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Report Highlights:

Peruvian ethanol production in 2021 is forecast at 215 million liters, approximately the same level compared to the previous year. Ethanol consumption for 2021 is forecast at 260 million liters. Peru is forecast to produce 195 million liters of biodiesel in 2021, a two percent increase compared to the previous year. Biodiesel imports are forecast at 140 million liters in 2021.

Executive Summary:

Peruvian ethanol production in 2021 is forecast at 215 million liters, about the same level compared to the previous year. Ethanol consumption for 2021 is forecast at 260 million liters, increasing two percent from 2020, this increase is solely the result of higher non-fuel ethanol demand due to COVID-19 since the blend rate is expected to remain steady. Peru's Consumer Defense and Intellectual Protection Institute (INDECOPI) initiated a countervailing duty investigation against U.S. ethanol exports on April 25, 2017. On November 6, 2018, INDECOPI ruled in favor of the domestic industry and imposed countervailing duties between \$47.86 and \$47.94 per ton (4 cents/liter). Following a lengthy appeals process, INDECOPI announced on January 29, 2021 a reversal of their previous decision and all duties were repealed. Despite the countervailing duties in place at the time, U.S. ethanol exports to Peru remained competitive with domestic production, reaching 152 million liters in 2020. Ethanol imports in 2021 are forecast at 190 million liters.

The expansion of fuel ethanol consumption slowed significantly after Peru met its target blend rate in 2013. Since that time, further increases are solely dependent on a growing gasoline market. Peru exports domestically produced ethanol to Europe. It then meets remaining domestic demand through imports. Peru has sufficient ethanol production capacity to support consumption and exports. The limiting factor is insufficient sugar cane feedstock to supply both the sugar and ethanol markets.

Biodiesel consumption has slowed after the target blend rate was achieved in 2012. Since that time, further increases are solely dependent on a growing diesel market. Peru resumed biodiesel production in 2017 after a halt between 2014 and 2016. In 2020, Peru produced 186 million liters of biodiesel, a significant increase of 22 percent from the previous year, but biodiesel capacity use continues to remain low. This increase was the result of reduced imports which created a market opportunity for local producers. In part, imports are controlled through renewed anti-dumping and countervailing duties on U.S. biodiesel and more recently imposed countervailing duties on Argentine biodiesel. Peru is forecast to produce 195 million liters of biodiesel in 2021. Biodiesel imports in 2021 are forecast at 140 million liters. With the blend rate expected to hold steady, biodiesel consumption in 2021 is forecast at 333 million liters, a decrease of 11 percent due solely to reduced fuel demand resulting from COVID-19 economic slowdown. Peru is currently reviewing the sunset process for the antidumping and countervailing duties imposed to U.S. biodiesel.

Peru does not provide tax incentives or set prices to directly support profitable biofuel margins that would give biofuels an advantage over fossil fuels. Instead, Peru relies on the mandatory blend rates of 7.8 percent for ethanol and 5 percent for biodiesel, which it has maintained for some time, and any costs are passed forward to the consumer.

II. Policy and Programs

Peru does not provide tax incentives or set prices to directly support profitable biofuel margins, which would give biofuels an advantage over fossil fuels. Instead, Peru relies solely on mandatory blend rates passing any costs over fossil fuels directly to consumers. At COP21 of the United Nation's Paris Climate Change Conference, Peru committed to a 30-percent, economy-wide reduction in emissions by 2030. While it plans to obtain this primarily through its forestry sector, a national law promoting the investment, development, and use of biofuels is included in this strategy (Supreme Decree 012-2009).

Peru updated its National Determined Commitment (NDC) for 2030 in December 2020 to a non-conditioned commitment of 208.8 MTCO₂Eq (million tons of carbon dioxide equivalent) and a 179 MTCO₂Eq conditional commitment, dependent upon international cooperation. In 2015, Peru had filed an NDC of 238.6 MTCO₂Eq for non-conditioned commitment and 208.8 MTCO₂Eq of conditioned commitment.

Biofuel Policy Framework and Mandates

Supreme Decree 013-2005 EM - Regulation for Biofuels Market Promotion: This 2005 decree sets the biofuel content in fuels distributed and sold in Peru. Gasoline must contain at least 7.8 percent ethanol. Diesel must have a biodiesel content of no less than five percent. This minimum blend level mandate applies to all diesel end-use markets, both on and off-road and heat and power.

Law 28,054 – Biofuels Market Promotion: This law (April 20, 2007) establishes the legal framework for promoting the use of biofuels. The legislation seeks to increase employment, diversify the country's fuel sources, strengthen agricultural development, reduce environmental contamination and degradation, and provide an alternative source of income to illicit coca cultivation and drug production. This law promotes investment in biofuel production and its commercialization. The law established the PROBIOCOM program within Peru's investment agency (i.e., PROINVERSION) in order to attract investment in the local biofuel sector. While the framework of this law remains in force, no new investments were made beyond the initial years. The Biofuels Market Promotion legislation establishes the technical committee responsible for determining blend rates and schedules and recommending regulations for biofuel production and commercialization. The committee is also responsible for enhancing public awareness of the benefits of biofuels. The Ministries of Energy and Mines, Economy and Finance, Agriculture, PROINVERSION, DEVIDA (alternative development agency), and the private sector make up the technical committee's membership.

Supreme Decree 021-2007 EM – Regulation for the Commercialization of Biofuels: This law (April 2007) establishes the legal requirements for trading and distributing biofuels in Peru. It also establishes quality standards and procedures for registering biofuel blends with the Ministry of Energy and Mines. The decree sets the schedule for biofuel blending minimums in fossil fuels. Beginning in 2010, all gasoline sold in Peru was required to contain at least 7.8 percent ethanol, but full phase in of this requirement took three years to complete. The required blend level has been met each year since 2013. Since 2011, diesel fuel sold in Peru must contain a minimum of five percent biodiesel, but that goal was met one year late. The blend rate has remained steady at B5 since 2012.

These regulations delineate responsibilities among the different agencies:

Ministry of Agricultural Development and Irrigation: Responsible for promoting the development of the agricultural areas necessary for biofuel production.

Ministry of Energy and Mines: This ministry authorizes the commercialization of biofuels and blends thereof with gasoline and diesel fuels.

Ministry of Production: Authorizes the operation of biofuel production facilities.

OSINERGMIN: Supervises and controls operations throughout the production chain.

PROINVERSION: Promotes investment in the biofuels sector.

Supreme Decree 012-2009 MINAM, National Environmental Policy: The Mining and Energy chapter of this Supreme Decree establishes as a priority the promotion of investment, development, and use of biofuels as a substitute for petroleum and natural gas in order to reduce carbon emissions.

Environmental Sustainability and Certification

Peru does not have environmental sustainability (i.e. greenhouse gas emission limits) or environmental certification requirements for biofuels. There are Peruvian companies which offer biofuel sustainability report verifications, but it is unknown how many producers utilize these services.

In its original and updated NDC commitments, Peru did not include any references to how or if bioenergy or biofuels would contribute to meeting its NDCs.

Import Policy Including Duties

Per the U.S.-Peru Trade Promotion Agreement, U.S. ethanol is imported into Peru duty free as of 2018. Peru imports U.S. biodiesel duty-free as well. Biodiesel imports, both 3826.00 (covering blends above B30 to B100) and 2710.20 (petroleum oils containing 1 - 30 percent biodiesel), enter Peru duty free. Ethanol imports of both undenatured and denatured ethanol (HS codes 2207.10 and 2207.20) are assessed a six percent import duty plus an 18 percent value-added tax. Under the U.S.-Peru Trade Promotion Agreement, a ten-year tariff phase out schedule was applied to U.S. denatured ethanol. As of 2018, denatured U.S. ethanol is imported into Peru duty free. Undenatured U.S. ethanol was granted duty free entrance when the Agreement entered into force in 2009. Peru primarily exports undenatured ethyl alcohol (2207.10), but in 2018 it exported 33 million liters of denatured ethyl alcohol (2207.20) to China and Colombia.

Peru's Consumer Defense and Intellectual Protection Institute (INDECOPI) published Resolution 1072017/CDB-INDECOPI dated April 25, 2017. The Resolution determined that there existed enough evidence to begin a countervailing duty (CVD) investigation on U.S. ethanol exports to Peru. On November 6, 2018, INDECOPI published Resolution 152-2018/CDB-INDECOPI imposing countervailing duties of \$47.86 per ton for Murex LLC and \$47.94 for ethanol from other U.S. sources. On November 30, 2018, the United States filed an appeal to the decision. On January 29, 2021, INDECOPI announced a reversal of its previous determinations and the duties were repealed.

Peru imposed temporary anti-dumping and countervailing duties on U.S. biodiesel in December 2009 in response to imports that began in December 2008. U.S. shipments totaled 85 million liters in 2009, which was equal to half of Peru’s consumption that year. U.S. exports stopped immediately following the imposition of these temporary duties, with the exception of two final shipments in March and June of 2010. On August 23, 2010, Peru’s INDECOPI published Resolution 151-2010-CFD-INDECOPI imposing permanent countervailing and anti-dumping duties on all U.S. exports of B51-100. These duties are \$178 per metric ton and \$212 per metric ton, respectively. The duties were renewed in 2016 after the expiration of the initial countervailing and anti-dumping duties. U.S. biodiesel shipments to Peru resumed in 2013, under Chapter 2710.20 to which the higher duties are not applied.

INDECOPI published resolution 011-2016/CDB-INDECOPI on January 25, 2016, establishing countervailing duties on all Argentinean biodiesels. This process was initiated after allegations from Palmas del Espino (Grupo Romero), who halted production at its Tocache production plant, claiming unfair competition from biodiesel from Argentina. Due to these countervailing duties, imports from Argentina fell in 2016 and 2017, and FAS Lima forecasts that B100 Chapter 38 imports from Argentina will remain limited in 2021. The countervailing duties levied against biodiesel from Argentina are as follows:

Countervailing Duties Against Argentinean Biodiesel	
Producer	\$/MT
LDC Argentina	15.4
Molinos Rio de la Plata, Renova Vicentin	17.1
Cargill	24.1
Aceitera General Deheza, Bunge Argentina	31.3
Others	208.2

Source: INDECOPI

III. Ethanol

Peru began producing fuel ethanol in 2008. It produced fuel ethanol in sufficient volumes to supply domestic consumption through 2014, when one of the producing plants temporarily closed due to financial difficulties. Since Peru began producing ethanol, it has exported high-value, sugar cane-based ethanol to the European Union. This created the demand for imports to meet domestic demand. Peru met the E7.8 requirement initially scheduled for 2010 in 2013 after a three-year delay.

Ethanol Used as Fuel and Other Industrial Chemicals (Million Liters)										
Calendar Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021f
Beginning Stocks							30	40	48	55
Fuel Begin Stocks	1	12	21	5	2	27	28	39	28	28
Production							172	222	212	215
Fuel Production	142	204	190	152	205	165	140	173	150	150
Imports							193	208	190	190
Fuel Imports	115	114	63	112	113	112	173	190	153	180
Exports							142	171	143	140
Fuel Exports	122	149	102	94	113	91	108	170	143	138
Consumption							213	251	255	260
Fuel Consumption	124	160	167	173	180	185	194	204	205	205
Ending Stocks							40	48	55	57
Fuel Ending Stocks	12	21	5	2	27	28	39	28	28	15
Total BalanceCheck	0	0	0	0	0	0	0	0	0	0
Fuel BalanceCheck	0	0	0	0	0	0	0	0	0	0
Refineries Producing Fuel Ethanol (Million Liters)										
Number of Refineries	2	2	2	2	2	2	2	2	2	2021f
Nameplate Capacity	350	350	350	350	350	350	350	350	350	350
Capacity Use (%)	41%	58%	54%	43%	59%	47%	40%	49%	43%	43%
Co-product Production (1,000 MT)										
Bagasse	586	842	784	627	846	680	578	714	619	619
Co-product B										
Feedstock Use for Fuel Ethanol (1,000 MT)										
Sugar Cane	1,775	2,550	2,375	1,900	2,563	2,062	1,750	2,163	1,877	1,877
Market Penetration (Million Liters)										
Fuel Ethanol Use	124	160	167	173	180	185	194	204	205	205
Gasoline Pool 1/	1,931	2,047	2,147	2,223	2,303	2,373	2,487	2,614	2,628	2,628
Blend Rate (%)	6.40%	7.80%	7.80%	7.80%	7.80%	7.80%	7.80%	7.80%	7.80%	7.80%

f: forecast

Source: Ministry of Agriculture, Private Sector, Ministry of Energy and Mines, FAS Lima analysis (Note: Forecasts are based on the assumption that Peru will continue to reach the E7.8 mandate. Some small volumes of ethanol traded may be for beverage use and other industrial chemicals not used as fuel.)

Production:

Peruvian ethanol production in 2021 is forecast at 215 million liters, roughly the same level compared to the previous year. Nameplate capacity is forecast to remain the same in the near future at 350 million liters with only a near 50 percent capacity use rate.

Peru's two ethanol production facilities are located in the state of Piura in northern Peru. Coazucar's Aurora facility, with about 6,500 hectares of sugarcane, is configured to produce sugar or ethanol depending on the economics at a given moment. This company is owned by Grupo Gloria (Peru's largest dairy processor). The other production facility is Caña Brava, a \$210 million facility owned by the Romero Group. It maintains approximately 8,000 hectares of planted sugarcane fields with a production capacity of 127 million liters per year.

Peru uses sugarcane as the feedstock for bioethanol production. This sugarcane is cultivated on formerly idle, non-irrigated desert lands. Ethanol production is centered in Piura where companies take advantage of the favorable weather conditions (i.e., ample sunlight due to proximity to the equator). Despite an average annual rainfall of only 25 millimeters, sugarcane is cultivated year-round using modern irrigation technology. The sugarcane fields are drip irrigated with water drawn from the Chira River. The river is also fed by the Poechos Reservoir, which has a one billion cubic meter capacity and a discharge rate of four cubic meters per second. The reservoir is 30 kilometers from the Peru-Ecuador border.

A number of sugarcane growers are evaluating the economic feasibility of diverting part of their crop to ethanol production. However, sources indicate that there are no immediate plans to initiate commercial operations.

Sugarcane yields can be as high as 200 metric tons (MT) per hectare, although average yields normally are around 140 MT per hectare, with 13 to 18 months between cuts. Brazil's shorter 180 day growing season produces lower yields of 70 MT per hectare. Sugarcane cultivation in Piura absorbs about 17,000 cubic meters of water per hectare per year.

Consumption:

Ethanol consumption for 2021 is forecast at 260 million liters, increasing two percent from 2020. With the blend rate unchanged, this increase is solely the result of higher non-fuel ethanol demand due to COVID-19. Peru met its ethanol mandate in 2013, three years late, and has continued to reach it since that year. Unless there is an increase in the ethanol blend mandate, ethanol consumption will only significantly increase as gasoline consumption increases. However, increasing fuel prices as result of higher international prices and the Peruvian Sol devaluation could eventually result in higher substitution rates of gasoline with less expensive fuels.

The growing pace of demand for E7.8 gasoline has slowed in recent years as taxis and buses increasingly turn to liquefied natural gas (LNG) and liquefied petroleum gas (LPG). Demand for these two alternative fuels in 2020 accounted for about 50 percent of total fuel use by light duty vehicles. This trend directly affects gasoline and thus ethanol consumption slowing growth opportunities for fuel ethanol.

FAS Lima forecasts that despite growing demand for LNG and LPG as transportation fuels, increased automotive ownership, and the continuation of the E7.8 requirement will lead to increased demand for gasoline and thus ethanol. In 2020 and into early 2021, public mobility restrictions related to the COVID-19 pandemic severely reduced light duty vehicle use.

The city of Lima and its immediate surroundings account for roughly 65 percent of the country’s ethanol and gasoline demand. REPSOL (Spain’s national petroleum company) and Petro Peru (state-owned) are the Peruvian market’s main gasoline suppliers. After initial opposition, these suppliers are now more open to discussing an increase to the current ethanol blend rate of 7.8 percent, likely due to the expectation it will lower costs.

Trade:

FAS Lima forecasts Peru’s 2021 fuel ethanol exports at 138 million liters, increasing six percent compared to the previous year. Attractive European Union market prices have encouraged production in Peru in the last several years. Fuel ethanol imports in 2021 are forecast at 180 million liters, mostly from the United States.

Peruvian Undenatured Ethyl Alcohol Exports (220710)			
(Million Liters)			
	2018	2019	2020
World	108	170	143
Netherlands	64	129	131
U.K.	21	18	0
France	5	14	5
Ecuador	15	5	7
Colombia	3	4	1

Source: Peruvian Customs

Peruvian Undenatured Ethyl Alcohol Imports (220710)			
(Million Liters)			
	2018	2019	2020
World	19	18	37
Bolivia	17	17	31
Brazil	0	0	5
Ecuador	2	1	1

Source: Peruvian Customs

Peruvian Denatured Ethyl Alcohol Imports (220720)			
(Million Liters)			
	2018	2019	2020
World	173	190	153
U.S.	173	190	152
Ecuador	0	0	1

Source: Peruvian Customs

The export price for Peruvian ethanol in 2020 ranged from \$0.59 to \$0.75 per liter while ethanol was imported into Peru at an average price of USD\$0.53 per liter. Peruvian ethanol exported to the European Union (EU) benefits from duty-free access under the EU – Peru/Columbia/Ecuador Free Trade Agreement as well as certain price premiums for some growers who are able to implement green harvesting (i.e., harvesting without cane field burning) and biological pest control among other more environmentally friendly measures.

Peru's ethanol does not meet biofuel land use change requirements under the US Energy Act of 2007 (EISA 2007) and thus cannot count towards fulfilling obligations (mandates) under the Renewable Fuel Standard (RFS), making it ineligible for Renewable Identification Numbers (RINs). RINs add value to biofuels sold in the United States. Peruvian ethanol's higher cost (compared to U.S. corn ethanol) and lack of RINs eligibility limits its market opportunity in the United States. For some years now, the only market for higher-priced sugarcane ethanol has been California and that market is dominated by Brazil.

Biofuels coming from overseas can fulfill RFS obligations and generate RINs if the biofuel plant was "grandfathered" by supplying the U.S. market prior to 2007 or by certifying that the biofuel: 1) comes from feedstock grown on lands that were cultivated prior to 2007; 2) is covered by a feedstock tracking and certification scheme that insures ineligible feedstock are excluded; and 3) meets a minimum environmental sustainability standard of 20 percent greenhouse gas savings over fossil fuel or 50 percent to qualify for an advanced non-cellulosic fuel. No plants in Peru were grandfathered, and Peru does not meet the land use condition because desert lands used to produce ethanol were converted after 2007. As a result, ethanol produced using feedstock from those lands cannot meet RFS obligations as defined under EISA 2007.

IV. Biodiesel/Renewable Diesel

Production:

Peru is forecast to produce 195 million liters of biodiesel in 2021, a two-percent increase compared to the previous year. After halting biodiesel production between 2014 and 2016, Peru resumed production in 2017. Peru produced 186 million liters of biodiesel in 2020. A steady production recovery over the past five years is due to a decline in imports as result of antidumping duties assessed on Argentinean biodiesel. Biodiesel imports are forecast to remain nearly flat at 140 million liters in 2021. Industry sources indicate that despite the anti-dumping duties on Argentinian biodiesel and the existence of a biofuel promotion law (Law 28054) that prioritizes domestic biodiesel production and procurement, local fuel distributors will continue to import more affordable biodiesel from other sources.

Peru produces biodiesel using crude palm oil (CPO) as a feedstock. PetroPeru, the entity that regulates biodiesel production and imports, notes that palm oil biodiesel quickly solidifies as temperature drops at higher altitudes, clogging fuel filters and damaging truck engines. It is this reason primarily that has justified not raising the blend rate above B5.

Biodiesel (Million Liters)										
Calendar Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021f
Beginning Stocks	1	6	11	9	9	59	35	12	24	24
Production	18	10	0	0	0	37	112	153	186	195
Imports	271	304	315	323	402	294	223	200	139	140
Exports	0	0	0	0	0	0	0	0	0	0
Consumption	284	309	317	323	352	355	358	341	325	333
Ending Stocks	6	11	9	9	59	35	12	24	24	26
BalanceCheck	0	0	0	0	0	0	0	0	0	0
Production Capacity (Million Liters)										
Number of Biorefineries	2	2	2	2	2	2	2	2	2	2
Nameplate Capacity	350	350	350	350	350	350	350	350	350	350
Capacity Use (%)	5%	3%	0%	0%	0%	11%	32%	44%	53%	56%
Feedstock Use (1,000 MT)										
Crude Palm Oil	17	9	0	0	0	34	103	141	171	179
Market Penetration (Million Liters)										
Biodiesel, on-road use	284	309	317	323	352	355	358	341	325	333
Diesel Pool , on-road use 1/	5,687	5,943	5,809	6,303	6,631	6,685	6,690	6,812	6,500	6,660
Blend Rate (%)	5.00	5.20	5.50	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Diesel Pool, total 1/										

f: forecast

Source: Peruvian Customs, PetroPeru, Private Sector, FAS Lima Analysis

Peruvian Biodiesel Imports – 3826.00 (Million Liters)			
	2018	2019	2020
World	202	151	98
Spain	58	113	49
Belgium	0	23	0
Indonesia	49	0	0
Malaysia	45	0	31
Argentina	24	0	0
Netherlands	19	0	0
Others	7	15	18

Note: Assume all product is B100.

Source: Peruvian Customs

Peruvian Petroleum Oils and Preparations Containing up to 30 percent Biodiesel Imports – 2710.20 (adjusted to B100-equivalent, Million Liters)			
	2018	2019	2020
World	21	49	41
U.S.	21	49	41

Note: The assumed average blend rate for imports is B10.

Source: Peruvian Customs

Consumption:

FAS Lima forecasts biodiesel consumption at 333 million liters in 2021, a two-percent increase compared to 2020. Consumption has remained heavily dependent on imports, particularly from 2014 to 2016 when all demand was met with imported biodiesel. Peru met the B5 requirement in 2012, one year late, after the blending requirement went into effect. The blend rate has remained quite steady at B5 since 2012. FAS Lima expects this blend rate to remain near that same level for the near future.

Trade:

Biodiesel imports in 2021 are forecast at 140 million liters, about the same level as the previous year. Biodiesel imports, both 3826.00 (covering blends above B30 to B100) and 2710.20 (petroleum oils containing 1 – 30 percent biodiesel), enter Peru duty free. Post believes that product imported under 2710.20, all of which comes from the United States, contains 10 percent biodiesel. If soy oil biodiesel is used (the most common type of U.S. biodiesel), it would perform better in colder temperatures than CPO-based biodiesel when blended at the same levels due to a naturally lower concentration of fatty acids in the feedstock.

V. Advanced Biofuels

There is currently no ongoing research on advanced biofuels in Peru. There is also no policy in place to support advanced biofuels research.

VI. Notes on Statistical Data

Ethanol production in Peru utilizes the diffusion method, adopted from Brazilian technology. This method consists of shredding harvested sugarcane stalks very thinly, then moving the shreds through thirteen consecutive warmer water (70-80°C) showers. The water from the final shower is allowed to ferment with alcohol producing yeast. Once the fermentation process is completed, the ensuing “liquor” is distilled. Industry sources clarify that this procedure is more efficient than traditional milling. The continuous flow also keeps plant idle time at a minimum. In order for a 350,000 liter per day ethanol plant to operate efficiently, 20 hectares of sugarcane must be processed daily. With an average sugar content of 17 percent, one metric ton of sugarcane produces roughly 170 kilograms of sugar or an amount equivalent to 80 liters of ethanol.

One metric ton of sugarcane also produces some 330 kilograms of bagasse (i.e., fibrous material that remains after sugarcane stalks are crushed to extract their juice). The bagasse, or sugarcane fiber, is used to produce 660 Kilograms of steam. Steam-turned turbines generate the processing plant’s electricity needs. Ethanol

operations utilize about eight megawatts per month. The excess energy produced (normally two to four megawatts) is sold to the national power grid. The following provides additional information on tables:

Table: Ethanol Used as Fuel (Million Liters)

Conversion: 1MT of sugar cane = 80 liters of ethanol

1MT of sugar cane = 330 kilograms of bagasse

Ethanol Trade: In this report, all exports of HS 2207.10 and 2207.20 to Europe is for use as fuel, while exports to other countries are for beverage or other industrial use. All imports of 2207.20 from the U.S. are fuel grade ethanol, while imports from other countries are for use as beverage or other industrial uses.

Table: Biodiesel Used as Fuel (Million Liters)

Conversion: 1MT of Crude Palm Oil = 1080 liters of biodiesel

Attachments:

No Attachments