UPDATES ON THE IMPLEMENTATION OF THE BIOFUELS LAW IN THE PHILIPPINES

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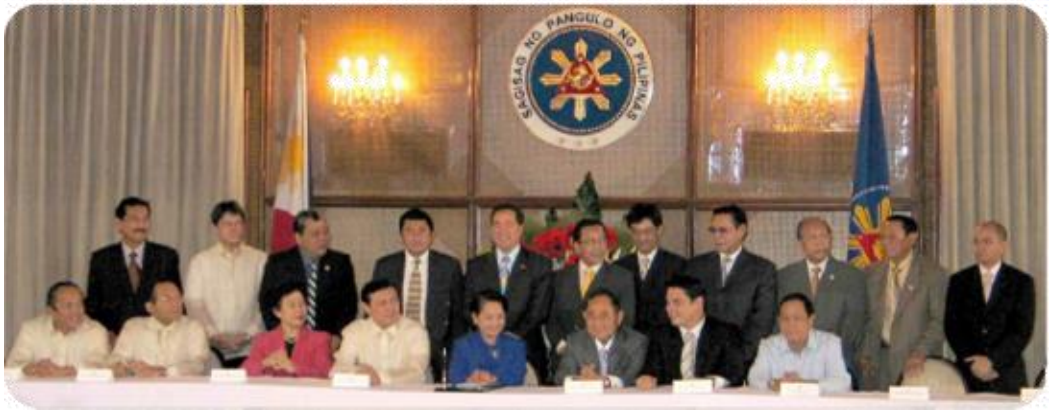
R.A. 9367: Biofuels Act of 2006

An Act to direct the use of biofuels, establishing for this purpose the Biofuel Program, Appropriating Funds therefore, and for other purposes



Signed into law on January 12, 2007

Republic Act 9367, also known as the Biofuels Act of 2006, was implemented to increase the contribution of biofuels in the country's energy mix thereby reducing its dependence on imported fossil-based fuels, enhance the quality of the environment, and create opportunities for countryside socio-economic development.

R.A. 9367: Biofuels Act of 2006

Current Mandates for biodiesel and bioethanol

- 2% biodiesel blend (**B2**) since February 6, 2009
- 10% bioethanol blend (**E10**) since February 6, 2011

Under Section 9.C:

"The National Biofuel Board shall review and recommend to DOE the adjustment in the minimum mandated biofuels-blends subject to the availability of locally-sourced biofuel: *Provided*, That the minimum blend may be decreased only within the first four years from the effectivity of this Act. Thereafter, the ***minimum blends of 5% and 2%*** for bioethanol and biodiesel, respectively, shall not be decreased."

Where are we now?

BIOETHANOL

Supply

- 12 accredited bioethanol producers with total production capacity of 380.50 MLPY as of end 2020, equivalent to about 50% of volume requirement for E10 mandate.

Demand

- Total sales of local bioethanol for 2020 reached 276.74 ML or a decrease of 22.17% as compared to the previous year.

BIODIESEL

Supply

- 13 accredited biodiesel producers with total production capacity of 707.9 MLPY as of end 2020, equivalent to about 295% of volume requirement for B2 mandate.

Demand

- Total sales of local biodiesel for 2020 reached 160.39 ML or a decrease of 26.26 % as compared to the previous year.

Additional Capacities

	No. of Projects	Annual Capacity (in million liters)	Target Operation Date
Biodiesel	3	277.65	2021-2022
Bioethanol	2	68	2021

Demand Outlook, 2019-2022

BIOETHANOL DEMAND OUTLOOK

Year	Gasoline Demand (in million liters)	Bioethanol Blends (Target)	Supply Requirement (in million liters)
2019	6,969.8	10%	697
2020	7,569.6	10%	757
2021	8,257.8	10%	826
2022	9,058.2	10%	906

BIODIESEL DEMAND OUTLOOK

Year	Diesel Demand (in million liters)	Biodiesel Blends (Target)	Supply Requirement (in million liters)
2019	12,013.1	2%	240
2020	12,001.8	5%	600
2021	12,642.7	5%	632
2022	13,370.6	5%	669

BIOFUELS ROADMAP (2018-2040)

OVERALL OBJECTIVE BY 2040

PURSUE THE DEVELOPMENT OF BIOFUELS IN COMPLIANCE WITH THE BIOFUELS ACT OF 2006 (R.A. 9367)

	SHORT-TERM (2018)	MEDIUM-TERM (2019-2022)	LONG-TERM (2023-2040)
BIODIESEL	**B2**	**B2 / B5**	**B5 / B10**
	Maintain 2% biodiesel blending on diesel	• Maintain 2% biodiesel blending on diesel until 2019 • 5% blend on 2020	Maintain 5% biodiesel blending on diesel and possible 10% blend depending on availability of feedstock
	• Revisit blending requirement and available feedstock • Continuous conduct of research and development on feedstock sources		
BIOETHANOL	**E10**		**E10 / E20**
	Review the bioethanol mandate		

On-going RESEARCH, DEVELOPMENT and DEMONSTRATION Activities on Biofuel

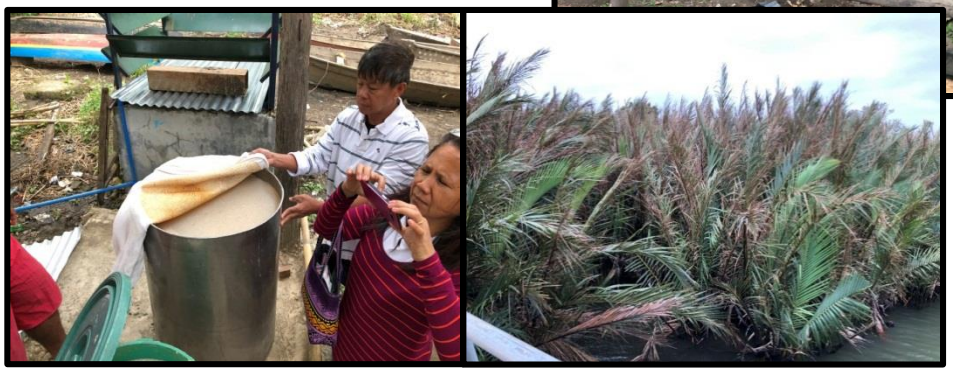
Nipa Sap

Mariano Marcos State University (MMSU)

"Establishment of a Community-Based Bioethanol Industry and Continued R&D on the Feasibility of Hydrous Bioethanol as Biofuel Blend using Nipa Sap as Feedstock"

Highlights:

1. Fabricated four (4) units 850-L distiller facilities.
2. The project was able to produce an average of 4,000 L of hydrous ethanol.
3. The project was completed on 30 April 2019.

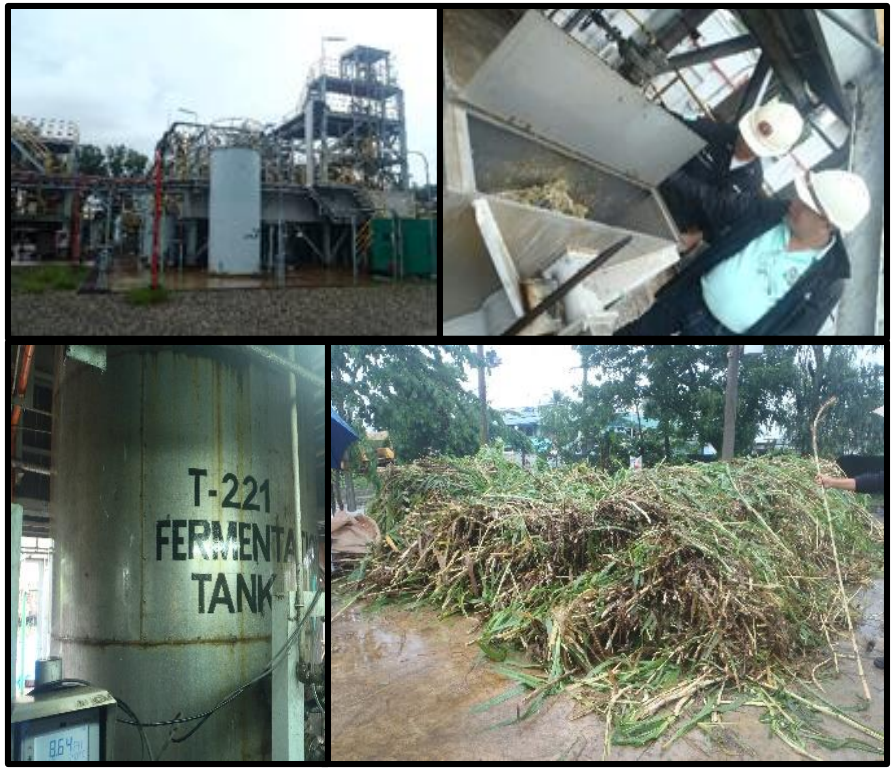


Project Site:
Pamplona, Cagayan

Cellulosic

NSEBIO Co., Ltd. Philippine Branch

"Demonstration Test for Cellulosic Ethanol Production Technology in the Philippines"



Project Site: Nasugbu, Batangas

Highlights:

1. Demonstration trial using bagasse in May 2017 and napier grass in October 2017.
2. High ethanol yield was stably achieved at pilot plant scale from the repeatedly conducted trial using molasses and 2nd generation process.
3. 1st and 2nd generation optimal fermentation conditions were found which can achieve an increase of 10% higher ethanol concentration compared to using 1st generation process alone.
4. Ethanol yield of 292L/dry-ton from fresh bagasse was obtained.
5. Target ethanol yield of stable 270L/dry-ton and average ethanol production of 282L/dry-ton both from napier grass were achieved.

Coconut Oil

University of the Philippines – Los Baños

"Life Cycle Assessment in terms of Carbon Debt and Payback Analyses, Carbon Savings and Energetics Studies of Biodiesel Production from Coconut Oil in the Philippines"

Highlights:

1. The project was completed on 09 July 2019.
2. Increasing the blending rate may also increase the GHG reduction potential and may lead to higher carbon savings.
3. At the current blending scenario, of 2% biodiesel with diesel, there is only 1.3% GHG reduction potential achieved. This therefore means that the current implementation was not able to meet one of the goals of Biofuels Law which is to mitigate climate change.
4. Scaling up the capacity of biodiesel production in the country must be based on the following criteria to ensure environmental sustainability in the long run: low in net carbon emissions, high in sequestration, more carbon savings, short carbon payback period, low environmental loading ratio, high net energy ratio, high emergy yield, high % renewable energy, and high value for emergy sustainability indicator.

Vegetable / Used Cooking Oil / Rubber Seed Oil

DOST – Industrial Technology Development Institute

"Characterization/performance testing of the Biodiesel/diesel Blends from Combined Feedstock of Various Vegetable and Used Cooking Oils."

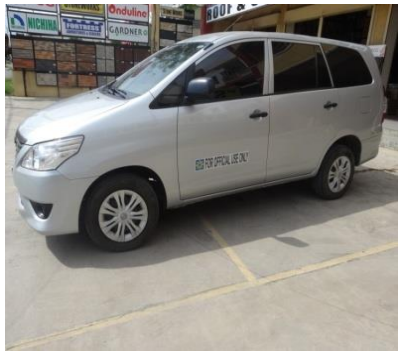
Highlights:

1. The project was completed on December 2019.
2. Biodiesel were produced from various feedstock, namely: refined palm oil, used cooking oil, and rubber seed oil through optimized process developed by DOST-ITDI.
3. Four combinations of the biodiesel from 4 plant oils, coconut (CME), palm (POME), used cooking oil (UCOME) and rubber seed oil (RSOME) were prepared as follows: 1 CME : 1 POME, 2 CME : 1 UCOME, 3 CME : 1 RSOME and 4 : 1 for binary blends.
4. Results of analyses show that methyl esters from palm oil, used cooking oil, and rubber seed oil can be blended with CME for use as fuel additive to petrodiesel at the given blending ratio both for binary and tertiary blends.

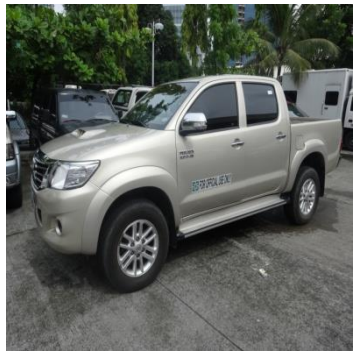
DOE's Actual On-Road Performance Testing Employing Dedicated Test Vehicles

Actual On-Road Test For Higher Biodiesel Blend (B5)

In 2017, the DOE coordinated with Department of Science and Technology - Philippine Council for Industry, Energy and Emerging Technology Research and Development (DOST-PCIEERD), TUP-IRTC and UP-NCTS on the conduct of an actual-on road using B5 and employing dedicated test vehicles (Toyota Innova and Hilux) that were procured in 2014.



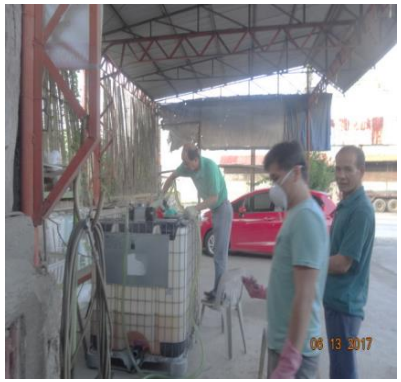
Toyota Innova



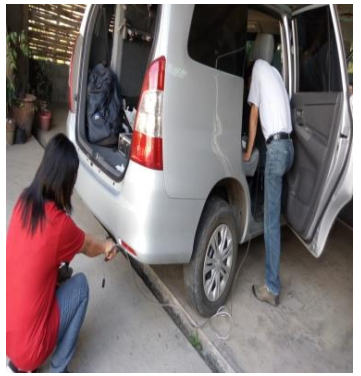
Toyota Hilux

- The test shall determine fuel efficiency based on the mileage run of two (2) test vehicles and emission reduction during test runs.

- Completed about 14,000 kms distance covering flat and high altitude/elevated terrains with varying weather conditions and showed an increase of about 10% mileage compared to B2.



Blending (B5)



Emission Testing

Thank You!

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