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**Prepared By:** Gaspar Nolte

**Approved By:** Robert Tuebner

**Report Highlights:**

Peruvian total ethanol production in 2024 is forecast at 210 million liters, a slight decrease compared to the previous year. Total ethanol consumption for 2024 is forecast at 290 million liters, remaining at the same levels compared to the previous year. Fuel ethanol imports in 2024 are forecast at 190 million liters, mostly from the United States. Peru is forecast to produce 245 million liters of biodiesel in 2024, a slight decrease compared to the previous year. FAS Lima forecasts biodiesel consumption at 420 million liters in 2024, increasing two percent from the previous year.

**Executive Summary:**

Peruvian total ethanol production in 2024 is forecast at 210 million liters, a slight decrease compared to the previous year. Total ethanol consumption for 2024 is forecast at 290 million liters, remaining at the same level as previous year. Ethanol blend rate expected to remain steady in 2024, however FAS Lima is actively working with the U.S. and Peruvian private and public sectors to increase the ethanol mandate.

Policy and its implementation have 'stagnated' over the past decade. Not only is there no effort to increase ethanol blending or introduce renewable diesel to overcome the understandable limit of B5 due to operating temperatures (pure 100% renewable diesel performs as well or better than fossil diesel in cold temperatures), there is also no effort to incentive biofuels sold on the market toward lower greenhouse gases emissions via changes in management practices of fuel production. The full climate mitigation potential for biofuels are not being realized. There is also no innovation to bring new fuels to market. This applies not only to renewable diesel but now also SAF. Commercial scale production of these fuels is already firmly established in the US and Europe, and efforts to introduce them (esp SAF) are underway in a dozen other countries. Peru has fallen behind and the gap is widening every day. No R&D is needed - that has already been completed in many places - but policy support is needed.

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. Fuel ethanol imports in 2024 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. However, gasoline consumption faces stiff competition from alternative and more affordable fuels such as natural gas and liquefied petroleum gas. Peru exports domestically produced ethanol to Europe and meets the resulting domestic demand-supply gap through imports. The blend rate holds steady at 7.8.

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 when lower-price imports shut down domestic production. Thereafter, with countervailing (CD) and anti-dumping (AD) duty border protection in place, production resumed and both production and production capacity use have risen to new records. By 2023, Peru produced 246 million liters of biodiesel, an increase of 17 percent from the previous year, aided by reduced imports and stock build. Little year-over-year change in supply and demand are expected in 2024. Peru has never exported biodiesel.

Biodiesel imports remain controlled through renewed AD and CV duties on U.S. biodiesel and more recently imposed CV duties on Argentine biodiesel. Argentina challenged, under the World Trade Organization (WTO), AD and CV duties imposed by Peru on biodiesel on September 6, 2022. Argentina claims that such measures may run against provisions of the Agreement on Implementation of Article VI of the General Agreement on Tariffs and Trade 1994 and the Agreement on Subsidies and Countervailing Measures.

Fuel prices in Peru in 2023 were more stable than in recent years. Gasoline prices in 2023 fell 17 percent on average while diesel (B5) prices fell 2 percent in the same period. Fuels in Peru are assessed an excise tax of 1.17 to 1.70 soles per gallon (\$0.31 – 0.45), 8 percent road tax and 18 percent value-added tax.

## 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).

In December 2020, Peru updated its National Determined Commitment (NDC) for 2030 to a non-conditioned commitment of 208.8 MTCO<sub>2</sub>Eq (million tons of carbon dioxide equivalent) and a 179 MTCO<sub>2</sub>Eq conditional commitment, dependent upon international cooperation. In 2015, Peru filed a non-conditioned NDC of 238.6 MTCO<sub>2</sub>Eq and conditioned NDC of 208.8 MTCO<sub>2</sub>Eq.

PetroPeru, notes that palm oil biodiesel quickly solidifies as temperature drops at higher altitudes, clogging fuel filters and damaging truck engines. This is the primary reason for not raising the blend rate above B5, and there has been no move to produce renewable diesel (HDRD) which would eliminate this constraint.

### 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. <https://www.minem.gob.pe/minem/archivos/file/Hidrocarburos/Legislacion/Biocombustibles/Decreto Supremo No 013-2005-EM.pdf>

**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 (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.

<https://www.minam.gob.pe/wp-content/uploads/2017/04/Ley-N°-28054.pdf>

**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 remained steady at B5 until it was temporarily suspended in 2022. <https://www.minem.gob.pe/minem/archivos/file/Hidrocarburos/Legislacion/Biocombustibles/Decreto Supremo No 021-2007-EM.pdf>

**Supreme Decree 014-2021 EM – Regulation that establishes sulfur content for diesel and gasoline and simplifies gasoline commercialization:** This regulation consolidates gasoline octanes (84, 90, 95, 97 and 98) in two categories. ‘Regular’ gasoline is set at 91 octane and Premium is set at 96 octane. This regulation entered into force on January 1, 2023. The regulation also establishes, a sulfur content limit at 50 ppm for both diesel and gasoline. By the first quarter of 2024, the sulfur content should not exceed 10 ppm. <https://cdn.www.gob.pe/uploads/document/file/1963869/DS 014-2021-EM.pdf.pdf?v=1624399256>

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 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. All ethanol plants in Peru have developed sustainability reports certified by third parties.

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.

### **Pan-American Liquid Biofuels Coalition (CPBIO)**

Peru is an active member of the Pan-American Liquid Biofuels Coalition. This association, established in 2023 under with the support of the Interamerican Institute of Cooperation on Agriculture (IICA), is formed by twenty-five private sector associations involved in the production and processing of sugar, alcohol, corn, sorghum, soybeans, vegetable oil and grains among other agricultural crops. CPBIO aims

at coordinating the sustainable production, promotion and consumption of clean energies in the Western hemisphere.

### **Import Policy Including Duties**

Per the U.S.-Peru Trade Promotion Agreement, U.S. ethanol and biodiesel is imported into Peru duty free as of 2018. 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). On January 29, 2021, Peru's Consumer Defense and Intellectual Protection Institute (INDECOPI) reversed the countervailing duty imposed in 2017 to U.S. ethanol exports to Peru.

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, except for two 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.

On February 18, 2024, INDECOPI renewed for five years antidumping and countervailing duties assessed on Argentinean biodiesel.

***Table 1***

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 then, domestic production has fallen somewhat short of domestic use. Since Peru began producing ethanol, it has exported high-value, sugar cane-based ethanol to the European Union. This created additional demand for imports to meet domestic demand. Peru met the E7.8 requirement (initially scheduled for 2010) in 2013 after a three-year delay. It has maintained this blend rate ever since.

*Table 2*

<b>Ethanol Used as Fuel and Other Industrial Chemicals (Million Liters)</b>										
Calendar Year	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024 <sup>f</sup>
<b>Beginning Stocks</b>				30	40	48	64	90	73	92
Fuel Begin Stocks	5	2	27	28	39	28	14	28	32	56
<b>Production</b>				172	222	212	216	204	218	210
Fuel Production	152	205	165	140	173	150	173	189	155	160
<b>Imports</b>				193	208	190	234	218	245	230
Fuel Imports	112	113	112	173	190	153	165	169	237	190
<b>Exports</b>				142	171	131	139	159	154	165
Fuel Exports	94	113	91	108	170	131	138	157	148	150
<b>Consumption</b>				213	251	255	285	280	290	290
Fuel Consumption	173	180	185	194	204	186	186	197	220	225
<b>Ending Stocks</b>				40	48	64	90	73	92	77
Fuel Ending Stocks	2	27	28	39	28	14	28	32	56	31
<b>Refineries Producing Fuel Ethanol (Million Liters)</b>										
Number of Refineries	2	2	2	2	2	2	2	2	2	2
Nameplate Capacity	350	350	350	350	350	350	350	350	350	350
Capacity Use (%)	43.4%	58.6%	47.1%	40.0%	49.4%	42.9%	49.4%	54.0%	44.3%	45.7%
<b>Co-product Production (1,000 MT)</b>										
Bagasse	649	675	694	728	765	746	750	754	788	788
<b>Feedstock Use for Fuel Ethanol (1,000 MT)</b>										
Sugar cane	2,163	2,250	2,313	2,425	2,550	2,488	2,500	2,513	2,625	2,625
<b>Market Penetration (Million Liters)</b>										
Fuel Ethanol Use	173	180	185	194	204	186	186	197	220	225
Gasoline Pool 1/	2,218	2,308	2,372	2,487	2,615	2,385	2,385	2,526	2,821	2,885
Blend Rate (%)	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%	7.8%

f: forecast

Source: Ministry of Agriculture, Private Sector, Ministry of Energy and Mines, FAS Lima analysis (Some small volumes of ethanol traded may be for beverage use and other industrial chemicals not used as fuel.)

**Production:**

Peruvian total ethanol production in 2024 is forecast at 210 million liters, decreasing 4 percent compared to the previous year. Fuel ethanol production is estimated at 160 million liters, about the same levels as the previous year. Nameplate capacity is forecast to remain the same in 2024 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.

Several 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:**

Total ethanol consumption for 2024 is forecast at 290 million liters, remaining at the same level as previous year level. Fuel ethanol consumption is estimated at 225 million liters, with the 7.8 percent blend rate unchanged. 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 increase as gasoline consumption increases. However, any sustained increase in gasoline prices as a result of higher international oil prices or a Peruvian Sol devaluation would eventually result in higher substitution rates of gasoline with less expensive fuels. The likelihood of sustained higher international oil prices seems unlikely in the mid-term based on most current modeling.

Any growth in the size of the gasoline pool and thus pace of demand for E7.8 gasoline has slowed in recent years as taxis and passenger vans, which represent a significant portion of Peru's public transport sector, 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 the near term. The current International Energy Agency (OECD/Paris) baseline model for fossil fuel demand by country shows the annual growth rate of Peru's gasoline-ethanol fuel pool slowing to between 1-2 percent over the next 10 years which is significantly slower compared to previous years but still growing. Currently, gasoline accounts for 22 percent of total fuel consumption while Liquefied Petroleum Gas accounts for 23 percent.

The city of Lima and its immediate surroundings account for roughly 65 percent of the country's ethanol and gasoline demand. REPSOL (Spain) 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.

PetroPeru, the state-owned oil company, has become a major headache for the government. Inefficiency, poor investments and overspending has resulted in a major financial crisis that led to the resignation of the board of directors on September 10, 2024. No replacements have been appointed to date. The government's response to the crises has been to continue injecting funds in the company. The government announced on September 14, 2024, the approval of \$1.75 billion to alleviate PetroPeru's financial deficit. This new funding includes a \$1 billion short term credit line and \$750 "transitory" financial support. It seems that the continued financing of PetroPeru only prolongs the end of the company which is technically broke, and it is costing Peru to deepen its fiscal deficit.

### **Trade:**

FAS Lima forecasts Peru's 2024 fuel ethanol exports at 150 million liters, essentially no change from the previous year. Attractive European Union market prices have encouraged production in Peru in the last several years. Fuel ethanol imports in 2024 are forecast at 190 million liters, mostly from the United States.



**Table 3**

Peruvian Undenatured Ethyl Alcohol Exports (220710) (Million Liters)			
	<b>2021</b>	<b>2022</b>	<b>2023</b>
World	139	159	148
Netherlands	130	145	127
Ecuador	9	14	21

Source: Peruvian Customs

**Table 4**

Peruvian Undenatured Ethyl Alcohol Imports (220710) (Million Liters)			
	<b>2021</b>	<b>2022</b>	<b>2023</b>
World	52	49	23
Bolivia	41	37	23
Brazil	8	0	0
Ecuador	0	0	0
U.S.	2	12	0

Source: Peruvian Customs

**Table 5**

Peruvian Denatured Ethyl Alcohol Imports (220720) (Million Liters)			
	<b>2021</b>	<b>2022</b>	<b>2023</b>
World	182	169	214
U.S.	181	168	214
Ecuador	1	1	0

Source: Peruvian Customs

The average export price for Peruvian ethanol in 2023 fell 17 percent to \$0.8 per liter. Ethanol was imported into Peru at an average price of \$0.66 per liter, falling 6 percent compared to the previous year. Peruvian ethanol exported to the European Union (EU) benefits from duty-free access under the EU – Peru 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 U.S. 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 many years now, the only market for higher-priced sugarcane ethanol has been California and that market is dominated by Brazil.

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## IV. Biodiesel/Renewable Diesel

### Production:

Peru is forecast to produce 245 million liters of biodiesel in 2024, or essentially the same as the previous year. Peru produces biodiesel using crude palm oil (CPO) as a feedstock.

*Table 6*

<b>Biodiesel (Million Liters)</b>										
Calendar Year	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024f</b>
<b>Beginning Stocks</b>	9	9	59	35	12	51	57	70	49	62
<b>Production</b>	0	0	37	112	153	186	208	210	246	245
<b>Imports</b>	323	402	294	223	237	165	203	189	178	180
<b>Exports</b>	0	0	0	0	0	0	0	0	1	1
<b>Consumption</b>	323	352	355	358	351	345	398	420	410	420
<b>Ending Stocks</b>	9	59	35	12	51	57	70	49	62	66
<b>Production Capacity (Million Liters)</b>										
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 (%)	0.00%	0.00%	10.60%	32.00%	43.70%	53.10%	59.40%	59.40%	61.40%	71.4%
<b>Feedstock Use (1,000 MT)</b>										
CPO	0	0	40	121	165	201	225	227	266	265
<b>Market Penetration (Million Liters)</b>										
Biodiesel	323	352	355	358	351	345	398	420	410	420
Diesel Fuel Pool	6,460	7,040	7,100	7,160	7,020	6,900	7,960	8,400	8,200	8,400
Blend Rate (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%

f: forecast

Source: Ministry of Agriculture, Private Sector, Ministry of Energy and Mines, FAS Lima analysis

**Table 7**

Peruvian Biodiesel Imports – 3826.00 (Million Liters)			
	2021	2022	2023
World	133	102	118
China		39	69
Spain	55	0	0
Indonesia	40	50	39
Malaysia	28	0	0
Netherlands	0	8	4
Others	22	5	6

Note: Assume all product is B100

Source: Peruvian Customs

**Table 8**

Peruvian Petroleum Oils and Preparations Containing up to 30 percent Biodiesel Imports – 2710.20 (adjusted to B100-equivalent, Million Liters)			
	2021	2022	2023
World	70	87	60
U.S.	70	87	60

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

Source: Peruvian Customs

### **Consumption:**

FAS Lima forecasts biodiesel consumption at 420 million liters in 2024, increasing two percent from the previous year. Peru met the B5 requirement in 2012, one year late, after the blending requirement went into effect. FAS Lima expects the blend rate to remain steady for the foreseeable future.

### **Trade:**

Peru does not export biodiesel due to limited production capacity and domestic demand. Biodiesel imports in 2024 are forecast at 180 million liters, essentially the same levels as the previous year. Biodiesel imports with HS codes 3826.00 (covering blends above B30 to B100) and 2710.20 (petroleum oils containing 1 – 30 percent biodiesel) enter Peru duty free. According to industry contacts, product imported under 2710.20, all of which comes from the United States, contains 10 percent biodiesel. If soy oil biodiesel is used, 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. FAS Lima is unaware of any announcements by Peruvian airlines to being using advanced biofuels in their operations.

## 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