

THIS REPORT CONTAINS ASSESSMENTS OF COMMODITY AND TRADE ISSUES MADE BY USDA STAFF AND NOT NECESSARILY STATEMENTS OF OFFICIAL U.S. GOVERNMENT POLICY

Required Report - public distribution

**Date:** 11/28/2018

**GAIN Report Number:** RP 1840

## Philippines

### Biofuels Annual

#### Philippine Biofuels Situation and Outlook

**Approved By:**

Ryan Bedford

**Prepared By:**

Perfecto Corpuz

**Report Highlights:**

Ethanol production using sugarcane and molasses in 2018 is expected to increase to 270 million liters (ML) from 235 ML the previous year as aggregate capacity increases. Blending peaked at 10 percent in 2014 but declined to just over 9 percent in recent years, and will further drop in 2018 due to new taxes on petroleum fuels and motor vehicle sales. For biodiesel, consumption growth is driven by increased diesel use since 2009 with the blend rate peaking at 2.8 percent in 2016 due to increased motor vehicle sales. The planned 5 percent blend in 2015 has not happened due to high coconut oil prices relative to petroleum fuel. The Philippine Department of Energy, in its latest energy plan has recommended maintaining the current ethanol and biodiesel blends (10 and 2 percent, respectively) through 2019, and revisit blend targets through 2040 due to feedstock concerns and pricing.

**Post:**  
Manila

**Executive Summary:**

Signed in January 2007, the Biofuels Act or Republic Act (RA) 9367 makes the Philippines the first country in Southeast Asia to have biofuels legislation in place. Sugarcane and molasses are used in Philippine ethanol production, while coconut oil (CNO) is the preferred biodiesel feedstock. The current official blend mandates are 10 percent (E10) and 5 percent (B5) for ethanol and biodiesel, respectively. However, the actual rates are lower, particularly for biodiesel. The Biofuels Act gives priority to local ethanol over imports, but the mandated blend historically has largely been met through the latter. Biodiesel imports are not allowed under the Biofuels Act.

In 2017, there were 10 fuel ethanol plants operating with a combined capacity of 282 ML, unchanged from 2016. Two additional plants commissioned in 2018 raised aggregate capacity to 365 million liters. Despite the increased capacity, however, local ethanol production will still be insufficient to meet the 10 percent mandate.

A quota allocation system for local ethanol makes the country one of the most open economies for ethanol imports. In 2017, the Philippines was the fourth largest market for U.S. ethanol with sales valued at over \$101 million, marginally lower than the \$103 million level in 2016. In terms of volume, however, imports from the United States increased 7 percent from 217 ML in 2016 to 232 ML in 2017 due to fairly flat local production.

For biodiesel, imports are prohibited and there have been no exports due to traditionally high CNO prices. Biodiesel consumption is met by purely by local production, which has consistently supplied the one percent blend set in 2007 and the 2 percent blend (B2) requirements since 2009. Not implemented was a B5 blend in 2015 due to high CNO prices and therefore, the high cost of biodiesel compared to fossil fuel. In 2017, 11 refineries produced 220 ML, which amounted to an estimated 2.5 percent blend level. Capacity utilization was only at 38 percent of total aggregate capacity of 575 ML in 2017.

Set in 2012, the Philippine government's (GPH) aspirational goal was to raise the biofuels blend to E20 and B10 by 2020. However, inadequate investments in new biofuel plants and distribution infrastructure, and inadequate tax policy and other support favoring biofuels over fossil fuel consumption is forcing the GPH to review its plans and targets. This is embodied in the Philippine Department of Energy's (DOE) Philippine Energy Plan (PEP) 2017-2040 which recommends maintaining the current blend targets, i.e., E10 and B5, through 2019, and revisiting biofuels blends and feedstock availability (while continuing biofuels feedstock research and development programs) in the medium- to long-term. The review is made more vital given the enactment of a tax reform measure that imposes higher excise taxes on petroleum fuels as well as on new motor vehicle sales starting 2018.

While the new taxes will dampen overall fuel use, the gasoline and diesel pools are still expected to expand in the near term due to the continued growth of the Philippine economy and increasing motor

vehicle sales. Ethanol imports are likely to account for roughly half of increasing overall demand in the next 3-5 years due to inadequate capacity.

For biodiesel, local coconut production can barely satisfy the strong domestic and international demand for CNO and other coconut products. Increasing current CNO production will remain a big challenge without a massive coconut tree-planting program. It will take roughly 10-15 years before these trees become commercially productive, or about the time advanced biofuels (i.e. commercial cellulosic fuel) are developed for biodiesel production. In the meantime, with biodiesel imports banned, the blend rate cannot be substantially raised and the benefits of its use to the environment and consequently human health will remain unrealized over the next decade.

## **II. Policy and Programs**

RA 9367 makes the Philippines the first country in Southeast Asia to legislate the blending of biofuels in all petroleum fuels. It seeks to develop indigenous renewable energy (RE) to reduce dependence on imported oil; mitigate greenhouse gas emissions; increase rural employment; and ensure the availability of RE without detriment to the environment and food security.

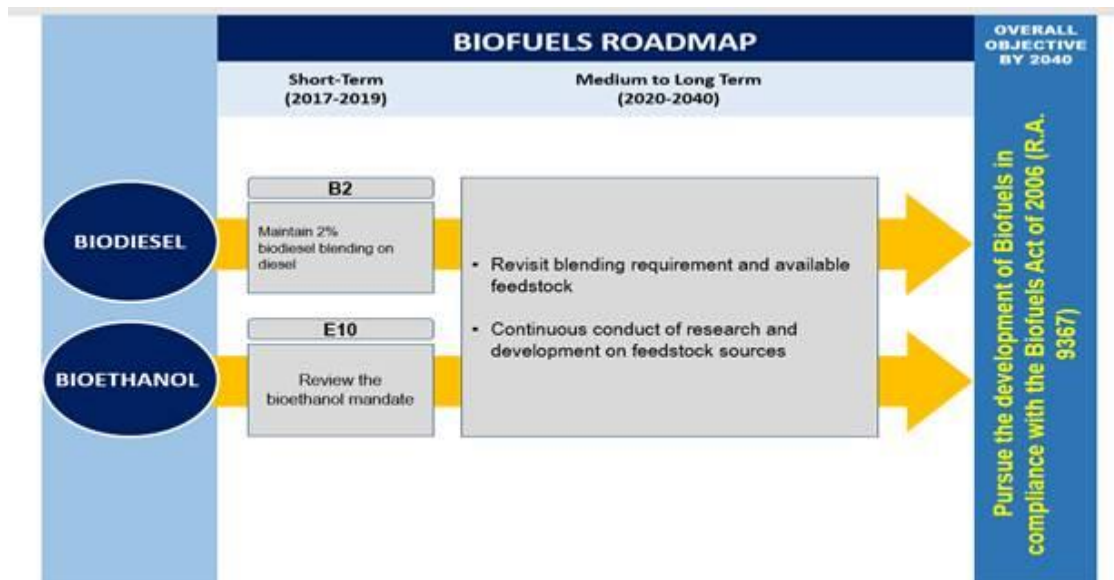
Implemented in June 2007, RA 9367 provides fiscal incentives to biofuels producers and distributors including income tax holidays, duty-free importation, value added tax (VAT) exemptions, among others.

Although the Department of Environment and Natural Resources (DENR) has no specific mandate provided by RA 9367, the DOE must ensure that standards and guidelines for biofuels (as well as biofuel-blended gasoline and diesel) must be compliant with Philippine National Standards. In addition, the Biofuels Act provides that water effluents used in production shall conform to the Philippine Clean Water Act, subject to the monitoring and evaluation of the DENR.

The Renewable Energy Act or RA 9513 was passed in 2008. The country then was the world's second largest producer of geothermal energy and the first country in Southeast Asia to establish a commercial wind farm and a grid-connected solar photovoltaic power plant. President Duterte signed the Paris Agreement on Climate Change in February 2017. The Philippines has committed to reduce its greenhouse gas emissions by 70 percent by 2030 but needs technical and financial support. The GPH aims to have renewable energy capacity installed to 20,000 MW by 2040.

The DOE's PEP is the basis of the country's biofuels strategy expressed in the National Biofuels Plan (NBP). The PEP and the NBP are 'living documents' and regularly reviewed and adjusted. Following is a diagram of the Biofuels Roadmap in the latest PEP for 2017-2040:

<https://www.doe.gov.ph/pep/philippine-energy-plan-2017-2040>.



Source: PEP 2017-2040 Sectoral Plans and Roadmaps

### III. Gasoline and Diesel

Fuel Use History (Million Liters)										
Calendar Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 <sup>f</sup>
<b>Gasoline Total</b>	3,784	3,918	3,882	4,114	4,365	4,547	5,211	5,741	6,028	6,200
<b>Diesel Total</b>	6,938	7,164	7,081	7,403	7,871	8,370	9,331	10,321	10,837	10,800
On-road	5,454	5,631	5,566	5,819	6,187	6,579	7,334	7,701	8,086	8,200
Agriculture										
Construction & Mining										
Shipping & Rail										
Industry										
Heating										
<b>Jet Fuel Total</b>	281	291	380	454	536	673	551	737	630	785
<b>Total Fuel Markets</b>	11,003	11,373	11,343	11,971	12,772	13,590	15,093	16,799	17,495	17,785

f-forecast  
Source: DOE

Gasoline, diesel and jet fuel consumption in the Fuel Use Table are based on estimates from Post and the DOE. The local industry is deregulated and gasoline and diesel prices vary by company and area. Although environmental consciousness is growing, price considerations remain the dominant factor in motor vehicle sales and use in the Philippines.

Contacts estimate the number of flexi-fuel vehicles (FFVs) at 10-20 percent of overall vehicles. Post considers this on the high side. In 2007, Ford Motor Company Philippines, Inc. (FMCPI) opened a new P4 billion (\$74 million) assembly plant in Santa Rosa, Laguna which manufactured and subsequently sold FFVs to the market. In 2012, FMCPI announced the cessation of its operations citing "lack of supply base and economies of scale." On March 2014, another motor company acquired the assembly plant.

In 2004, the GPH, through Executive Order No. (EO) 290 entitled “*Implementing the Natural Gas Vehicle Program for Public Transport*” initiated the pilot testing of locally sourced natural gas as fuel for 200 public utility buses using compressed natural gas (CNG) from the Malampaya gas field (located 65 kilometers northwest of the island of Palawan). While the test proved it was technically feasible to use CNG for public utility buses (absent a pipeline), the establishment of CNG depots was a major economic challenge. Likewise, while Malampaya provides virtually all the country’s natural gas requirements, supply is projected to be short of demand starting 2022. The DOE had estimated a market potential of 16,000 public units of utility buses shifting to CNG but there has been little progress.

In 2010, an estimated 17,500 taxi units were running on liquefied petroleum gas (LPG). The availability of new car models (for taxis), low gasoline prices (in 2014-2015) and the negative health perception, however, dampened the interest of fleet operators to convert to LPG. The numbers have been declining, as a result. As of 2016, the DOE estimates the total number of commercial auto-LPG taxis at around 8,500 units supported by roughly 200 refilling stations.

On June 19, 2017, the Philippine Department of Transportation (DOTR) officially launched the country’s Public Utility Vehicle (PUV) Modernization Program. Involved is the phase out of PUVs, including jeepneys or PUJs (i.e., jeeps used as public utility vehicles), aged 15 years and older, to be replaced with more environment-friendly vehicles with more efficient engines (i.e., Euro-4 compliant or electrically powered) by 2020. Funding constraints are an issue, however. According to a press report, the GPH will have to invest ₱415 billion (\$7.7 billion) to implement the scheme fully. Selective program implementation is a proposed alternative (see Biodiesel Consumption Section).

Unconfirmed estimates place the number of electric vehicles (E-vehicles) in the Philippines at 2,000 units. In 2006, EO 488 was issued to support the manufacturing of E-vehicles by reducing tariffs for E-vehicle components. Although E-vehicles, mostly PUVs, can be seen on some roads in major urban centers, charging stations are grossly inadequate. The first oil company had its E-vehicle charging facility installed only in late 2017. Other companies are expected to follow. Industry forecasts e-vehicles to comprise 10 percent of the total 200,000 PUVs over the next five years or through 2022.

A major program of the Duterte government is a comprehensive tax reform package. The first tranche, the Tax Reform for Acceleration and Inclusion (TRAIN) or RA 10963 was signed on December 27, 2017. TRAIN lowers personal income tax rates while imposing new excise taxes on petroleum products and motor vehicles, among others, starting January 1, 2018. Proceeds from the tax reforms support an ambitious P8 trillion (\$148 billion) GPH infrastructure program called “Build, Build, Build” ([www.build.gov.ph](http://www.build.gov.ph)) through 2022.

Following are the old and new TRAIN tax rates for motor vehicles. Under the TRAIN, electric vehicles do not have to pay excise taxes while for hybrids only half of the tax is applied. Also exempted are trucks, cargo vans, jeeps, special purpose vehicles and pick-up trucks. Although still growing, the excise taxes on new motor vehicles have slowed down sales in 2018.

<b>OLD vs NEW TRAIN AUTO EXCISE TAX RATES</b>			
<b>Old</b>	<b>New</b>	<b>Old Rate (%)</b>	<b>New Rate (%)</b>
up to P600,000 (\$11,111)	up to P600,000 (\$11,111)	2	4
over P600,000 (\$11,111) to P1,100,000 (\$20,370)	over P600,000 (\$11,111) to P1,000,000 (\$18,520)	2	10
over P1,100,000 (\$20,370) to P2,100,000 (\$38,890)	P1,000,000 (\$18,520) to P4,000,000 (\$74,075)	P112,000 (\$2,075) +40% In excess of P1,100,000 (\$20,370)	20
Over P2,100,000 (\$38,890)	Over P4,000,000 (\$74,075)	P512,000 (\$9,480) +60% in excess of P2,100,000 (\$38,890)	50

Source: Department of Finance

#### IV. Ethanol

<b>Ethanol Used as Fuel and Other Industrial Chemicals (Million Liters)</b>										
Calendar Year	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018f</b>
<b>Beginning Stocks</b>	0	0	0	0	0	0	0	0	0	0
Fuel Begin Stocks	0	0	0	0	0	0	0	0	0	0
<b>Production</b>										
Fuel Production	23	10	4	35	72	115	168	230	235	270
<b>Imports</b>										
Fuel Imports	64	140	215	248	297	339	311	260	276	280
<b>Exports</b>										
Fuel Exports	0	0	0	0	0	0	0	0	0	0
<b>Consumption</b>										
Fuel Consumption	87	150	219	283	369	454	479	490	511	550
<b>Ending Stocks</b>										
Fuel Ending Stocks	0	0	0	0	0	0	0	0	0	0
<b>Total Balance Check</b>	0	0	0	0	0	0	0	0	0	0
<b>Fuel Balance Check</b>	0	0	0	0	0	0	0	0	0	0
<b>Production Capacity (Million Liters)</b>										
Number of Refineries	2	3	3	4	4	8	8	10	10	12
Nameplate Capacity	49	79	79	133	133	222	222	282	282	365
Capacity Use (%)	47	13	5	26	54	52	76	82	83	74
<b>Co-product Production (1,000 MT)</b>										
Bagasse	93	48	0	144	150	150	45	17	12	3
<b>Feedstock Use for Fuel (1,000 MT)</b>										
Sugar Cane	310	160	0	480	500	500	150	55	40	10
Molasses	15	0	16	20	155	340	650	930	950	1,100
Sugar	0	0	0	2	10	5	0	0	0	0
<b>Market Penetration (Million Liters)</b>										
Fuel Ethanol	87	150	219	283	369	454	479	490	511	550
Gasoline	3,784	3,918	3,882	4,114	4,365	4,547	5,211	5,741	6,028	6,200
Blend Rate (%)	2.30	3.83	5.64	6.88	8.45	9.98	9.19	8.54	8.48	8.87

f-forecast

Source: DOE and SRA

#### Consumption

Ethanol demand is largely a function of the mandated blend. Ethanol consumption has risen over the last decade but slowed considerably in 2014, and has remained largely flat since then. Imports, which initially dominated ethanol supply, have gradually eased as local production has increased consistently since 2012. Blend compliance, monitoring and enforcement are concerns mainly due to the archipelagic and geographical terrain of the Philippines. In general terms, the distribution infrastructure is inadequate and inefficient.

Local gasoline stations generally offer regular, mid-grade, and premium or high-octane gasoline. These have octane ratings of 91, 95, and 97-octane or higher, respectively. According to an industry expert, ethyl tert-butyl ether or ETBE is not used locally as an octane enhancer. Low to mid ethanol-blended gasoline engines dominate Philippine gasoline-powered vehicles.

RA 9367 creates the National Biofuels Board (NBB), a cabinet-level body that biofuel policy is consistent with the goal of balanced economic growth. The NBB may adjust the ethanol blend only within the first four years of implementation. The minimum requirements of 5 percent for ethanol cannot be decreased thereafter. The following table shows the ethanol blend targets and implementation dates since inception.

<b>ETHANOL TARGETS</b>	<b>Blend</b>
<b>Year</b>	<b>%</b>
2009	5
2011	10
2015	10
2020	20
2025	20/85*
2030	20/85*

\*aspirational & voluntary goal  
Source: DOE

As an aspirational goal, the DOE wants to make available an 85 percent ethanol blend for voluntary promotion by 2025. Attaining this goal is unlikely and is manifest in the PEP 2017-2040's biofuels roadmap that recommends maintaining the current ethanol blend at E10 through at least 2019 and revisiting blending requirements onwards through 2040.

The TRAIN excise taxes that increased fuel prices starting in 2018 further gave credence to the PEP guidance. From P4.35 (\$0.08) per liter, excise taxes for gasoline increased to P7 (\$0.13) per liter starting January 1, 2018 under TRAIN. Taxes will further increase to P9 (\$0.17) per liter in 2019, and P10 (\$0.19) per liter in 2020. The excise taxes are in addition to a 12 percent VAT.

The following Table shows the price differential per liter ethanol vs. gasoline (RON 95). Local ethanol and gasoline prices have risen by over 12 percent (P11.96 or \$0.22 per liter) and 28 percent (P6.38 or \$0.12 per liter) from July 2017 to June 2018, respectively. As a result, the pump-price difference of ethanol and gasoline has narrowed from P7.96 (\$0.17) in July 2017, to P2.38 (\$0.04) per liter in June 2018 (latest data available).

<b>LOCAL GASOLINE VS. ETHANOL PRICES</b>			
July 2017 – June 2018			
	Gasoline	Ethanol	Ethanol-Gas
	Peso per liter		Price Differential
Jul-17	43.40	51.36	7.96
Aug-17	45.37	51.53	6.16
Sep-17	46.76	48.77	2.01
Oct-17	46.84	47.52	0.68
Nov-17	48.22	42.48	(5.74)
Dec-17	47.73	43.89	(3.84)
Jan-18	50.26	45.77	(4.49)
Feb-18	52.31	48.26	(4.05)
Mar-18	52.54	51.76	(0.78)
Apr-18	53.76	53.54	(0.22)
May-18	56.30	55.48	(0.82)
Jun-18	55.36	57.74	2.38

Source: DOE and SRA

The gap between gasoline and ethanol likely widened leading to October 2018 when gasoline prices peaked and reached record level (Dubai prices exceeded \$80 per barrel) at over P70 (\$1.30) per liter in some areas. Inflation rose to 6.7 percent in September 2018, the ninth consecutive month of increase and the highest in nine years due to increasing global fuel prices, the weakening of the Philippine Peso, and rising food prices because of weather-related issues. Average inflation from January to September 2018 was 5 percent, higher than the 2-4 percent target, according to the Philippine Central Bank.

While there have been calls to suspend its implementation, RA 10963 provides that suspension of the higher tax rates can only happen if oil prices reach \$80 per barrel for at least three months.

### **Production**

According to the DOE, there were 11 ethanol plants operating in 2017 with a total production capacity of 282 million liters. Two additional plants were commissioned in the second quarter of 2018 raising aggregate capacity to 365 million liters. Ethanol output in 2018 will likely increase to 270 ML as a result compared to 235 ML the previous year.

As mentioned in the [previous annual report](#), a shift from potable alcohol plants to fuel ethanol production is a recent development as it is cheaper to modify rather than build a new facility. The adjustments take only two to three months. The trend likewise explains the shift from cane to molasses as the primary feedstock used.

The Philippines is also a major sugarcane producer and in addition to domestic requirements, it is a major U.S sugar quota recipient. Raw sugar production was inadequate in Market Year (MY) 2017/18 (December/November) forcing the GPH to import 200,000 tons of sugar. The Philippines also exported about 120,000 tons to the United States, about 16,000 short of the quota. Raw sugar production is projected to modestly recover and reach 2.250 million tons in MY 2018/19, up 7 percent from the previous year's level. Local sugar production is inadequate to meet the growing domestic and international demand for sugar, including the feedstock needs for fuel ethanol production.



There are research and development efforts in using sweet sorghum (for conventional sugar fermentation) and lignocellulosic biomass as an alternative or complementary feedstock. However, commercial cultivation of sweet sorghum for fuel will require vast tracks of land, and is expected to remain constrained by a longstanding Philippine agrarian reform law (which limits private land ownership to five hectares).

The DOE rationalizes the distribution of locally produced ethanol by determining the volume of production and allocating this quantity to local oil companies on a monthly basis. Oil companies are required to purchase the entire monthly allocation before they can import ethanol.

### **Trade**

The quota allocation scheme, domestic feedstock limitation for local fuel ethanol production, and effort to maintain E10 combine to make the Philippines one of the most open economies for ethanol imports. Although Section 5.2 of the Biofuels Act allows ethanol imports only up to four years after the 2009 blend implementation or 2013, inadequate local production has forced importation. The quota allocation system for locally produced ethanol ensures that imports do not displace locally produced ethanol.

Ethanol tariffs (HS 271012) under various free trade agreements within ASEAN, including the Philippines, fell to zero in 2016, and remain duty free. Likewise, Most Favored Nation (MFN) tariffs for World Trade Organization (WTO)-member countries, including the United States, remain at zero percent in 2018. A duty of one percent is imposed if the ethanol is used for fuel-blending purposes under the Philippine Fuel Ethanol Program, according to the DOE.

For molasses, imports are only allowed if used for potable ethanol production. The local ethanol producers can only import molasses when approved by the Sugar Regulatory Administration (SRA).

Mainly due to relatively flat production, fuel ethanol imports in 2017 increased 6 percent from 260 ML in 2016 to 276 ML in 2017, according to data from the SRA and the DOE. Imports from the United States, however, increased 9 percent to 263 ML in 2017 from 241 ML the previous year. The United States maintained its dominance accounting for 95 percent of total ethanol imports in 2017, increasing its share from 93 percent in 2016. According to U.S. Census data, the Philippines was the 6th largest market for U.S. ethanol in 2017, with sales valued at \$101 million.

<b>ETHANOL IMPORTS (ML)</b>			
<b>Country of Origin</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>
Australia	8.26	16.60	3.85
Brazil			
Indonesia			
Korea	7.40	1.91	5.69
Philippines (Subic)	112.54		
Singapore	4.74		
Thailand			
USA	177.67	241.04	263.07
Vietnam	0.07		2.96
Others			
<b>Total</b>	<b>310.68</b>	<b>259.55</b>	<b>275.56</b>

Source: SRA and DOE

For 2018, ethanol imports are expected to decline to 240 ML compared to the 2017 level due to increased production.

## V. Biodiesel/Renewable Diesel

<b>Biodiesel (Million Liters)</b>										
Calendar Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018f
<b>Beginning Stocks</b>	2	8	7	17	18	20	29	32	41	57
<b>Production</b>	137	124	133	138	155	172	204	227	220	226
<b>Imports</b>	0	0	0	0	0	0	0	0	0	0
<b>Exports</b>	0	0	0	0	0	0	0	0	0	0
<b>Consumption</b>	131	125	123	137	153	163	201	218	204	210
<b>Ending Stocks</b>	8	7	17	18	20	29	32	41	57	73
Balance Check	0	0	0	0	0	0	0	0	0	0
<b>Production Capacity (Million Liters)</b>										
Number of Biorefineries	10	8	9	9	9	11	11	11	11	11
Nameplate Capacity	350	436	350	393	393	585	585	575	575	575
Capacity Use (%)	39.1%	28.4%	38.0%	35.1%	39.4%	29.4%	34.9%	39.5%	38.3%	39.3%
<b>Feedstock Use for Fuel (1,000MT)</b>										
Coconut oil	125	113	122	126	142	157	186	207	201	207
<b>Market Penetration (Million Liters)</b>										
Biodiesel, on-road use	131	125	123	137	153	163	201	218	204	210
Diesel, on-road use	5,454	5,631	5,566	5,819	6,187	6,579	7,334	7,701	8,086	8,200
Blend Rate (%)	2.4%	2.2%	2.2%	2.4%	2.5%	2.5%	2.7%	2.8%	2.5%	2.6%
Diesel, total use	6,449	6,588	6,696	7,004	7,394	7,778	8,793	9,535	10,159	10,158

f-forecast

Source: DOE and SRA

## Consumption

Diesel is the dominant transport fuel used in the Philippines. Diesel has a price advantage over gasoline and diesel engines run more efficiently. In June 2016, the DOE in partnership with a

major oil company, organized the first Euro 4 Fuel Eco Run to produce a standard measure of fuel economy. About 70 cars from over 20 different brands participated. The top 10 cars in the test were diesel-powered vehicles. Diesel engines reportedly can save up close to 30 percent more of fuel consumption compared to gasoline-driven ones, due to higher energy content of diesel and engine efficiency.

RA 9367 had mandated the use of a minimum one percent biodiesel blend in all diesel fuels (off-road and on-road) by February 2007, to increase to a 2 percent blend by 2009. Following are the biodiesel blends targets through 2030:

<b>BIODIESEL TARGETS</b>	<b>BLENDS</b>
<b>Year</b>	<b>%</b>
2007	1
2009	2
2015	5
2020	10
2025	20
2030	20

Source: DOE

Biodiesel blending is currently still at 2 percent. Like ethanol, the National Biofuels Board (NBB) may adjust the ethanol blend only within the first four years of implementation. The minimum requirements of 2 percent for biodiesel cannot be decreased thereafter. As mentioned in previous reports, high coconut oil (CNO) prices as a result of tight copra supplies have likely resulted in the delay in raising the blend to B5 since 2015 (as indicated in the above table).

The taxes from the TRAIN law already increased diesel prices starting this year. From zero, the price of diesel increased to P2.50 (\$0.05) per liter on January 1, 2018 under the TRAIN. Taxes will further increase to P4.50 (\$0.08) per liter in 2019, and P6 (\$0.11) per liter in 2020. The excise taxes are on top of a 12 percent VAT.

On the other hand, copra and CNO prices have gone down considerably due to a glut in world supply of vegetable oils and the Philippine Coconut Authority (PCA) recently appealed anew to the National Biofuels Board (NBB) to increase the coconut methyl ester (CME) content of biodiesel to B5 to help coconut farmers.

Following is a table on diesel and CME prices from July 2017 to August 2018 (most recent data available). As of October 11, 2018, the common diesel retail price in Metro Manila was P49.80-51.95 (\$0.92-0.96) per liter.

<b>LOCAL DIESEL AND BIODIESEL PRICES</b>				
<b>July 2017 – June 2018</b>				
	Diesel	CME	CME less Diesel Price Differential	
	Peso per liter*		Low End	High End
Jul-17	30.57	45-90	14.43	59.43
Aug-17	32.43	45-90	12.57	57.57
Sep-17	33.52	45-90	11.48	56.48
Oct-17	34.48	63-89	28.52	54.52
Nov-17	35.22	63-90	27.78	54.78
Dec-17	35.74	63-89	27.26	53.26
Jan-18	38.81	63-90	24.19	51.19
Feb-18	41.02	63-90.75	21.98	49.73
Mar-18	40.97	57-90.49	16.03	49.52
Apr-18	42.02	60-86	17.99	43.99
May-18	43.37	56-90	12.63	46.63
Jun-18	44.71	45-90	0.29	45.29
Jul-18	44.41	49-72.64	4.59	28.23
Aug-18	44.31	47-72.5	2.69	28.19

\*Average retail price after taxes  
Source: DOE

While the local coconut industry stakeholders have consistently expressed support for the B5 blend, economists are concerned about supply availability and pricing. As mentioned in the [previous annual report](#), a 2016 USAID-funded policy study recommended the postponement of the higher blend, at least, in the short-run. While it affirms there are positive environmental and health benefits in raising the blend, it recognized that meeting the required coconut/copra requirements for a higher 5 percent blend would be difficult despite the optimistic production projections by the PCA. In the medium to long term, the study further suggests a review of the Biofuels Act “as several economic studies (such as de Gorter and Just, 2009) point to the distortive effects of mandates and subsidies in addressing climate change issues.” Consistent with the USAID policy recommendation is the guidance from the PEP 2017-2040 recommending the biodiesel blend be maintained at B2.

Responding to rising inflation, on July 11 2018, the Departments of Budget, Transportation and Energy, signed a joint memorandum circular on a fuel subsidy program (aka “*Pantawid Pasada*”) which grants PUJ drivers P5,000 (\$92.6) as fuel subsidy to cushion the effects of TRAIN. An estimated P977 million (\$18 million) was allocated by the Budget department for the remaining six months of 2018. According to press reports, a subsidy of P3.86 billion (\$71.5 million) would be allocated by the GPH in 2019.

On August 10, 2018, the DOE issued Order 2018-08-0012 instructing “all industry players are hereby directed to provide Euro 2-compliant automotive diesel oil at the retail level as fuel option for the transport and industrial customers.” Local oil companies have voiced their opposition as a shift back to Euro 2-diesel would entail additional handling costs. The shift to the lower Euro-2 also contradicts present GPH policy, according to a legislator.

### **Production**

An estimated 50 active CNO mills operate in the country, and around 20 cater to the export market while roughly 30 concentrate in servicing domestic CNO needs, according to industry contacts. Virtually all domestic biodiesel is made using CNO and is therefore also referred to as

CME (coconut oil-based biodiesel), an oleochemical derived from CNO. CNO is obtained from crushing copra. Oleochemicals are also used in the manufacture of soaps, detergents and other cosmetic items and toiletries.

According to the DOE, there were 11 registered biodiesel refineries in 2018, unchanged since 2014. Likewise, the aggregate annual capacity remains at 575 ML. Seven CME producers operate in the island of Luzon while four are located in Mindanao island. Despite an expected improvement in copra supply, the number of biodiesel plants and their output in 2018 are expected to remain flat compared to the 2017 level due to strong demand for the competing uses of CNO.

The United Coconut Association of the Philippines (UCAP) revised its earlier copra production estimate from 2.2 million tons to 2.4 million tons in 2017. Post likewise raised its production estimate to 2.3 million tons in October–September Market Year (MY) 16/17 due to favorable weather conditions (see 2018 Oilseeds and Products Annual. Copra production is projected to increase further in the next two years reaching 2.6 million tons in MY 17/18 and 2.7 million tons in MY 18/19 due to adequate rainfall and generally favorable weather conditions in calendar years 2017 and early 2018. As mentioned in the oilseeds annual report, copra productivity is constrained by predominantly old and unproductive coconut palms or trees, which constitute an estimated 20 percent of overall Philippine coconut trees. Coconut trees may start to bear nuts after 6-10 years but take around 15-20 years to reach their peak. Coconut trees have a long lifespan (80-90 years).

The country's first biodiesel plant using used cooking oil (UCO) was inaugurated in August 2017 in Davao City. The Bio Diesel Fuel Plant (BDFP) has an annual processing capacity of 365,000 liters and product quality will be tested using jeepneys and garbage trucks. The Davao city government in cooperation with the Japanese government and Japan International Cooperation Agency (JICA) is implementing the BDFP project. Post is currently not aware of product quality tests results.

### **Trade**

The Biofuels Act does not permit biodiesel imports. According to industry contacts, CNO exporters avoid trade disruptions as they have longstanding export commitments to their preferred buyers. No biodiesel exports are expected through 2018, as a result. However, if imports were permitted, the B5 blended goal for 2015-219 set in 2007 legislation could be achieved with its associated human health and carbon emission reduction benefits. Imports of biodiesel above B30 to B100 (HS 382600) are levied a 3 percent Most Favored Nation (MFN) tariff while petroleum oils containing B1 to B30 (HS 271020) are duty-free.

### **VI. Advanced Biofuels**

The DOE aims to have B20 by 2025. According to a local expert, algal biodiesel would be necessary to augment feedstock supply in order to comply with the higher mandate assuming imports remain banned. However, commercialization of price competitive algal biodiesel is not foreseen in the near to medium-term. There is little information on current research and development for cellulosic fuel available, as well as on demonstration plants that prove the

commercial viability of advanced biofuels technology. The development of commercial cellulosic fuel will likely entail a much longer time, closer to 2030.

## **VII. Notes on Statistical Data**

The numbers on the Fuel Use Projections, Ethanol and Biodiesel Tables are guided by the following assumptions:

- Fuel use figures through 2017 are based on consumption estimates from the DOE.
- Gasoline and diesel use in 2018 in the Fuel Use Table are Post's estimates and much lower than the DOE's projection in consideration of increasing inflation starting 2018 and new and/or higher taxes on petroleum fuel and motor vehicle sales.
- On-road diesel was derived by multiplying total diesel use for transport by 75-80 or the estimated percentage of on-road transport over total transport.
- Ethanol imports are based on data from the DOE and SRA.
- Biodiesel production and consumption estimates through 2017 were adjusted based on DOE data.
- Post assumes ethanol stocks to be nil due to tightness in local supply.

Co-product production and feedstock use numbers are Post's estimates using the following conversion factors:

- Sugarcane co-product (bagasse) recovery of 300 kilos (kg) per ton of cane.
- For biodiesel, a ton of CNO yields around 1,090 liters of CME.
- A ton of sugarcane yields roughly 60 liters of fuel ethanol.
- A ton of molasses yields roughly 245 liters of ethanol.
- A ton of sugar yields around 500 liters of ethanol.