of 50,000 engines annually. The engine plant was intended to support the production of Ford Focus Flexible Fuel Vehicles that were also to be exported to other ASEAN markets.

Then on April 2010, President Arroyo signed EO 877 or the new Motor Vehicle Development Program (MVDP). EO 877 amends EO 156, the earlier MVDP, and allows the importation of used engines and parts and components for motor vehicles. Major car companies are reportedly against EO 877's provisions that favor locally completely knocked down operations and production of parts and components over the importation of new vehicles. The new MVDP likewise did not address a request by industry to ban the importation of used trucks. EO 877 is likely to weaken the demand for biofuels and some car companies have called for the recall, if not at least an amendment of the MVDP. The implementing guidelines of EO 877 have not yet been released. More information on Philippine motor vehicles is provided in the Conventional Biodiesel Section.

High prices of locally produced ethanol also have a dampening effect on overall ethanol demand in 2010. The local bioethanol industry represented by the Ethanol Producers Association of the Philippines (EPAP) has been complaining that oil companies have favored imports over local ethanol. In response, the Independent Philippine Petroleum Companies Association (IPPCA) asserted that prices of locally produced ethanol were not competitive. Locally produced ethanol is currently sold around P40/li ($0.89/li), according to industry contacts, compared to about P30/li ($0.67/li) for imported ethanol.

Ethanol demand this year is expected to increase compared to the 2009 level due to improved supply. Even though local production is expected to increase in 2011, demand will likely decline considerably as a result of the prohibition of ethanol imports as provided by RA 9367.

Trade

Ethanol, according to the Philippine Tariff Commission (PTC), falls under HS 2207.20.11 or Ethyl Alcohol Strength by Volume of Exceeding 99 percent. Ethanol has an MFN tariff of 10 percent but may be subject to a tariff of 1 percent if the importer is DOE-accredited. Only DOE-certified oil companies may import ethanol in times of a local deficit, according to the Biofuels Act. There are no penalty provisions should oil companies not import ethanol. Last year, the NBB reportedly authorized oil companies to import 184 MLi of ethanol to help meet demand in 2009. There are no entries under the tariff heading HS 2207.20.11, however, and the figure in the table represents imports under the heading HS 2207.20 which covers alcohol of any strength. Imports under this classification, according to GTA data reached 49,361 MT (or 55 MLi at the 1 MT: 1,267 Li ethanol mass: liquid conversion rate). The 2009 import figure in the table is Post's estimate, however, and is lower than the GTA data as the latter also includes alcohol for other purposes.

The EPAP continues to push for a 20 percent duty on imported ethanol arguing that the current import duty of 1 percent is a major investment deterrent. Overall tariffs, including those for ethanol, are currently under review. The current MFN duties will expire by the end of this year and an updated tariff structure for the period 2011-2015 is expected before the end of 2010. Just this month, an EO eliminating the 3 percent tariff on imported crude oil, among other products, was reportedly issued. This is expected to further weaken competitiveness of biofuels relative to petroleum fuel.

Ethanol imports this year are likely to increase from the 2009 level although compliance with the mandated ethanol blend is unlikely given the uncertain policy environment and the current price volatility of ethanol and oil. Ethanol imports in the table assume that the duty on imported ethanol will remain at their current level (1 percent for DOE accredited oil firms). Imports of ethanol the following year are expected to decline dramatically from the 2010 level as a result of the expected import prohibition imposed by the Biofuels Act by 2011.

Ending Stocks

No ending bioethanol stocks are expected through 2011.

Conventional & Advanced Bioethanol (million liters)						
CY	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**
Production	0	0	0	25	50	95
Imports	0	0	0	50	150	5
Exports	0	0	0	0	0	0
Consumption	0	0	0	75	200	100
Ending Stocks	0	0	0	0	0	0
Production Capacity (Conventional Fuel)						
No. of Biorefineries	0	0	0	2	3	4
Capacity	0	0	0	40	70	100

Production Capacity (Advanced Fuel)						
No. of Biorefineries	0	0	0	0	0	0
Capacity	0	0	0	0	0	0
Co-product Production (1,000 MT)						
Product Y (Bagasse)	0	0	0	115	231	438
Product Z	0	0	0	0	0	0
Feedstock Use (1,000 MT)						
Feedstock A	0	0	0	385	769	1,462
Feedstock B	0	0	0	0	0	0
Feedstock C	0	0	0	0	0	0
Feedstock D	0	0	0	0	0	0

Source: Post's estimates

CONVENTIONAL BIODIESEL

Production

Biodiesel refers to fatty acid methyl ester or mono-alkyl ester derived from vegetable oil, or animal fats and other biomass-derived oils that shall be technically proven and approved by the DOE with quality specifications in accordance with the PNS.

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CME is the Philippine biodiesel feedstock, and is an oleochemical derived from coconut oil (CNO) which is produced from copra. Copra is the dried meat of the coconut which when crushed produces CNO. Copra meal and glycerine are by-products in the CNO extraction process. CNO has many industrial and food purposes. Oleochemicals, one the other hand, is used in the manufacture of soaps, detergents, shampoos and other toiletries and cosmetic items.

According to industry contacts, 5 coconuts will make 1 kg of copra, which will make 0.60 kg of CNO. This means 60 percent of copra weight is oil. Hence, a Kg of CNO will come from 1.67 kg of copra extracted from 8.35 coconuts. The conversion of CNO to CME is 1:1. Thus, 1.11 Li of coco oil will also make 1.11 Li of CME coming from 8.35 nuts. On per liter basis, a liter CME is extracted from 7.5 nuts.

There are currently 7 biodiesel plants operating in the Philippines with a capacity of 300 million liters (MLi) annually, down from the previous year's level of 12 facilities with a combined capacity of 395 MLi. Despite the reduction, Post does not expect major supply problems of local biodiesel through 2011. Antiquated and inefficient plants likely ceased operations as competition tightened in 2009 and unconfirmed reports allude to the consolidation and possible expansion of major extraction facilities. The biodiesel production figures in the table through 2011 are Post estimates and are based to satisfy the CME demand as per projections by the DOE. The number of CME biorefineries and

their corresponding capacities are expected to increase in 2011 in anticipation of stronger CME demand. The local coconut industry has assured refineries that local copra supply will be adequate should a higher blend be mandated by next year.

The country's biggest biodiesel, resins and oleochemical producer, in a press article, reportedly said its 2010 first-quarter net income rose by more than a fifth as revenues returned to pre-crisis levels. The same company reportedly said its consolidated earnings grew 22 percent to P160 million ($3.55 million) in the first 3 months of this year, from P131.7 million ($2.9 million) last year. Biodiesel remained the company's biggest revenue driver, contributing about half of sales

Consumption

Although data on how many vehicles run on what type of fuel is not readily available, the majority of overall Philippine motor vehicles run on diesel fuel.

In 2009 (latest data available), there were 6.2 million registered motor vehicles according to the Philippine Land Transportation Office (LTO). Motorcycles/tricycles (MC/TC), utility vans and cars accounted for 51, 26 and 13 percent share, respectively, of overall registered motor vehicles last year. In order to be registered, these vehicles are made to undergo emission tests by the LTO.

No. of Motor Vehicles Registered by MV Type				**%Share**		
MV Type	**2007**	**2008**	**2009**	**09**	**08/07 %**	**09/08 %**
Cars	751,092	761,919	780,252	12.54	1.44	2.41
UV	1,602,619	1,595,162	1,643,878	26.43	-0.47	3.05
SUV	192,991	198,497	221,980	3.57	2.85	11.83
Truck	281,261	296,276	311,582	5.01	5.34	5.17
Buses	30,159	29,745	33,033	0.53	-1.37	11.05
MC/TC	2,647,574	2,982,511	3,200,968	51.46	12.65	7.32
Trailer	24,356	27,162	28,740	0.46	11.52	5.81
TOTAL	5,530,052	5,891,272	6,220,433	100.00	6.53	5.59

Source of Basic Data: Land Transportation Office, Philippine Department of Transportation and Communication

For the first 4 months of 2010, motor vehicle sales grew 37 percent from the same period of the previous year, according to data from the Chamber of Automotive Manufacturers of the Philippines Inc. (CAMPI). Vehicle sales in April 2010, however, contracted 1 percent from the March 2010 level.

Preliminary estimates from CAMPI reportedly estimate vehicle sales in May 2010 at 13,995 units for a strong 34 percent increase from the same month last year. For the first 5 months of this year,

vehicle sales reportedly reached 66,958 units, up by 37 percent from the year-ago levels. For the entire 2010, CAMPI had earlier projected vehicle sales this year to grow 4 percent but raised its forecast after the better-than-expected sales in May this year.

	2010	2010	Variance	2010	2009	Variance
	Apr	Mar	%	Jan-Apr	Jan-Apr	%
Total Industry	14,254	14,373	-0.8	52,963	38,551	37.4
Passenger Car	4,658	4,649	0.2	17,667	13,762	28.4
Commercial Vehicle	9,596	9,724	-1.3	35,296	24,789	42.4
AUV	3,108	3,141	-1.1	11,493	8,846	29.9
LCV	6,331	6,348	-0.3	23,101	15,060	53.4
Lt. Trucks	97	137	-29.2	476	642	-25.9
Trucks & Buses	60	98	-38.8	226	241	-6.2

Source of Basic Data: Chamber of Automotive Manufacturers of the Philippines Inc.

There have been no major issues in complying with the biodiesel mandated blends of 1 and 2 percent (refer to Total Demand by Fuel in Bioethanol Section) since the implementation of the Biofuels Act. The significant jump in CME demand in 2011 is premised on the raising of the mandated blend from 2 to 5 percent.

Trade

The PTC classifies biodiesel under the tariff heading 3824.90.90C. There are no records under this is heading, however, according to the GTA. Imports under HS 3824.90 or Other Chemical Industrial Products and Preparations of the Chemical or Allied Industries last year reached 28, 076 MT, down from the 31,354 MT the previous year. Imports were dominated by China, Singapore and Malaysia. Items under this grouping have tariffs currently at 3 percent, unchanged from the 2008 level, but may be imported duty-free if coming from the ASEAN-member countries. Post contends that possibly CME does not belong to this category. No CME imports are reflected in the Biodiesel table. The imports reported by the GTA were likely other chemical products considering the country is the world's top CNO exporter. Unlike ethanol, there is no provision for biodiesel importation in the Biofuels Act and this reinforces Post's position that there were likely no CME imports in 2009. Likewise, Post expects CME imports in 2011 to be nil.

Ending Stocks

No ending CME stocks are expected through 2011.

Conventional & Advanced Biodiesel (million liters)						
CY	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**

Production	2	70	72	150	124	182
Imports	0	0	0	0	0	0
Exports	0	0	0	0	1	2
Consumption	2	70	71	89	271	564
Ending Stocks	0	0	0	0	0	0
Production Capacity (Conventional Fuel)						
No. of Biorefineries	10	12	12	12	7	10
Capacity	150	325	325	395	300	600
Production Capacity (Advanced Fuel)						
No. of Biorefineries	0	0	0	0	0	0
Capacity	0	0	0	0	0	0
Feedstock Use (1,000 MT)						
Feedstock A (CME)	2	70	72	150	124	182
Feedstock B						
Feedstock C						
Feedstock D						

Source: Post's estimates

Advanced Biofuels:

An archipelago, the Philippines has an aggregate land area of 30 million hectares (74 million acres), about a third of which are classified as agricultural lands. The local terrain, however, is predominantly rugged and mountainous with limited natural water bodies for irrigation. The majority of the country's farms is small in size, averaging about 2 hectares, and is managed by single families engaged in subsistence production. Because agricultural areas are not to be utilized for biofuel feedstock production as per the guidelines of RA 9367, biofuel feedstock production is limited to idle and non-productive areas. These considerations make appealing the cultivation of Jatropha curcas (jatropha) as an alternative biodiesel source. Jatropha is a non-edible tropical plant reportedly resistant to drought, and can easily be planted or propagated through seeds or cuttings. It reportedly starts producing seeds within 14 months, but reaches its maximum productivity level after 4-5 years. The plant remains useful for around 30-40 years.

As potential source for biodiesel, the jatropha plant reportedly can produce oil content of 30-58 percent, depending on the quality of the soil where it is planted. Its seeds yield an annual equivalent of 0.75 to 2 tons of biodiesel per hectare, according to unconfirmed reports. The geographic landscape of the country, however, makes logistics distribution and collection a major concern. Economic scale in relation to biofuel feedstock requirements is also expected to be an issue for potential investors.

Jatropha, as a biodiesel feedstock, is still in the research and development stage. Although there have been numerous press articles alluding to heavy investments in jatropha production, there currently is no known jatropha plantation of significant scale, i.e. above 5,000 hectares. Jatropha is still not included in the PNS and specific varieties for biodiesel extraction have reportedly not yet been identified. Consequently, yields at the farm level and milling extraction rates (and the appropriate costings) have not yet been established. Jatropha nuts reportedly are also toxic and

environmental questions need to be addressed. Supportive of current research efforts is the recent launching of a jatropha processing and analytical testing facility by the Philippine Department of Science and Technology (DOST).

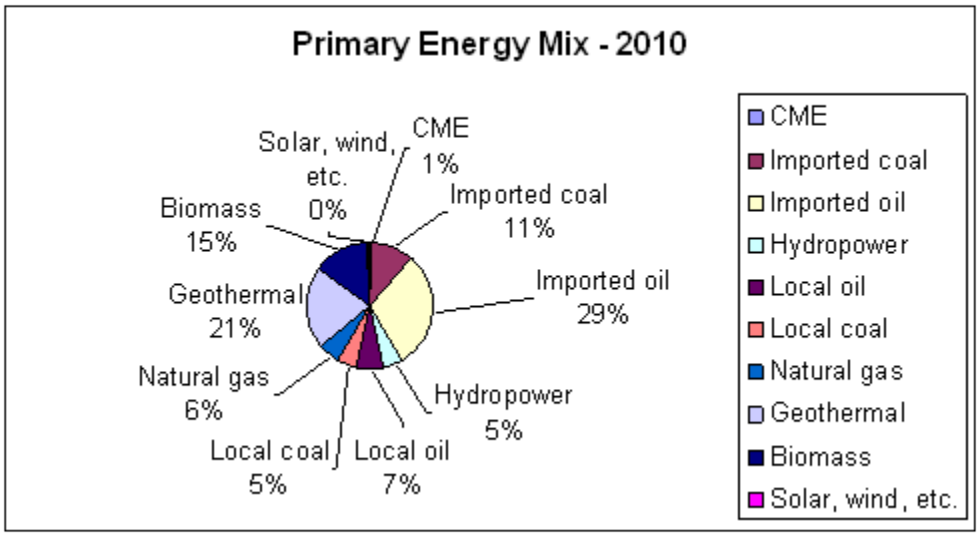
FAS/Manila, working closely with the Philippine DA, supported a Philippine Biofuels delegation to the United States, April 21-30, 2010. The visiting delegation was composed of eight (8) key private sector representatives led by a high-level official of the PADCC. The delegation included a representative of an organization pushing for jatropha as a biodiesel feedstock, who is currently in negotiations with a U.S.-based biofuels company for a possible production arrangement. The arrangement, will reportedly involve a major airline company as a possible market for jatropha-blended aviation fuel. Current talks are reportedly on due diligence.

Second- and third-generation biofuels research is a new field of study in the Philippines, and the current focus is on the pre-treatment of cellulosic materials, C-5 sugar fermentation, and low ethanol evaporation. During the Presidential State Visit to Brazil in June 24, 2009, a "Memorandum of Understanding on Bioenergy Cooperation including Biofuels" between the Philippine DOE and the Ministry of Mines and Energy of the Federal Republic of Brazil was signed. Details, however, are not available.

Biomass for Heat and Power:

In 2007, or around the time when the Renewable Energy Act was signed, President Arroyo reported that the country had become 57 percent energy-sufficient from a 45 percent sufficiency level before her administration in 2001. With the signing of RA 9513, a 60 percent self-sufficiency target was reportedly attainable by 2010. According to press reports, the Philippines is the second largest geothermal power producer in the world (next to the U.S.), has the highest wind power potential in the region, has very high solar power penetration and abundant hydropower and biomass resources. On the other hand, the country also has one of the most expensive power rates in the region.

Following is a pie-chart on the country's primary energy mix for 2010 as per the DA-BFP, which reportedly is based on the PEP 2007-2014.



Source of Basic Data: Source of Basic Data: DA Biofuels Feedstock Program

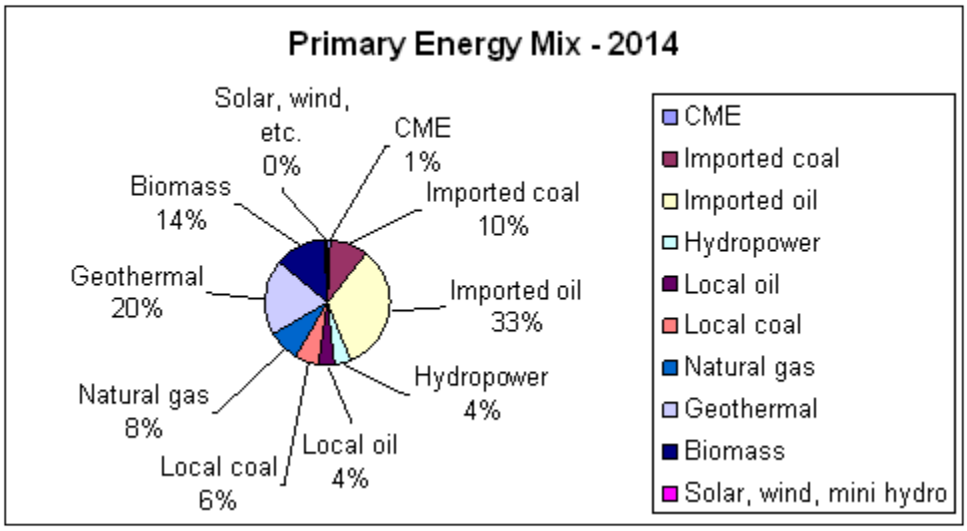
Except for imported coal and imported oil, all other components of the primary energy mix are indigenous sources of energy. According to the DA-BFP, the latter is the expected dominant primary energy source of the Philippines this year (59 percent) followed by imported oil (30 percent) and imported coal (11 percent). RE sources (natural gas, hydropower, geothermal, biomass, solar, wind, mini hydro, etc. and CME) is projected to account for 42 percent of the overall energy source in 2010, according to the DA-BFP.

Following is the comparative breakdown of the primary energy mix of the country for 2010 and 2014, according to the DA-BFP.

ENERGY SOURCE	**% CONTRIBUTION**	
	2010	**2014**
• Indigenous sources		
• Local oil	6.8	3.9
• Local coal	5.1	6.2
• Natural gas	5.5	8.0
• Hydropower	4.8	4.2
• Geothermal	21.3	19.8
• Biomass	4.9	13.9
• Solar, wind, etc.	0.2	0.2
• CME	0.6	1.0
	59.2	57.2
• Imported oil	29.6	32.9
• Imported coal	11.2	9.9
TOTAL	100.0	100.0

By 2014, indigenous sources is projected to account for a lower 57 percent of Philippine primary energy, imported oil higher at 33 percent, and imported coal at a lower 10 percent. Based on the DA-BFP, from 2010 to 2014, the share of RE sources relative to overall energy is expected to decline to 39 percent in 2014 from 42 percent in the 2010. Biomass as an energy source and CME use are also both projected to decline during the same period. This may allude to possible sustainability issues using RE sources in the country. Philippine Legislations and Regulations related to Environmental Management is attached.

The corresponding pie-chart for the 2014 energy mix follows.



Source of Basic Data: DA Biofuels Feedstock Program

According to the PADCC, the Philippines produces abundant biomass resources from agricultural wastes of more than 50 MMT per annum from agricultural crops such as rice hulls, rice straws, coconut shells, coconut husks, coconut fronds, sugarcane trash and cane tops, corn cobs and corn stalks. Aside from agricultural crops, the country also produces biomass residues from the livestock subsector at about 3.5 MMT per year.

Heat and power from biomass is quite popular in the Philippines, particularly in the rural areas. Charcoal and firewood use are still common for cooking and heating purposes and rising oil prices have enhanced a shift away from the use of liquefied petroleum gas (LPG) to firewood and charcoal use. The practice of using wood for cooking is a major reason for the deforestation and shrinking forest cover of the Philippines. In 2000, when LPG prices were much lower, an estimated 4 out of 10 households nationwide were already using wood for cooking. There are currently roughly 13 million households in the Philippines.

Notes on Statistical Data:
The following conversion rates were used in the Bioethanol and Biodiesel Tables:

65 Li ethanol = 1 MT of sugarcane = 300 kgs bagasse

1 Li of biodiesel = 1 Li CME
0.64 TOE = 1,267 Li ethanol
0.90 TOE = 1,136 Li biodiesel

Author Defined:

ABBREVIATIONS

BFP - Biofuels Feedstock Program
CAMPI - Chamber of Automotive Manufacturers of the Philippines Inc.
CME - coco-methyl ester
CNO - coconut oil
DA - Department of Agriculture
DOE - Department of Energy
DOF - Department of Finance
DOST - Department of Science and Technology
EPAP - Ethanol Producers Association of the Philippines
EO - Executive Order
GTA - Global Trade Atlas
IRR - Implementing Rules and Regulations
ITH - Income Tax Holiday
IPPCA - Independent Philippine Petroleum Companies Association
Jatropha - Jatropha curcas
Kg - Kg
Li – liters
LTO - Land Transportation Office
LPG - liquefied petroleum gas
LGU - Local Government Unit
MC/TC - motorcycles/tricycles
MVDP - Motor Vehicle Development Program
NBB - National Biofuels Board
MFN - Most Favored Nation
MLi – million liters
MT- ton
PADCC - Philippine Agricultural Development & Commercial Corporation
PEP - Philippine Energy Plan
PNS - Philippine National Standards
PTC - Philippine Tariff Commission
RE - renewable energy
RA 9367 - Republic Act 9367
RA 9513 - Republic Act 9513 (Biofuels Act)
TOE – ton of oil equivalent
UV - Utility vans
VAT - Value-added Tax