Required Report: Required - Public Distribution

Date: June 24, 2025

Report Number: RP2025-0025

Report Name: Biofuels Annual

Country: Philippines

Post: Manila

Report Category: Biofuels

Prepared By: Florence Mojica-Sevilla

Approved By: Herpin rochet Jateng

Report Highlights:

Post forecasts a 10 percent growth in fuel ethanol imports to 450 million liters in 2025, prompted by gasoline pool increases and uptake of voluntary E20 (20 percent ethanol blended to gasoline). Post forecasts a 2 percent growth in production to 390 million liters as feedstock problems remain. Post estimates fuel ethanol consumption growth at 5 percent in 2025 on top of the 10 percent growth realized in 2024. The implementation of higher biodiesel blend to B4 (4 percent biodiesel) in 2025 will result in a 49 percent growth in consumption to 400 million liters. Consumption estimate will go down to 360 million liters if B4 implementation will be suspended in 2025. The National Biofuels Board agreed to pass a resolution to suspend the B4 and B5 implementation due to high prices of coconut oil. Official announcement on B4 and B5 suspension is still pending. There is no sustainable aviation fuel (SAF) production, but the Philippines is exploring coconut oil as a potential feedstock to future SAF production.

ACRONYMS AND ABBREVIATIONS

BIR	Bureau of Internal Revenue
BOC	Bureau of Customs
BOI	Board of Investments
CAAP	Civil Aviation Authority of the Philippines
CAMPI	Chamber of Automotive Manufacturers of the Philippines
CME	Coco Methyl Ester
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
DA	Department of Agriculture
DAR	Department of Agrarian Reform
DC	Department Circular
DENR	Department of Environment and Natural Resources
DOE	Department of Energy
DOF	Department of Finance
DOLE	Department of Labor and Employment
DOST	Department of Science and Technology
DOTr	Department of Transportation
DTI	Department of Trade and Industry
EPAP	Ethanol Producers Association of the Philippines
EV	Electric Vehicle
FDA	Food and Drug Administration
ICAO	International Civil Aviation Organization
IRR	Implementing Rules and Regulations
JAO	Joint Administrative Order
LMA	Local Monthly Allocation
MLPY	Million Liters Per Year
NABI	Notice of Allowable Bioethanol Importation
NBB	National Biofuels Board
NDC	Nationally Determined Contribution
PCA	Philippine Coconut Authority
PEP	Philippine Energy Plan
PNS	Philippine National Standard
PUV	Public Utility Vehicle
RA	Republic Act
RE	Renewable Energy
REMB	Renewable Energy Management Bureau
SAF	Sustainable Aviation Fuel
SAWP	Social Amelioration and Welfare Program
SRA	Sugar Regulatory Administration

Executive Summary

Post forecasts a 10 percent growth in fuel ethanol imports to 450 million liters in 2025, prompted by gasoline pool increases and the uptake of voluntary E20 (20 percent ethanol blended to gasoline). Post estimates fuel ethanol consumption growth at 5 percent in 2025 on top of the 10 percent growth realized in 2024. **The implementation of higher biodiesel blend to B4 (4 percent biodiesel in diesel fuel) in 2025 will result in a 49 percent growth in consumption to 400 million liters.** In the recent NBB meeting (May 29, 2025), members agreed to pass a resolution to suspend the B4 implementation in 2025 due to the high price of coconut oil in the international market. Pending official DOE Advisory on suspension of B4 implementation, Post sees consumption to go up with the corresponding 4 percent growth forecast in the diesel pool. Biodiesel production is forecast to grow by 50 percent to 400 million liters to meet the demand, if B4 is implemented in 2025. Should B4 suspension happen, Post's production estimate is expected to go down to 360 million liters in compliance with the B3 mandate for the whole year.

The increase in vehicle sales is a growth driver. In 2024, there was a 9 percent increase in vehicles sales leading it closer to a half a million units sales target in 2025. The country's policy support in electric vehicles (EVs) will not have an immediate impact on biofuels consumption in 2025. Moreso are the large-scale investments in public transportations like metro rail. The effect will be realized once these investments become fully operational until 2029.

There is no immediate solution to insufficient feedstocks for fuel ethanol production. In 2024, local producers supplied around 50 percent of the bioethanol requirement for gasoline blending. Fuel oil companies can import ethanol only if there is a shortage, a condition that should continue due to insufficient feedstocks. Imported ethanol does not run concurrently with locally-produced ethanol, as all local ethanol stocks must be exhausted prior to imports being allowed. Traditionally, the United States has been the largest supplier of imported ethanol, but has faced increasing competition recently, particularly from Brazil. Biodiesel importations are not allowed under the Biofuels Act.

As of March 2025, there were 14 accredited bioethanol producers in the Philippines, with a total production capacity of 508 million liters per year (MLPY). Three facilities are currently non-operational, which reduced capacity to 396 MLPY. Additional capacity of 45 MLPY has been accredited for construction, once all operational, total capacity will increase to 553 MLPY. There were 14 accredited biodiesel producers with total capacity of 815 MLPY. One facility was non-operational in 2024, which reduced capacity to 791 MLPY.

There is no sustainable aviation fuel (SAF) production, but the Philippines is exploring coconut oil as a potential feedstock to future SAF production. While there is no official SAF policy support in place in the Philippines, the country is developing a SAF roadmap, which covers four pathways – hydroprocessed esters and fatty acids (HEFA), alcohol-to-jet (ATj) technology, power-to-liquid (PtL), and fermentation-based SAF. The SAF roadmap is yet to be finalized to craft the policies and framework that will help advance the development of SAF in the country. The country's flag carrier, Philippine Airlines announced a 1 percent SAF target for 2026.

I. Policy and Programs

The Philippines has enacted two laws to promote renewable energy (RE): the Biofuels Act of 2006 (RA 9367) with its implementing rules and regulations (IRR) and the Renewable Energy Act of 2008 (RA 9513) and its IRR. For key features see Biofuels Annual 2021. The Department of Energy (DOE) issued policies, mostly in the form of Department Circulars (DC), related to the Biofuels Act of 2006. Please see Biofuels Annual 2023 for the detailed list.

The **Biofuels Act** seeks to reduce dependence on imported fuels by promoting the development and mandating the use of locally sourced biofuels, specifically bioethanol and biodiesel. Domestically produced bioethanol uses sugarcane (mostly molasses) as a feedstock, while biodiesel is produced from coconut (coconut oil transesterified into coco methyl ester or CME). Policy implementation is focused on production and consumption with no policies issued to incentivize lower carbon intensity (CI) of existing biofuels over time.

A. Renewable Energy and Greenhouse Gas (GHG) Emissions

The **Renewable Energy Act** aims to accelerate the exploration and development of RE sources such as biomass, geothermal, solar, hydropower, ocean energy sources, and wind. The Act envisions the Philippines to be energy self-sufficient through sustainable development of RE resources and reduce its reliance on fossil fuels, thereby minimizing vulnerability to international market price fluctuations. The National Renewable Energy Program (NREP), however, does not cover transport biofuels. The NREP outlines the policy framework enshrined in RA 9513 and focuses on sustained drive towards energy security and improved access to clean energy but is silent on the contribution of transport biofuels. The Philippine Energy Plan (PEP) 2023-2050, however, includes biofuels in the energy mix.

With its signing of the Paris Agreement, the Philippines pledged to reduce carbon dioxide (CO_2) and other GHG emissions by scaling up renewable energy activities using biofuels as one of the solutions. The Philippines submitted its first Nationally Determined Contributions (NDC) on April 15, 2021, committing to GHG carbon dioxide equivalent (CO_2e) emissions reduction or avoidance of 75 percent by 2030 relative to its business as usual (BAU) scenario of 2020-2030. Reduction of CO_2e emissions will come from the energy, transport, waste, agriculture, and industry sectors. There are ongoing activities being enforced across these sectors that would contribute to the NDC's fulfillment including increasing the biofuels blends and ongoing discussion on sustainable aviation fuel (SAF). Fuel ethanol reduces GHG emissions and helps meet the country's NDC commitments. The Philippines' NDC commitments have not been updated since April 15, 2021.

Most vital is transforming the country's energy sector from fossil fuel-reliant to RE-dependent. Post monitors three programs: PUV Modernization, Electric Vehicles (EVs) and SAF initiatives. The Public Utility Vehicle (PUV) Modernization Program emphasizes the environmental benefits of modernizing PUV, particularly the traditional jeepneys. Jeepneys have been used as a mode of transportation since the 1950s from modified Willys Jeep left by the American troops after Worl War II. Since then, the customized, privately-owned jeepneys have become the backbone of the Philippines transit system. To date, the program is not yet fully implemented. Implementation has started but there is still some

opposition because of high investment costs. Transport accounts for one-third of GHG emissions in the Philippines. Fuel ethanol has half the carbon footprint of refined petroleum products.

The Comprehensive Roadmap for the Electric Vehicle Industry (CREVI) specified a short-term target of 2.45 million EVs, and 66,000 EV charging stations from 2023-2028 in line with the clean energy scenario and achieve the goal of eliminating gasoline-powered cars by 50 percent by 2040. Sustainable aviation fuel (SAF) is a key part of the country's aviation industry's plan to reduce carbon emissions. According to the International Air transportation Association (IATA), SAF reduces the carbon intensity of air travel by up to 80 percent over its life cycle. The Philippines, through the Civil Aviation Authority of the Philippines (CAAP), has been part of the International Civil Aviation Organization's (ICAO) carbon offsetting and reduction scheme for international aviation since December 2018. As an ICAO member, the Philippines is committed to reaching the aviation industry's net-zero carbon emissions target by 2050.

B. Policy and Programs on Biofuels

Policy Framework. The DOE leads the implementation of the Biofuels Act and its IRR, and prepares the National Biofuels Program consistent with the PEP. The National Biofuels Board (NBB) was established following the law as an oversight body composed of eight government entities. The NBB acts as recommendatory body on biofuels policies, assisted by a Technical Secretariat, whose powers and functions are monitoring implementation and recommending policies to be promulgated by the DOE.

Table 1. The National Biofuels Board

Chair: Secretary, Department of Energy (DOE)
Vice Chair (Bioethanol): Administrator, Sugar Regulatory Administration (SRA)
Vice Chair (Biodiesel): Administrator, Philippine Coconut Authority (PCA)
Members: Secretaries, Department of Agriculture (DA),
Department of Trade and Industries (DTI)
Department of Science and Technology (DOST)
Department of Finance (DOF)
Department of Labor and Employment (DOLE)
Non-voting Members: Secretaries
Department of Environment and Natural Resources (DENR)
Department of Transportation (DOTr)
Department of Agrarian Reform (DAR)
Chairman of the National Commission of Indigenous People (NCIP)

1.Fuel Ethanol and the Gasoline Market

Blend Mandates. The NBB determines the feasibility and recommends adjustment in the minimum mandated biofuel-blends subject to the availability of locally sourced biofuel. In compliance with the law, the 5 percent blend of fuel ethanol (E5) was mandated in the second year of the Biofuels Act in 2009. The 10 percent blend (E10) was mandated in 2011, but the Philippines has yet to meet the mandate.

Table 2. Bioethanol Blends: Date Mandated and Implemented

Blend	Date Mandated and Policy	Date Implemented
Mandated		
E5	February 5, 2009 DC 2009-02-0002	February 12, 2009
E10	February 6, 2011 DC 2011-02-0001	February 27, 2011
Voluntary		
E20	May 7, 2024 DC 2024-05-0014	June 2024

Source: DOE

Discretionary E20 blend. On May 7, 2024, the DOE signed the Department Circular (DC) 2024-05-0014 or the implementing guidelines and specifications for the roll-out of voluntary E20 gasoline. Oil companies can offer E20 to users on a voluntary basis in conformance with the approved standard. Please see GAIN report for more details. The NBB approved the discretionary E20 to mitigate the effects of high fuel prices by offering a less expensive alternative E20 gasoline supported by much cheaper imported fuel ethanol. This, in turn, would encourage more local investments. Beyond the E10 mandate, the Philippines continues to study (as it has for years) higher fuel ethanol blends of E15 and E20. Please see GAIN report for more information.

Fuel Quality Standards. The DOE promulgated the Philippine National Standard (PNS) for E20 on October 31, 2023. Oil companies blend fuel ethanol with gasoline to comply with the PNS, using appropriate blending methodologies at their refineries, depots, or blending facilities prior to the sale of ethanol blends. The DOE conducts semestral monitoring and sampling activities to ensure compliance with the PNS.

Table 3. Bioethanol Quality Standards

Blending Rate	PNS Number	Promulgation
E20	PNS/DOE QS 019:2023	October 31, 2023
E10	PNS/DOE QS 008:2018	May 2018
E-100/E98	PNS/DOE QS 0017:2014	January 29, 2014

Source: DOE

2. Biodiesel/Renewable Diesel and Diesel Markets

Blend Mandates. In 2024, following recommendations from the NBB, the DOE required fuel companies to implement a 3 percent CME blend in all diesel fuel on October 1, 2024, and 1 percent increase annually in 2025 and 2026. The Philippines is set to increase the biodiesel blend to B4 on October 1, 2025. On May 29, 2025, the NBB members agreed to pass a resolution to suspend the B4 implementation in 2025 and B5 in 2026 due to the high price of coconut oil in the international market, currently up near $3,000/MT from $1,100/MT in 2024. The resolution has been drafted for NBB members' signatures. As of this writing, there is no official DOE Advisory issued on the suspension of B4 implementation. FAS Manila will write a GAIN voluntary report and adjust this forecast should implementation be suspended.

Table 4. Biodiesel Blends: Date Mandated and Implemented

Blend Mandate	Date Mandated and Policy	Date Implemented
B1	May 17, 2007 DC 2007-05-006	June 7, 2007
B2	February 5, 2009 DC 2009-02-0002	February 12, 2009
B3	May 7, 2024 DC 2024-05-0013	October 1, 2024
B4	May 7, 2024 DC 2024-05-0014	October 1, 2025 (Target Date)
B5	May 7, 2024 DC 2024-05-0014	October 1, 2026 (Target date)

Source: DOE

The Philippines initially set higher eventual blend targets for biodiesel, but the mandated blends have remained at B2 since 2009. In 2007, three months after the Act went into effect, all diesel engine fuels sold in the country had a minimum of 1 percent biodiesel (B1).

Table 5. Biodiesel Blend Targets

Year	Target Blend (%)
2007	1
2008	1
2009	2
2010	2
2011	2
2015	5
2020	10
2025	20
2030	20

Source: DOE

Fuel Quality Standards. The DOE promulgated the PNS for B100 and B5 as early as 2015 in anticipation of increasing the blend from B2 to B5 in 2016. The B5 mandate did not happen because of the more lucrative market for coconut oil export. Manufacturers took advantage of the high price of coconut oil in the international market which reduced the available feedstock to produce CME. The NBB recommended to implement a gradual increase in biodiesel mandate, hence the development of the standards and promulgation of B3 and B4 PNS in 2021. The target date to implement B5 is set on October 1, 2026, as agreed by the NBB. Oil companies undertake the blending of diesel with CME in compliance with the PNS. The DOE conducts a quarterly monitoring and sampling activities to ensure compliance with the PNS.

Table 6. Biodiesel Quality Standards

Blending Rate	PNS Number	Promulgation
B100	PNS/DOE QS 002:2015	November 27, 2015
B2 (automotive)	PNS/DOE QS 004:2017	December 18, 2017
B2 (industrial)	PNS/DOE QS 013:2017	December 18, 2017
B3	PNS/DOE QS 015:2021	December 27, 2021
B4	PNS/DOE QS 017:2021	December 27, 2021
B5	PNS/DOE QS 010:2015	November 27, 2015

Source: DOE

3. SAF and Jet Fuel Market

There is no SAF production in the Philippines. SAF, a sustainable alternative to fossil fuel-based aviation fuel, can be produced from plant-based feedstock such as forestry and agricultural waste, as well as used cooking oil. The Philippines is in the process of exploring coconut oil as a potential SAF feedstock. A study to assess the feasibility of local SAF production is being undertaken by the Department of Transportation (DOTr), Civil Aviation Authority of the Philippines (CAAP), and a global aircraft manufacturer Airbus. The study, the completion of which remains undisclosed, will cover macroeconomic data analysis, SAF feedstocks and production pathways evaluation, financing assessment and policy support, and action plan. The study will support policy development and expected to encourage industry stakeholders to advance SAF production in the Philippines.

Table 7. Oil Products Consumption In Million Liters

Type	2022	2023	2024
Gasoline	7,442	8,008	8,473
Diesel	11,163	11,112	11,718
Fuel Oil	1,258	1,101	1,050
Aviation Fuel	1,934	2,511	2,677
LPG	3,296	3,454	3,535
Kerosene	71	59	53
Biodiesel	202	262	268
Bioethanol	644	725	797
Others*	1,515	1,671	1,829
TOTAL	27,525	28,902	30,401

Note: *include asphalts, solvents, naphtha/reformate, condensate
Source: DOE

The Philippines is currently drafting its SAF Roadmap and recently formed a SAF Committee under the National Biofuels Board. The DOE leads the NBB-SAF Committee, members include CAAP, DOTr, DTI-BOI, PCA, SRA, and DOST. The SAF roadmap is looking at four pathways – hydroprocessed esters and fatty acids (HEFA), alcohol-to-jet (ATj) technology, power-to-liquid (PtL), and fermentation-based SAF. The SAF roadmap is yet to be finalized to craft the policies and framework that will help advance the development of SAF in the country. The Philippines initially targeted to finish the roadmap in mid-2024. To date there is no announcement yet on the publication of the SAF roadmap.

The jet fuel market reached 2.7 billion liters in 2024. The aviation industry started to recover since 2022, and demand for jet fuel is on its way to reaching pre-pandemic levels.

Among local airlines in the Philippines, Cebu Pacific (CEB) has started to use SAF in its Airbus 320neo (New Engine Option). CEB has signed a memorandum of understanding (MOU) with NESTE, an oil refining and marketing company and a leading producer of SAF to explore the supply and purchase of SAF in Asia Pacific in November 2023. CEB has laid out initiatives to address emissions footprint by integrating SAF into its operations. CEB seeks to further utilize SAF by launching green routes in approximately three years. One challenge, however, is the high price, making it uncertain if the higher use of SAF will impact CEB's low-cost business model. Philippine Airlines (PAL), the country's flag carrier, is also working toward developing sustainable fuel for its airline fleet. PAL supports the zero-emission initiative of the IATA. PAL announced it will invest in the use of SAF in its aviation operation during the Asia-Pacific Economic Cooperation (APEC) Summit in November 2023. In April 2024, PAL mentioned in a report of its plan to operate SAF-powered flights to Singapore, at least 1 percent SAF blend in 2026. PAL pledged to use five percent of SAF by 2030. SAF is a key part of the aviation industry's plan to reduce carbon emissions. See GAIN report for more information.

The DOE aims to put in place regulations on SAF and collaborates with the aviation sector and international partners to decarbonize the aviation industry. A meeting was conducted last year among the DOE, CAAP, Philippine National Oil Company, and other stakeholders to discuss the potential advantage of exploring SAF. The DOE acknowledges international initiatives such as the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), established by the ICAO, which offers a harmonized way to reduce carbon emissions in the aviation industry. The Philippines as an ICAO member joined CORSIA in December 2018 through CAAP. Under CORSIA's timetable, participating ICAO member states pledged to comply with the carbon dioxide offsetting requirements by 2024 to 2026. Mandatory compliance is set for 2027 to 2035. Philippine airlines such as PAL and CEB are mandated to implement CORSIA by 2027.

Financial Supports for Biofuel Producers

To encourage investment, the government provides biofuels producers income tax breaks for the first seven years of operation, special realty tax rates on equipment and machinery, duty-free importation of equipment and machinery, zero-rated value added tax on purchases of goods and equipment, and zero percent value added tax rate on sale of bioethanol fuel, as stated in the RE Law of 2008.

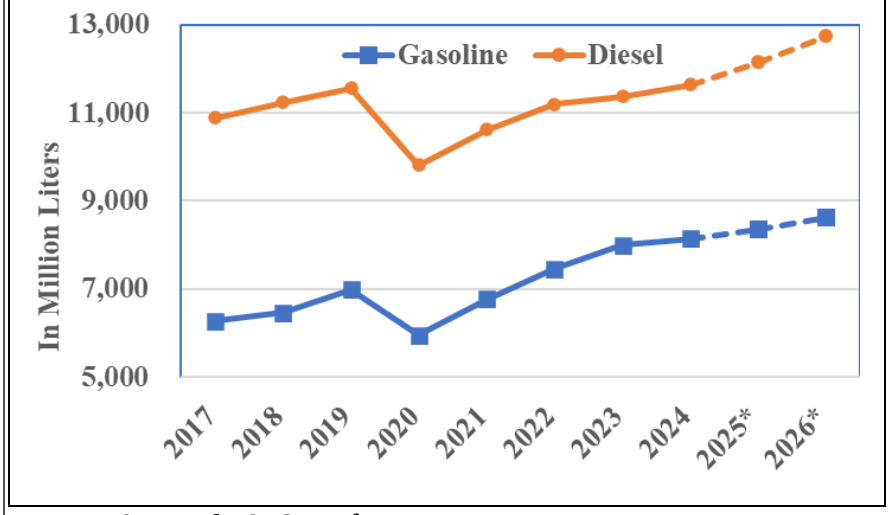
In accordance with Section 17B of the Biofuels Act, the Social Amelioration and Welfare Program (SAWP) has been institutionalized wherein biofuel producers contribute a corresponding "lien" per liter of biodiesel and bioethanol produced and sold. Currently, the Department of Labor and Employment (DOLE) imposed a lien of PhP0.05 per liter of CME-based biodiesel, PhP0.19 per liter of sugarcane-based bioethanol, and PhP0.07 per liter of molasses-based bioethanol. Under the SAWP, qualified biofuel workers can take advantage of various assistance, such as for livelihood, training, education, social protection and welfare, and emergencies. The revised guidelines on the implementation on SAWP for biodiesel workers were issued June 3, 2021, while the revised SAWP for ethanol was issued in January 22, 2021, both with increasing social protection and benefits to workers. On February 22, 2024, the DOE issued Department Order No. 243-24 setting the amounts of the maternity and death benefit

assistance programs for molasses-based bioethanol workers, pursuant to DOLE Department Order No. 222-21.

Policy/Programs Impacting Rate of Growth in the Fuel Pool

The Philippine fuel market is predominantly led by gasoline and diesel. Consumption of both fuels has grown consistently since recovering from the COVID-19 pandemic and are expected to continue growing surpassing the pre-pandemic record in 2025. Growth is driven by the expansion of vehicle sales. The Philippine automotive industry targets to sell half a million units in 2025. The Chamber of Automotive Manufacturers of the Philippines (CAMPI) and the Truck Manufacturers Association (TMA) reported a 7 percent growth in vehicle sales during the first three months (Q1) 2025 to 117,074 units. In 2024, there was a 9 percent increase in vehicle sales (467,252 units) leading it closer to a half a million sales target.

Figure 1. Growth in Gasoline and Diesel Pool



Note: 2025 and 2026 are forecast.
Source of data: International Energy Agency (IEA)

According to the Department of Transportation-Land Transportation Office (DOTr-LTO), there were 14.6 million motor vehicles in the country, of which 24,286 were electric vehicles (EVs). The current number of EVs will not have a direct impact on the growth of the fuel pool in 2025 and 2026. The Philippine government, however, is now implementing the Comprehensive Roadmap for the Electric Vehicle Industry (CREVI).

On April 15, 2022, the Electric Vehicle Industry Development Act (EVIDA) lapsed into law in line with the country's policy to ensure its energy security and independence by reducing reliance on imported fuel for the transportation sector. The IRR was issued on September 2, 2022 and implemented 15 days after publication. This law gives tax breaks for EV buyers, requires businesses to set up charging stations. The CREVI specified a short-term target of 2.45 million EVs, and 66,000 electric vehicle charging stations (EVCS) from 2023-2028 in line with the clean energy scenario. The Philippines has yet to achieve these targets. In 2024, total EVs sold were 48,521 units, of which only 4,908 were 4-wheeled EVs, the rest are 2- and 3-wheeled EVs. As of May 2025, there were 147 accredited EVCS providers, way below target. Available charging points nationwide were also below target at only 992 locations. To achieve the goal of eliminating gasoline-powered cars by 50 percent by 2040, the national governments has laid the groundwork for a strong EV market by providing tax breaks for EV imports until 2028, and other incentives such as a production-linked incentive scheme, tax rebate or research and development, subsidy for EV purchase, and reduced electricity tariff for EV charging. The Department of Trade and Industry (DTI) set the policies for the manufacturing of EVs and has issued incentives to

encourage EV investment such as the removal of tariffs, excise duty exemptions, and VAT exemption for raw materials/parts/capital equipment to be used in EV manufacturing.

The DOTr currently implements a Public Utility Vehicle (PUV) Modernization Program, that calls for the phase out of jeepneys that are at least 15 years old. There are close to 180,000 jeepneys that need to be modernized, and the EV industry is targeting to fill in 10 percent of this potential demand. The full compliance with the PUV Modernization Program has been extended. Progress to date remains limited due to high investment cost and lack of effective incentives.

Vehicle fleet efficiency and emissions standards. The Department of Environment and Natural Resources (DENR) issued Administrative Order (AO) No. 2015-04, which provides more stringent emission standards for carbon monoxide (CO), hydrocarbon, oxides of nitrogen, and particulate matter to be complied with by new passenger, and light-and heavy-duty vehicles. The Order sets an average CO emissions limit of 2 grams per kilometer (g/km) for gasoline-fed passenger and light-duty vehicles. Certificate of Compliance (COC) is issued to new vehicles that complied with the emissions standards prescribed by the DENR. It is a requirement for initial registration of vehicles with the Land Transportation Office. The implementation of the vehicle emission limits is consistent with RA 8749, or the Philippine Clean Air Act of 1999.

Value added tax. The Board of Investments (BOI) extended a zero-VAT rating to the sale of raw materials used in biofuels production under the National Internal Revenue Code, as amended by the Expanded VAT Reform Law of 2006, in accordance with the Omnibus Investment Code of 1987 (Executive Order No. 226). BOI also provides incentives to registered biofuels manufacturers under the CREATE MORE Act, and the 2025 Philippines' Strategic Investment Priority Plan (SIPP) 2025-2028 which identifies projects under the Clean Energy as among the inclusions.

Sales tax/import duty relief and consumer tax credits on alternative engine vehicles

On January 13, 2023, Executive Order No. 12 was issued, temporarily modifying the rates of import duty on EVs, parts, and components, prompting importation and setting up of sales outlets or distributorships of mostly Chinese-made EVs. The bulk of EVs in the Philippines are e-tricycles and e-motorcycles, followed by electric utility vehicles like e-jeepneys.

Large-scale, public transport investment programs. There are several large-scale investments in transportation infrastructure in the Philippines. These investments will eventually have an impact on the demand for biofuels in the country. According to the DOTr, the first underground railway system in the Philippines called the Metro Manila Subway Project (MMSP), is expected to operate fully in 2029. The 33-kilometer (km) underground railway system has 8-car trainsets that can carry up to 2,200 passengers per train, running as fast as 80 km/hour, and train arriving at stations every 5 minutes. In 2024, the project has an estimated total cost of PhP488.5 billion ($8.79 billion). Aside from the MMSP, the Philippine railway sector infrastructure projects include:

- North-South Commuter Railway Project (NSCR) – a 147-kilometer elevated railway line that will connect Metro Manila in three regions.
- MRT Line 7, a 22-km long rail transit that will connect dense areas of northeast Metro Manila, which can accommodate 300,000-800,000 passengers daily.

- LRT 1 Cavite Extension Project – additional 11.7 kilometers extension of the existing LRT 1, which can accommodate additional 300,000 passengers, from LRT-1's 500,000 passengers daily.
- MRT Rehabilitation Project – involves the restoration of the existing MRT Line 3 to design condition. The rehabilitation is expected to restore capacity from 300,000 to 600,000 passengers per day.
- The MRT Line 4 and PNR South Long-Haul Project are in their pre-construction stage, while the Mindanao Railway Project Phase 1 is in project development phase.

C. Environmental Sustainability and Certification

At present, biofuel plants are not required to certify the carbon intensity (CI) of their fuels on their own nor through third-party certification. Producers do not comply with any GHG sustainability requirements as there is no mandatory certification for biofuels placed in the domestic market. The lack of incentives lowers the drive of biofuel producers to bring down the CI of the fuels they market. Government policy is focused on compliance with the biofuels mandate and has not yet released guidance on the CI certification. In 2024, fuel ethanol used in the country resulted in a reduction of more than 853,000 tons of CO2e in line with the efforts by the Philippine government to comply with its international commitment to reduce GHG emissions through RE. Among the objectives of the Biofuels Act are a) develop and utilize indigenous renewable and "sustainably-sourced" clean energy sources to reduce dependence on imported oil; b) mitigate toxic and GHG emissions; and c) ensure the availability of alternative and renewable clean energy without any detriment to the natural ecosystem, biodiversity and food reserves of the country. The Philippine government investigates the realization of the sustainable development goals, wherein economic progress supports the protection of the environment and the health and safety of the people. The DOE-Energy Policy and Planning Bureau (EPPB) continues to monitor the GHG avoidance contribution of the actual local consumption of biofuels in the country. To date, there is no third-party certification of GHG values released by the DOE-EPPB.

Table 8. Biofuels GHG Avoidance

Year	Bioethanol (KTCO2e)	Biodiesel (KTCO2e)
2016	499.59	551.98
2017	516.61	516.05
2018	668.81	520.39
2019	782.92	551.53
2020	609.38	406.75
2021	788.81	484.74
2022	810.60	512.53
2023	843.11	575.91
2024	853.49	677.21
2025*	215.40	212.15

Note: * As of March 31, 2025
Formula of DOE-EPPB based on actual sales
Source: DOE

Life Cycle Assessments. In 2019, the University of the Philippines Los Baños (UPLB) completed a study on "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." The study calculated carbon intensity of Philippine biodiesel from crude coconut oil and refined coconut oil at 32.8 gCO2e/MJ and 31.5 gCO2e/MJ, respectively. However, under the current B2 blending requirement, this only results in a GHG reduction of 1.2-1.3 percent, which is still minimal (near zero) to date, though this factor would grow to 12.6-12.9 percent under a B20 scenario as earlier envisioned by DOE.

UPLB also conducted a life cycle assessment of fuel ethanol production, considering 10 out of 12 bioethanol distilleries during 2019-2020 (September to August). The study calculated the Philippines'

overall ethanol carbon intensity at 46.8 gCO2e/MJ, albeit wide ranging from a 37 to 89 percent GHG reduction, depending on the ethanol plant observed. The study further estimated the adoption of an E20 mandate as earlier envisioned by DOE would result in four million tons of annual GHG savings by 2030. Environmental savings lead to human health savings.

The Biofuels Act exempts biofuel investors from wastewater fees but not from the obligation to secure a discharge permit. Under the Philippine Clean Water Act, the DENR enforced sustainability requirement on water quality, which requires facilities discharging regulated effluents to secure a permit to discharge (Section 14). The implementation of the Biofuels Act is linked to the provisions and in accordance with the objective of the Philippine Clean Air Act to develop and utilize cleaner alternative fuels. To date, no third-party certification is in place with permits only issued by the government.

There are no sustainability requirements for soil management or land use. The Philippines has no comprehensive land-use policy regarding cultivation of energy crops such as sugarcane for bioethanol or coconut for biodiesel. While the DA and DAR are mandated to determine the lands suitable to feedstock production, land use is largely determined by the local governments through ordinances. SRA monitors the sugarcane used for fuel ethanol production but there are no national standards or guidelines on how decisions are made on whether farmland is to be used for biofuel or food production.

D. Trade Policy, Import Duties/Licenses

The HS Codes for ethanol (excluding beverage ethanol) are 2207.10 undenatured and 2207.20 denatured. Currently, there is no import tariff on ethanol as tariffs fell to zero in 2016 (ASEAN) and 2020 (Most Favored Nation). A 1 percent duty is paid by oil companies on imported ethanol destined for gasoline blending. Biodiesel is harmonized under HS Code 3826.00 for pure biodiesel and biodiesel blends greater than 30 percent while petroleum oils containing 1-30 percent biodiesel by volume use HS Code 2710.20.

Fuel oil companies can import fuel ethanol only if domestic production cannot meet demand created by the mandate, which has been the case from the very earliest days of the fuel ethanol program. Sections 5.1 and 5.2 of the Biofuels Act recognized the country's insufficient feedstocks supply to meet the mandated volume of gasoline-fuel ethanol blend (e-gasoline). DOE and DOF issued DC 2006-08-0011 and Revenue Regulation No 8-2006, respectively, allowing oil companies to import fuel ethanol subject to the guidelines issued. The NBB determines the volume and allocates among fuel oil companies for compliance with the mandated blend.

By law, during the first four years of Biofuels Act implementation, in the event of supply shortage of locally produced fuel ethanol, oil companies were allowed to import fuel ethanol and benefit from a reduced tariff, but only to the extent of the shortage as determined by the NBB (Section 5 and 6 of the IRR, RA 9367). Due to insufficient feedstock, NBB still allows importation of fuel ethanol to comply with the mandated E10 blend requirement and discretionary E20 blend. The DOE promulgates the import guidelines in DC 2011-12-0013 requiring oil companies to purchase the entire monthly allocation of local fuel ethanol before they can import.

Allocation System. The bioethanol producers submit their committed volumes available for delivery to the DOE- Renewable Energy Management Bureau (REMB) on the first day of the allocating month,

which is one quarter ahead of the delivery month. DOE-REMB endorses the consolidated monthly committed volumes for any given quarter to OIMB. The OIMB calculates and circulates the respective local monthly allocations (LMA) of each oil company on the 10th day of each allocating month based on the average market share. The LMA issuance serves as the regulatory mechanism for the exhaustion of local bioethanol. While imported ethanol fills in the supply gap, it is calculated based on gasoline demand. Importations of ethanol blended fossil fuels shall not be considered as part of the compliance with the LMA mandate. The quota allocation system ensures that imports do not displace locally produced fuel ethanol. DOE DC 2015-06-0007 provides revised guidelines on the utilization of locally-produced fuel ethanol. The revised DC omitted the notice of allowable bioethanol importation (NABI).

EPAP requested the reinstatement of the NABI as stated in DC 2011-12-0013, which was omitted in the revised guidelines on the utilization of locally produced bioethanol in the production of e-gasoline. The DOE issued DC 2021-06-0014 or the revised circular for the accreditation and submission of notices and reports of the Philippine downstream oil industry (DOI) pursuant to Biofuels Act. The circular reinforces the DOE's mandate to strictly monitor the DOI. Additional information can be accessed here.

Diversion Prevention. The Bureau of Internal Revenue (BIR) issued Revenue Regulations No. 8-2006 prescribing the implementing guidelines on the taxation and monitoring of the raw materials used and the fuel ethanol-blended gasoline produced under the bioethanol program of the DOE. Imported fuel ethanol must be denatured by 2 percent gasoline in accordance with the formula prescribed under these regulations. This practice prevents the diversion of imported bioethanol to other usage other than fuel, i.e., potable alcohol. The denaturing of imported fuel ethanol must be conducted in the presence of authorized representatives of the oil industry participant, DOE, BIR and Bureau of Customs (BOC) within 48 hours immediately after completion of the unloading of the fuel ethanol from the foreign vessel and transfer thereof to the Customs-bonded storage tank. The REMB conducts monitoring and sampling activities to ensure compliance with the PNS – quarterly for biodiesel and semestral for bioethanol producers.

II. Ethanol

Table 9. Ethanol Used as Fuel and Other Industrial Chemicals (Million Liters)										
Calendar Year	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025f**
Beginning Stocks	Na	Na	Na	25	14	14	10	18	22	16
Fuel Begin Stocks	Na	Na	Na	25	14	14	10	18	22	16
Production	Na	Na	Na	375	344	400	402	417	417	425
Fuel Production	230	235	297	346	280	355	375	387	382	390
Imports	339	322	347	341	322	385	398	461	589	650
Fuel Imports	260	276	285	257	241	225	277	342	409	450
Exports	0	0	0	0	2	4	0	0	0	0
Fuel Exports	0	0	0	0	0	0	0	0	0	0
Consumption	Na	Na	Na	727	664	785	792	874	1,012	1,075
Fuel Consumption	490	511	557	614	521	584	644	725	797	840
Ending Stocks	Na	Na	25	14	14	10	18	22	16	16
Fuel Ending Stocks	Na	Na	25	14	14	10	18	22	16	16
Refineries Producing Fuel Ethanol (Million Liters)										
Number of Refineries	10	10	12	12	12	13	13	13	11	11
Nameplate Capacity	282	282	381	381	381	426	466	478	396	396
Capacity Use (%)	81.6%	83.3%	78.0%	90.8%	73.5%	83.3%	80.5%	81.0%	96.5%	98.5%
Co-product Production (1,000 MT)										
Bagasse	17	12	60	57	150	102	164	207	143	150
Feedstock Use for Fuel Ethanol (1,000 MT)										
Sugarcane	55	40	200	190	502	340	547	690	477	500
Molasses	930	950	1,080	1,240	1,076	1,340	1,344	1,265	1,297	1,420
Sugar	0	0	0	0	0	0	0	0	0	0
Market Penetration (Million Liters)										
Fuel Ethanol Use	490	511	557	614	521	584	644	725	797	840
Gasoline Pool 1/	5,692	6,199	6,441	6,973	5,636	6,757	7,091	8,008	8,174	8,350
Blend Rate (%)	8.6%	8.2%	8.6%	8.8%	9.2%	8.6%	9.1%	9.1%	9.8%	10.1%

Note: f = forecast
Na = neither government nor industry sources can provide stocks and production data from 2016 to 2018
1/= covers gasoline and all biocomponents (ethanol)
Conversion: 1MT of molasses = 246 liters of ethanol, 1MT of sugarcane = 80 liters of ethanol (average)
Source: DOE, SRA, Bureau of Internal Revenue, with Post estimates for 2025

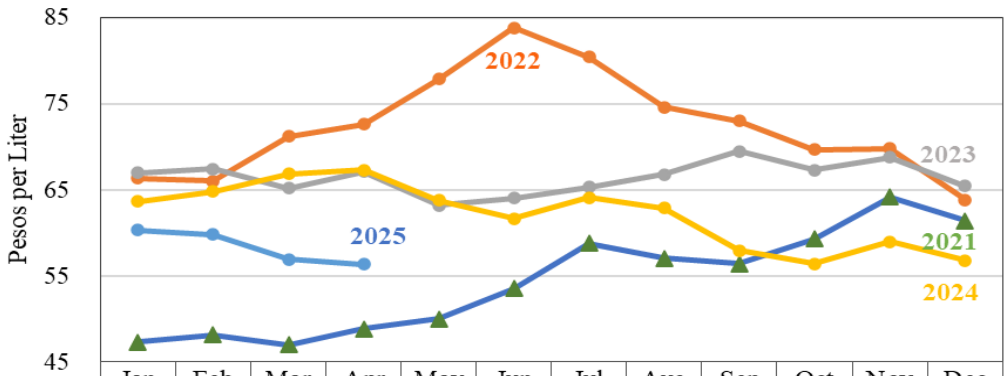
Consumption

Post forecasts a 5 percent growth in fuel consumption in 2025 attributed to increase in fuel pool size and uptake of voluntary E20. More fuel retailers are expected to offer E20 at the pump which will raise consumption especially among price sensitive consumers. The contribution to growth, however, will still be minimal in 2025 considering the slow uptake among fuel retailers. Higher gasoline consumption is the main growth driver, propelled by increased in car purchases, which were up 9 percent in 2024. For 2025, the Chamber of Automotive Manufacturers of the Philippines (CAMPI) targets half a million car

sales, which will further increase consumption. Imports supplied most of the domestic demand in the early years of the fuel ethanol program. With the expansion of domestic production capacity, the industry was able to reach up to 50 percent of domestic demand by 2016. Since then, the ability of the domestic industry to supply demand has stagnated at around 50 percent, with imports covering the remaining 50 percent of the E10 mandate. Over time, imported fuel ethanol is expected to cover a growing portion of total consumption because local production is expected to face continued feedstock supply constraints. Voluntary E20 gasoline blending still has a minimal contribution to fuel ethanol consumption during the first half of 2025 but is expected to pick up once more fuel retailers offer E20 at gas stations. The prevailing uncertainty on vehicle compatibility results in slow uptake of E20 gasoline, which fuel retailers hope to address to increase sales.

Prices. The Philippines experienced and continues to experience sudden increases in at-the-pump prices of fossil fuel. EPAP acknowledges that domestic ethanol is expensive, and that oil companies and consumers have benefitted from cheaper imported fuel ethanol, which drives down the retail price of gasoline. Local and imported gasoline competes openly on price, while imported fuel ethanol does not compete with local ethanol nor with local gasoline.

Figure 2. Monthly Gasoline Prices



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2021	47.30	48.18	46.98	48.86	50.05	53.54	58.80	57.05	56.40	59.30	64.16	61.44
2022	66.36	66.02	71.20	72.65	77.89	83.85	80.45	74.63	72.98	69.65	69.82	63.88
2023	67.01	67.44	65.23	67.14	63.21	64.05	65.32	66.8	69.48	67.33	68.78	65.43
2024	63.64	64.83	66.86	67.33	63.76	61.65	64.09	62.9	57.94	56.41	58.96	56.81
2025	60.32	59.84	56.95	56.34								

2024 $/gallon	
Jan	4.30
Feb	4.38
Mar	4.53
Apr	4.48
May	4.18
Jun	3.98
Jul	4.15
Aug	4.16
Sep	3.91
Oct	3.73
Nov	3.80
Dec	3.68

Source: DOE

Production

Post forecasts fuel ethanol production to increase to 390 million liters in 2025, a marginal 2 percent year-over-year increase due to the closure of three ethanol facility. The remaining facilities absorbed the available feedstocks and reached 96 percent capacity utilization of operating facilities in 2024. Insufficient sugarcane and molasses feedstocks remain a challenge. Molasses prices remain high, which also results in high bioethanol reference price (BRP) for locally-produced ethanol.

The PEP has set the targets for fuel ethanol production capacity on the assumption that all supply requirements are to be produced locally. See Biofuels Annual 2022 for historical developments. In 2025, installed capacity of 508 million liters fall short of the 944 million liters target in PEP. Currently, the main feedstocks are sugarcane-based materials, i.e., molasses and sugarcane juice. Only three fuel ethanol producers (San Carlos Bioenergy, Green Future Innovations, and Progreen Agricorp) use sugarcane as feedstock, while the rest use molasses. While 80 percent of total molasses in the country is used for ethanol production, supply is still not sufficient. The industry is exploring corn and other potential feedstock, i.e. sweet sorghum, cassava, nipa and sweet potato, but these are still in the research stage and will take time to produce alternatives to sugarcane commercially for bioethanol processing, if they can achieve success at all. The DOE has projects on biofuels on nipa sap as feedstock and cellulosic ethanol production technology.

Table 10. Fuel Ethanol Production Capacity Targets (In Million Liters)

Year	Production Capacity
2020	380.50
2025	944.15
2030	1,354.26
2035	1,913.05
2040	2,579.34

Source: PEP, DOE

There is no immediate solution to insufficient feedstocks. Molasses depends on the volume of sugarcane harvested and milled. For the past decade, the production of sugarcane exhibited a fluctuating trend attributed to declining sugarcane areas, adverse weather conditions, high cost of inputs i.e. fertilizer, declining farm labor force, and highly acidic or degraded soils for sugarcane planting. See GAIN Sugar Annual 2025 for more information.

The Philippines will continue to use molasses and sugarcane juice. The high demand for molasses drove up its price in previous years. Sugarcane planters are benefiting from the high molasses prices, but this has resulted in high fuel ethanol prices. The SRA releases the Bioethanol Reference Price twice a month as a benchmark for the price negotiations of oil companies and bioethanol producers to establish a level playing field.

Table 11. Molasses Price and BRP

Marketing Year (September-August)	Molasses Price (PhP/MT)	Sugar Composite Price (PhP/Lkg)	Bioethanol Price Index (PhP/Li)
2016-2017	8,544	1,430	53.68
2017-2018	6,364	1,440	50.96
2018-2019	9,694	1,532	57.40
2019-2020	11,828	1,484	61.07
2020-2021	9,352	1,500	57.07
2021-2022	11,735	2,014	65.79
2022-2023	14,510	3,163	82.07
2023-2024	15,700	2,578	80.56
2024-2025*	10,984	2,709	79.18

Note: September 2024 to May 2025 only

Source: SRA

By law, imported molasses for use as a biofuel feedstock is not allowed. EPAP proposed temporarily allowing importation of molasses to maximize plant capacity given current high fuel prices. The DOE declined the proposal in 2020, with sugar planters, millers and the SRA opposed during the stakeholders' consultations in August 2021 and in E20 consultations in 2023. EPAP also discussed the proposal with the Philippine Senate but received no decision.

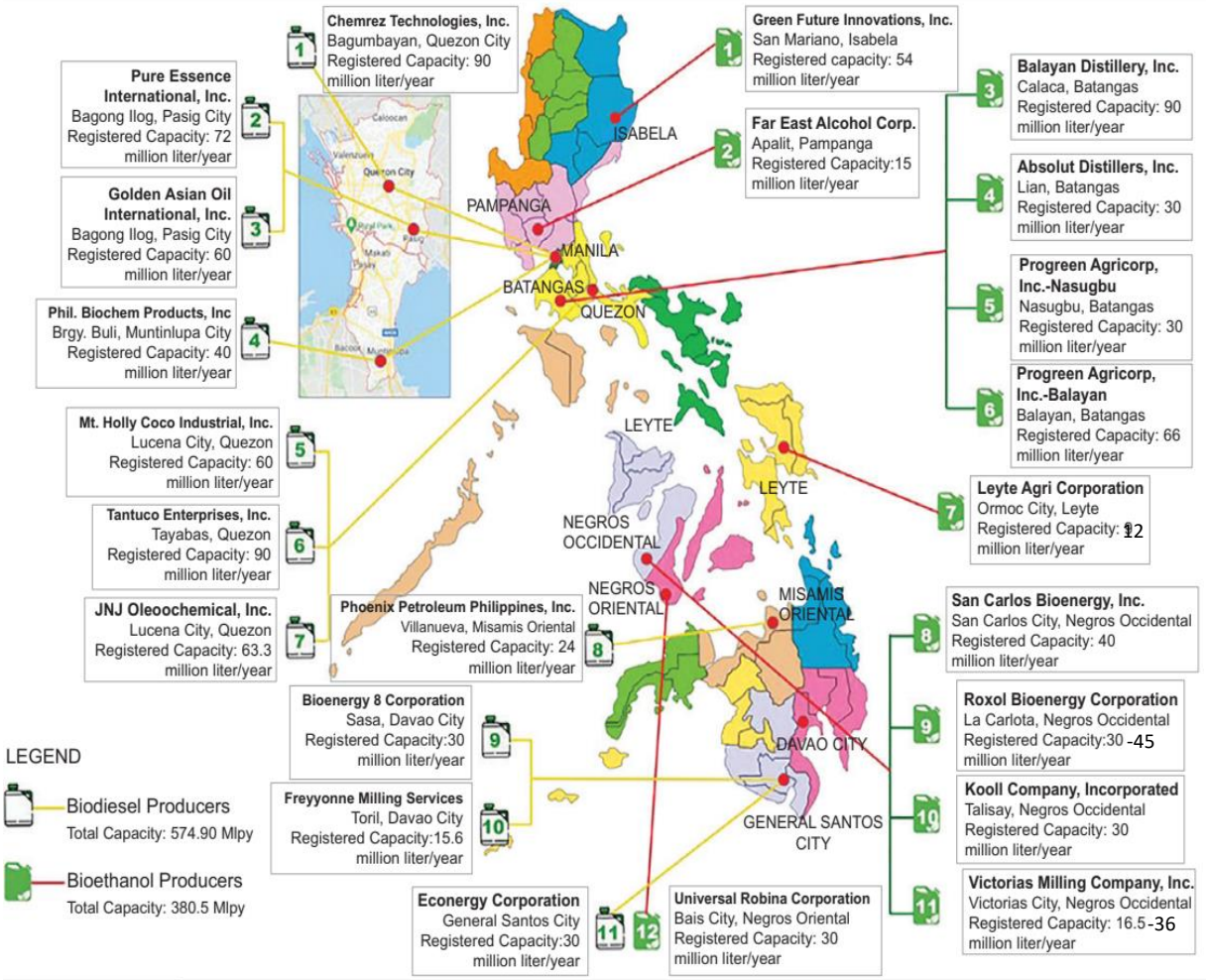
Meanwhile, imported molasses is allowed as feedstock in the production of denatured alcohol for industrial use. The DOE allowed bioethanol producers to repurpose their production processes from fuel use to medical use. Five bioethanol producers went into production of medical grade alcohol or rubbing alcohol to increase the country's supply of the needed alcohol due to COVID-19. The

Philippine Food and Drug Administration (FDA) issued interim guidelines for the provisional licenses to operate and certificates of product notifications for all rubbing alcohol through FDA Memorandum Circular 2020-001.

As of March 2025, there were 14 accredited bioethanol producers in the Philippines, with a total production capacity of 508 million liters per year (MLPY). Three facilities are currently non-operational, which reduced capacity to 396 MLPY. Additional capacity of 45 MLPY has been accredited for construction in Negros Occidental in the Visayas Region. Once all operational, total capacity will increase to 553 MLPY. The overcapacity of fuel ethanol plants compared to the local feedstock available is a result of the unexpected shift of seven potable alcohol producers to fuel ethanol following the implementation of a 22 percent excise tax on potable alcohol in 2020.

On February 11, 2025, the SRA issued Sugar Order No. 3 allowing existing sugar mills to expand or establish their own bioethanol facility. Some sugar mills are considering this opportunity so they can produce ethanol using the molasses by-products from sugar milling. See GAIN Report.

Figure 3. Philippine Biofuels Producers



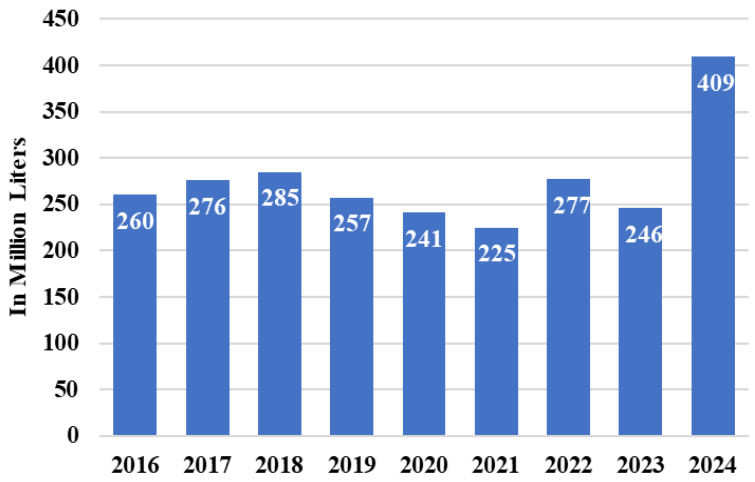
Source: PEP 2018-2040

Trade

Post forecasts fuel ethanol imports to increase to 450 million liters in 2025 due to the rise in gasoline pool consumption, and the implementation of the discretionary E20 blend. Local ethanol remains the priority, but imports will cover around 54 percent of the needed supply to meet mandated E10 and voluntary E20 blends. The United States has been the largest supplier of imported ethanol; however, recently faced increasing competition with Brazil.

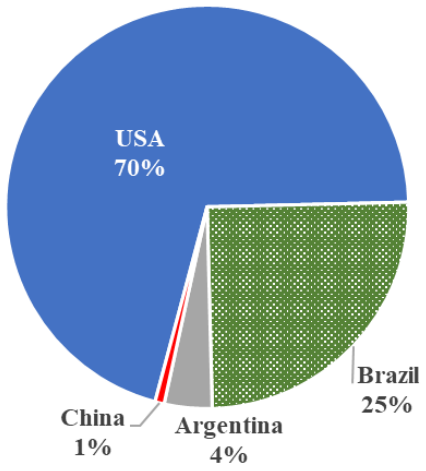
Figure 4. Fuel Ethanol Imports

Volume in Million Liters (ML)



By Country Source, 2024

Total Imports = 409 ML



Source: SRA and DOE

As of May 2025, there were 23 accredited importers of fuel ethanol composed of the top fuel oil companies (Petron, Shell, Chevron) and fuel traders who supply small players.

Table 12. Accredited Downstream Oil Industry Biofuel Participants

1. Petron Corporation	13. Insular Oil Corporation
2. Pilipinas Shell Petroleum Corporation	14. Warbucks Industries Corporation
3. Chevron Philippines, Inc.	15. Warbucks Southern Corporation
4. PTT Philippines Corporation	16. ERA 1 Petroleum Corporation
5. Seaoil Philippines, Inc.	17. Power Fill International Subic Inc.
6. Unioil Petroleum Philippines, Inc.	18. Vmaximus Subic FreePort Corp.
7. Jetti Petroleum Inc.	19. APEX Petroleum OPC
8. Phoenix Petroleum Philippines, Inc.	20. Trafigura Philippines Inc.
9. Filoil Logistics Corporation	21. Goldenshare Commerce & Trading, Inc.
10. Marubeni Philippines Corporation	22. South Brookville Trading Corp.
11. Micro Dragon Petroleum, Inc.	23. Felcor Petroleum Depot Corporation
12. High Glory Subic International Logistics, Inc.	

Source: DOE

III. Biodiesel

Table 13. BIODIESEL (Million Liters)										
Calendar Year	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025f**
Beginning Stocks	32	41	57	53	64	56	47	48	11	9
Production	227	220	220	242	188	198	203	225	266	400
Imports	0	0	0	0	0	0	0	0	0	0
Exports	0	0	0	0	0	0	0	0	0	0
Consumption	218	204	224	231	196	207	202	262	268	400
Ending Stocks	41	57	53	64	56	47	48	11	9	9
Production Capacity (Million Liters)										
Number of Biorefineries	11	11	11	12	13	13	13	13	13	13
Nameplate Capacity	575	575	575	608	708	708	678	678	791	791
Capacity Use (%)	39.5%	38.3%	38.3%	39.8%	26.6%	28.0%	30.0%	33.2%	33.6%	50.6%
Feedstock Use (1,000 MT)										
Coconut Oil	208	202	202	222	172	182	187	207	244	368
Market Penetration (Million Liters)										
Biodiesel	218	204	224	231	196	207	202	262	268	400
Diesel Pool, on-road use	7,701	8,086	8,200	8,413	6,440	7,460	8,191	8,100	7,641	7,736
Blend Rate (%)	2.3%	2.0%	2.0%	2.0%	2.0%	2.0%	1.8%	2.1%	2.3%	3.3%
Diesel Pool, total 1/	9,535	10,159	11,207	11,534	9,786	10,590	11,164	11,090	11,719	12,155

Note: 1/ Diesel pools include all blended biodiesel.
f-forecast.
Feedstock biodiesel conversion: 1 MT of coconut oil yields 1,090 liters of biodiesel.
Source: DOE, IEA with Post estimates for 2025

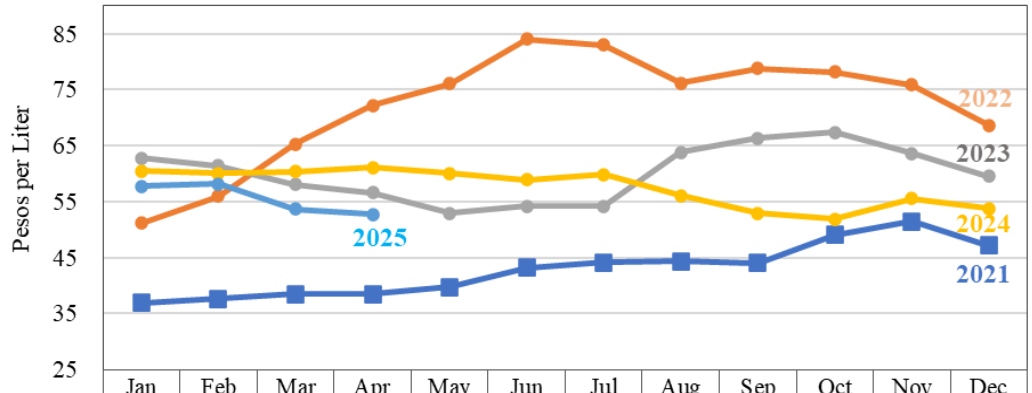
Consumption

Post forecasts biodiesel consumption to reach 400 million liters in 2025 due to an additional increase in blend mandate to B4. The mandated B3 covers the months of January to September 2025 and B4 is targeted to be implemented starting October 1, 2025. During the May 29, 2025, NBB meeting, however, members agreed to draft a resolution to suspend the B4 implementation in 2025 due to the high price of coconut oil in the international market. High coconut oil prices translate to high feedstock costs to produce CME, which would result in high biodiesel prices at the pump. Pending official DOE Advisory on suspension of B4 implementation, Post forecasts consumption to rise with the corresponding 4 percent growth in the diesel pool. Should the B4 mandate be suspended, the mandated B3 blend will be in effect for all of 2025, which will bring down Post's consumption forecast to 360 million liters.

Prices. Blended diesel is sold at retail stations for on-road and off-road use, including agricultural use (e.g. tractor, inland boats). Large mining companies maintain their own fuel depots on-site for their

equipment, sourcing their supply directly from fuel companies. Diesel prices during the first quarter of 2025 followed the same trend as in the past two years.

Figure 5. Monthly Prices of Diesel



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2021	36.87	37.63	38.52	38.50	39.74	43.14	44.14	44.38	44.04	49.09	51.47	47.16
2022	51.15	55.99	65.33	72.19	76.10	84.04	82.98	76.14	78.75	78.17	75.87	68.67
2023	62.79	61.45	58.05	56.58	52.96	54.17	54.21	63.78	66.29	67.36	63.63	59.54
2024	60.49	60.01	60.34	61.14	60.06	58.87	59.81	56.07	52.94	51.86	55.56	53.74
2025	57.79	58.15	53.62	52.77								

2024 $/gallon	
Jan	4.09
Feb	4.05
Mar	4.09
Apr	4.06
May	3.94
Jun	3.80
Jul	3.87
Aug	3.71
Sep	3.57
Oct	3.43
Nov	3.58
Dec	3.48

Source: DOE

Over the years, examining price trends and gaps in the Philippines between biodiesel and fossil diesel indicated that raising the blend rate from B2 to B5 would lead to even higher prices at the pump. This price effect (which is relatively very small on low-blended biodiesel-diesel blends), however, does not prevent the PCA from supporting the increase in the biodiesel blend in support of the livelihood of around 2.5 million coconut farmers. An evaluation of the effects in the coconut oil industry, however, and a calculation of diesel price increases are needed. That said, at low-blend rates, any price increase in the blended fuel over pure fossil diesel is largely 'washed-out' by the wide swings in oil and fossil diesel prices on the international market seen year after year. **By law, importation of biodiesel is not allowed, which could be the solution to manage the increase in diesel pump prices.**

Production

The available biodiesel plant capacity is more than enough to supply a national B5 mandate. While coconut production is abundant in the Philippines, the bulk

Table 14. Prices of Diesel, CME and CNO

Year	Diesel Price (a) (PhP/Li)	Biodiesel (CME) Price Range (b) (PhP/Li)	Crude CNO Local Price (c) (PhP/Kg)
2015	27.46	43 – 72	55.25
2016	25.43	45 – 85	74.45
2017	31.78	45 – 92	90.41
2018	42.16	40 – 91	79.97
2019	41.60	35 – 70	51.73
2020	34.71	35 – 75	49.19
2021	42.16	58 – 90	97.16
2022	72.12 (b)	68 – 96	82.37
2023	60.07 (b)	53 – 62	65.97
2024	57.57 (b)	72.73*	75.08

Note: *average price

Source: (a) ADB Key Indicators Database Philippines
(b) DOE
(c) United Coconut Association of the Philippines

of coconut oil goes to traditional exports, reducing available supply for biodiesel producers. **Post forecasts 50 percent growth in biodiesel production to 400 million liters** to satisfy rising consumption, due to the B3 mandate from January to September and B4 mandate from October to December 2025. Additional growth would be attributed to a 4 percent projected increase in total diesel pool in 2025. If B4 implementation is suspended this year, post forecast lower production at 360 million liters in compliance with the B3 mandate for the whole year of 2025.

The PEP set production capacity targets for biodiesel with cumulative targets under the Clean Energy Scenario (CES). Three prospective investors have signaled interest in constructing biodiesel facilities with a combined potential capacity of 201 MLPY. As of March 2025, there were 14 accredited biodiesel producers with total production capacity of 815 MLPY. One facility was non-operational in 2024, which reduced total capacity to 791 MLPY, equivalent to about 34 percent of volume requirements for the start of the B3 mandate in 2024. The overcapacity in serving the current B3 blend is a result of the over expansion of the industry in anticipation of the shift to B5 as guided by the PEP.

Increasing the biodiesel blend mandates requires constant development of locally produced feedstock sources to ensure adequate supply. Research and development of biofuel production and utilization is one of the responsibilities of the DOST. The DOST- Industrial Technology and Development Institute (DOST-ITDI) completed in December 2019 the study entitled Characterization/Performance Testing of the Biodiesel/Diesel Blends from Combined Feedstock of Various Vegetable and Used Cooking Oils. Biodiesel was produced from various feedstocks, namely: refined palm oil, used cooking oil, and rubber seed oil through optimized processes. Results of the analyses showed methyl esters from palm oil, used cooking oil, and rubber seed oil can be blended with CME for use as fuel additive to petroleum diesel.

Trade

No trade is allowed under the Biofuels Act, although imported palm-oil biodiesel could offset the expected price increase of a higher blend mandate through lower-cost imported biodiesel.

IV. Advanced Biofuels

The DOST spearheads initiatives on biofuels research and development (R&D). DOST has recently funded the following projects on SAF development and production:

- Advancing Sustainable Aviation Fuel in the Philippines through the Establishment of a Demo-Scale Sustainable Aviation Fuel Production Facility Utilizing Used Cooking Oil as Feedstock This project is funded under the DOE's Renewable Energy Trust Fund (RETF) under the 2024 RESTI Call for Proposals. The general objective is to demonstrate CORSIA eligible SAF production from used cooking oil via the HEFA process and assess its technical performance, production economics, and logistics cost.

- Advancing Sustainable Aviation Fuel in the Philippines: Propelling Green Energy Solution for Aviation Decarbonization. The general objective is to assess the techno-economic and environmental viability of SAF production in the Philippines from alternative feedstocks such as coconut oil, palm oil, and used cooking oil.

The Philippines also focuses on finding new feedstocks to produce more biofuels. The National Bioenergy Research and Innovation Center (NBERIC) was established in 2018 to realize R&D projects in bioenergy. NBERIC collaborates with various institutions on bioethanol R&D to maximize the NBERIC facility located at the Mariano Marcos State University (MMSU) in Batac, Ilocos Norte in northern Philippines. The USAID - Science, Technology, Research and Innovation for Development (STRIDE) program had been instrumental in the establishment of NBERIC. The U.S. Grains Council (USGC) signed a Memorandum of Understanding with MMSU in July 2022 to establish a cooperative partnership, which facilitates the exchange of expert knowledge, technical information, and best practices as they relate to the biofuels industry and policy development.

The Pampanga State Agricultural University (PSAU) established the Bio-Energy Laboratory in 2017-2019 to determine the potential of the enormous volume of agricultural resources, products and wastes in Central Luzon as biofuels. The laboratory focuses on the thermal conversion and characterization of biomass used of agricultural wastes and other lesser studied agricultural resources.

The DOST-Philippine Council for Industry, Energy, and Emerging Technology Research and Development (PCIEERD) and the Industrial Technology Development Institute (ITDI) conducted R&D on biofuels in collaboration with other institutions such as DOE, DA, PCAARRD, and academia, particularly the UPLB and UP Visayas.

Bio-oil production from agricultural waste (2014-2020). Pyrolysis was conducted on a corn stover using a prefabricated reactor. Optimum conditions on temperature, time, and catalyst have yielded corresponding improvements in bio-oil and char yields. Recommendations for further studies include scaling up of equipment and facilities to support bio-oil production from other agricultural waste sources, working on higher pyrolysis temperature, and economic analysis to determine cost efficiency of the bio-oil and char.

Microalgae experiments were done by DOST and UP Visayas at the laboratory stage but the economic feasibility for commercial-scale production must be established. Likewise, studies on used vegetable oils, particularly from fast-food chains, were conducted by DOST, and more studies are needed on raw material quality control, and process optimization, since the resulting biodiesel had difficulty meeting standards. For bioethanol, DOST and UPLB have undertaken studies on sweet sorghum, and the economic feasibility of its cultivation vis-à-vis sugarcane needs to be ascertained.

A project funded by the National Biofuel Board (NBB) was completed by the ITDI in 2018 on multi-feedstock (coconut oil, palm oil, used oil, rubber oil) production of biodiesel, and further studies are needed for engine testing. These initiatives focused on viability of feedstocks and may not be considered advanced technology as has been solicited.

Appendix A: Conversion Rates and Terms

Feedstock-to-Biofuel Conversion Rates
Use these conversion rates as a guide. The rates you use (or implied based on reported feedstock use) must match or come very close to these rates. Feedstock reported in the biofuels tables when added together should match reported biofuel production.

Ethanol
Sugarcane: 1 MT = 76-83 liters (use 80 as average)
Molasses: 1 MT = 246 liters ethanol
Biodiesel
Coconut oil 1 MT = 1,090 liters of biodiesel.

Appendix B: Bioethanol Producers and Capacities

Year	Number of Distilleries	Annual Rated Capacity (million liters)	Annual Production (million liters)	Capacity Utilization (%)	Annual Blend Rate (%)
2008	1	Na	0.97	Na	Na
2009	2	39.00	23.23	59.6	2.3
2010	3	69.00	10.17	14.7	3.8
2011	3	69.00	4.14	6.0	5.6
2012	4	123.00	34.54	28.1	6.9
2013	4	123.00	71.54	58.2	8.5
2014	7	207.12	114.86	55.5	10.1
2015	8	222.12	167.87	75.6	9.3
2016	10	282.12	230.18	81.6	8.6
2017	10	282.12	234.65	83.2	8.2
2018	12	380.50	296.54	77.9	8.6
2019	12	380.50	346.14	91.0	8.8
2020	12	380.50	279.58	73.5	9.2
2021	13	425.50	354.60	83.3	8.6
2022	13	466.00	374.78	80.4	8.7
2023	13	478.00	386.51	81.0	9.1
2024*	11	396.00	381.83	96.5	9.8

Note: *two distilleries were non-operational
Source: DOE and SRA

Attachments:

No Attachments