THE PHILIPPINES’ BIOENERGY POLICY AND REGULATORY FRAMEWORK: A LEGISLATOR’S PERSPECTIVE

7TH BIOENERGY WEEK
GLOBAL BIOENERGY PARTNERSHIP (GBEP)
25 June 2019 | PICC

SENATOR WIN GATCHALIAN
Republic Act No. 9367
January 12, 2007

AN ACT TO DIRECT THE USE OF BIOFUELS, ESTABLISHING FOR THIS PURPOSE THE BIOFUEL PROGRAM, APPROPRIATING FUNDS THEREFOR, AND FOR OTHER PURPOSES.

Be it enacted by the Senate and House of Representatives of the Philippines in Congress assembled:

SECTION 1. Short Title - This act shall be known as the "Biofuels Act of 2006".

SEC. 2. Declaration Policy - It is hereby declared the policy of the State to reduce dependence on imported fuels with due regard to the protection of public health, the environment, and the natural ecosystems consistent with the country's sustainable economic growth that would expand opportunities for livelihood by mandating the use of biofuels as a measure to:

a) Develop and utilize indigenous renewable and sustainable-sources clean energy sources to reduce dependence on imported oil.

b) Mitigate toxic and greenhouse gas (GGG) emissions;

c) Increase rural employment and income; and

d) Ensure the availability of alternative and renewable clean energy without any detriment to the natural ecosystem, biodiversity and food reserves of the country.

SEC. 3. Definition of terms - As used in this act, the following term shall be taken to mean as follows:

a) AFTA - shall refer to the ASEAN free trade agreement initiated by the Association of South East Asian Nation;

b) Alternative Fuel Vehicle/Engine - shall refer to vehicle/engines that use alternative fuels such as biodiesel, bioethanol, natural gas, electricity, hydrogen and automotive LPG instead of gasoline and diesel;

c) Bioethanol fuel - shall refer to ethanol (C2H5OH) produce from feedback and other biomass.

d) Biodiesel - shall refer to Fatty Acid Methyl Ester (FAME) or mono-alkyl ester delivered from vegetable oil,
Both laws aim to **spur the use of indigenous and clean energy sources in transportation and power generation**
BIOFUELS ACT OF 2006

- Mandates all liquid fuels for motors and engines to contain locally sourced biofuels
- Provides fiscal incentives for producers and consumers such as zero VAT on local and imported biofuels component, and VAT exemption for the sale of raw materials used for biofuel production
RENEWABLE ENERGY ACT OF 2008

Provides for mechanism to stimulate the entry and expansion of renewable energy technologies including biomass.

Photo Source: powerphilippines.com
<table>
<thead>
<tr>
<th>SUPPLY</th>
<th>DEMAND</th>
</tr>
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<tbody>
<tr>
<td>• Feed-In-Tariff</td>
<td>• Green energy option</td>
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<tr>
<td>• Renewable Portfolio Standards</td>
<td>• Net metering</td>
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<tr>
<td>• Fiscal Incentives for developers</td>
<td>• Zero percent vat on sale of fuel or power generated from renewable</td>
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<td>• Income tax holiday</td>
<td>sources</td>
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<td>• Duty Free importation</td>
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<tr>
<td>• Zero percent vat on purchase of local</td>
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<td>supply of goods, properties and services</td>
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</table>
Expansion of bioenergy for transport and power generation remains beset with challenges.
TOTAL FINAL ENERGY CONSUMPTION BY FUEL SHARES

Source: Philippine Energy Situationer from DOE (2017)

- 19.8% Electricity
- 21.4% Biomass
- 48.3% Petroleum Products
- 8.9% Coal
- 1.5% Biofuels
- 0.2% Natural Gas
## Ethanol Used as Fuel and Other Industrial Chemicals

Source: DOE and SRA; USDA GAINS Report, Philippine Biofuels Situation and Outlook, November 28, 2018

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<tr>
<td><strong>Demand and Supply (Million Liters)</strong></td>
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<td>283</td>
<td>369</td>
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<td>282</td>
<td>282</td>
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<td>Gasoline</td>
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<td>Blend Rate (%)</td>
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<td>9.19</td>
<td>8.54</td>
<td>8.48</td>
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2018 ETHANOL USED AS FUEL (MILLION LITERS)

Source: DOE and SRA; USDA GAINS Report, Philippine Biofuels Situation and Outlook, November 28, 2018

- Production: 270
- Consumption: 550
- Nameplate Capacity: 365
Feedstock for all operating bioethanol plants

- Molasses
- Sugarcane
- Sugar
USE OF MOLASSES
Source: SRA (CY 2017-2018)

- 22% Other Uses
- 78% Feedstock for Bioethanol
BIOETHANOL PRODUCTION AND IMPORTATION

50.91% imported

49.09% produced domestically

Photo Source: medium.com
COMPARATIVE BIOETHANOL PRICES (PHP/L)
PHILIPPINES VS. USA
Source: USDA GAINS Report, 2019; Additional computation by Office of Senator Gatchalian

![Comparison of Bioethanol Prices in Philippines and USA from July 2017 to April 2018]
All these problems affect the pump price paid by public
The Senate Committee on Energy is pushing for **diversification of bioethanol feedstock sources** and improved production processes.
Nipa and sweet sorghum can supplement the existing feedstock.
NIPA PLANTATION SITES
Source: Dr. Agrupis (2018)

Cagayan
Leyte
Samar
Negros
Zamboanga Del Sur
Zamboanga Sibugay

36.6 million liters
maximum bioethanol potential

Photo Source: dr.farrahcancercenter.com
ETHANOL YIELD PER HECTARE

Source: Dr. Demafelis (2018)

- SWEET SORGHUM: 6,500 L/ha
- SUGARCANE: 4,200 L/ha
- MOLASSES: 280 L/ha
ETHANOL PRICE (PHP/L)

Source: Demafelis (2019) and Agrupis (2019); Computation by Office of Senator Gatchalian

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<tr>
<th>Material</th>
<th>Price (PHP/L)</th>
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<td>Sugarcane</td>
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<td>Molasses</td>
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<td>Sweet Sorghum</td>
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<td>Cassava</td>
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<td>Rice Straw</td>
<td>59.39</td>
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<td>Corn Stover</td>
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<td>Macroalgae</td>
<td>45.45</td>
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<tr>
<td>Nipa</td>
<td>36.68</td>
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</table>
Demand is the barrier in biodiesel.

Mandated biodiesel blend is still at 2%
## Biodiesel Used as Fuel

**Source:** DOE and SRA; USDA GAINS Report, Philippine Biofuels Situation and Outlook, November 28, 2018

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<td>Production</td>
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<td>Ending Stocks</td>
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<td>Number of Refineries</td>
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<td>Nameplate Capacity</td>
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<td>585</td>
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<td>Capacity Use (%)</td>
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<td>35.10</td>
<td>39.4</td>
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<td>Coconut Oil</td>
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<td><strong>Market Penetration (Million Liters)</strong></td>
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<td>Biodiesel (on-road use)</td>
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<td>123</td>
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<td>163</td>
<td>201</td>
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<td>7,701</td>
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<td>Blend Rate (%)</td>
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<td>2.20</td>
<td>2.20</td>
<td>2.40</td>
<td>2.50</td>
<td>2.50</td>
<td>2.70</td>
<td>2.80</td>
<td>2.50</td>
<td>2.60</td>
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2018 BIODIESEL USED AS FUEL (MILLION LITERS)

Source: DOE and SRA; USDA GAINS Report, Philippine Biofuels Situation and Outlook, November 28, 2018

CAPACITY USE: 39.30%

PRODUCTION: 226
CONSUMPTION: 210
NAMEPLATE CAPACITY: 575
Ensure sufficient and sustainable supply of CME and Ascertain effect on pump price
TOTAL INSTALLED AND COMMITTED CAPACITY OF BIOMASS POWER PLANTS (MW)

Source: Department of Energy (2018)

- BAGASSE: 333.86 MW
- BIOGAS: 60 MW
- BIOMASS: 20 MW
- BIOMASS GASIFICATION: 3.67 MW
- CANE TRASH: 25 MW
- COCONUT WASTE: 1.5 MW
- LANDFILL METHANE: 20.31 MW
- MULTI-FEEDSTOCK: 73.5 MW
- NAPIER GRASS: 41 MW
- RICE HUSK: 111 MW
- WOODY BIOMASS: 26 MW
- WASTE-TO-ENERGY: 38 MW
- TOTAL: 753.84 MW
## Feed-In-Tariff (FIT)


<table>
<thead>
<tr>
<th>Technology</th>
<th>Subscribed Capacity (MW)</th>
<th>Available Capacity (MW)</th>
<th>Installation Target (MW)</th>
<th>FIT Rate</th>
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<td>98.175</td>
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<td>Hydropower</td>
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<td>Wind</td>
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POWER GENERATION MIX OUTLOOK WITH RPS (2016-2040)

Source: Data from DOE (2018) / Computations and Assumptions from OS Gatchalian

AAGR:
RENEWABLE TECHNOLOGY = 7.39%
BIOMASS = 8.65%

73.42 MW additional Biomass by 2040
Existing bagasse and rice husk production can power an additional 115.37 MW capacity.

Source: Zafar and Salman (2018); Pippo and Luengo (2013); Belonio (2014); Zafar and Salman (2019); Office of Sen. Gatchalian (2019)
WASTE TO ENERGY (WTE)

4 WTE plants under construction

TOTAL CAPACITY: 38 MW

Potential Additional WTE capacity this year

111 MW
WASTE TO ENERGY BILL

• Allow WTE technologies provided they do not emit toxic and poisonous fumes;

• Mandate local government units (LGUs) to estimate the percentage of their waste that can be used as feedstock;

• Authorize the clustering of LGUs to enter into joint ventures, public private partnerships, or other allowable contractual arrangements for WTE generation facilities; and

• Implement a transparent and streamlined procedure for the entire WTE value chain.
Philippines still has considerable **biomass potential for power generation**.
Republic of the Philippines
Congress of the Philippines

Seventeenth Congress
Third Regular Session

Begun and held in Metro Manila, on Monday, the twenty-third
day of July, two thousand eighteen.

[ Republic Act No. 11234 ]

AN ACT ESTABLISHING THE ENERGY VIRTUAL ONE-STOP
SHOP FOR THE PURPOSE OF STREAMLINING THE
PERMITTING PROCESS OF POWER GENERATION,
TRANSMISSION, AND DISTRIBUTION PROJECTS

Be it enacted by the Senate and House of Representatives of the
Philippines in Congress assembled:

CHAPTER I

GENERAL PROVISIONS

SECTION 1. Short Title. – This Act shall be known as
the “Energy Virtual One-Stop Shop Act”.

SEC. 2. Declaration of Policy. – It is hereby declared the
policy of the State to:

(a) Ensure the quality, reliability, and security of energy
at reasonable cost by undertaking measures to guarantee that
supply meets demand in a timely manner;
Translate into **power generation investments** and **increased biomass share** in the energy mix.
SUMMARY

• Research and development for sustainable feedstock supply both for bioethanol and biodiesel
• Improved processes for feedstock production
• Full implementation of the Renewable Energy Act
• The passage of a WTE bill
MORE SECURE ENERGY SYSTEM