Required Report: Required - Public Distribution

Date: December 11,2019

Report Number: PE2019-0026

Report Name: Biofuels Annual

Country: Peru

Post: Lima

Report Category: Biofuels

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Report Highlights:

Peruvian ethanol production in 2019 is forecast at 180 million liters, an increase of 29 percent from the previous year. Ethanol consumption for 2019 is forecast at 200 million liters, increasing three percent from 2018. Ethanol imports from the United States in 2019 are forecast at 140 million liters. Biodiesel production is forecast at 110 million liters in 2019.

Executive Summary:

Peru's Consumer Defense and Intellectual Protection Institute (INDECOPI) initiated a countervailing duty investigation against U.S. ethanol exports to Peru 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). This measure was appealed by the United States and is currently awaiting a final decision of the second instance. Despite these countervailing duties, U.S. ethanol exports to Peru remain competitive with domestic production and continued to increase, reaching 173 million liters in 2018.

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 five percent for biodiesel and any costs are passed forward to the consumer. Fuel ethanol production is forecast at 180 million liters for 2019, an increase of 29 percent compared to the previous year. This production increase is explained by resumed production at an ethanol processing plant that had stopped producing. Ethanol consumption in 2019 is forecast at 200 million liters, increasing three percent from 2018. Ethanol imports in 2019 are forecast at 140 million liters, down 19 percent from the previous year due to increased production.

The expansion of fuel ethanol consumption slowed dramatically 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.

The expansion of biodiesel consumption also slowed dramatically 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 2018, Peru produced 112 million liters of biodiesel, a significant increase from the 37 million liters produced 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 110 million liters of biodiesel in 2019. Biodiesel imports in 2019 are forecast at 224 million liters.

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). The following four regulations provide the legal framework that govern Peru's biofuel sector.

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. Since 2011, diesel fuel sold in Peru must contain a minimum of five percent biodiesel but that goal was met one year late.

The following regulations delineate responsibilities among the different agencies:

Ministry of Agriculture 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 an opportunity to substitute if in place of petroleum and gas in order to reduce carbon emissions. Peru does not have environmental sustainability (i.e. greenhouse gas emission limits) or environmental certification requirements for biofuels.

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.

Peru's Consumer Defense and Intellectual Protection Institute (INDECOPI) published Resolution 1072017/CDB-INDECOPI dated April 25, 2017. The Resolution determines that there is 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.

III. Gasoline and Diesel Markets

Fuel Use (Million Liters)										
Calendar Year	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019f**
Gasoline Total	1658	1843	1931	2047	2147	2223	2303	2373	2487	2564
Diesel Total	4842	5464	5687	5943	5809	6303	6631	6685	6690	6705
Jet Fuel Total	781	850	883	964	1063	1120	1220	1228	1230	1233
Total Fuel Markets	7281	8157	8501	8954	9019	9646	10154	10286	10407	10502

f: forecast
Source: Ministry of Energy and Mines and private sector

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 2018 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.

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.

IV. Fuel 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	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019f**
Beginning Stocks										
Fuel Begin Stocks	0	0	1	12	21	5	2	27	28	39
Production										
Fuel Production	70	195	142	204	190	152	205	165	140	180
Imports										
Fuel Imports	12	38	115	114	63	112	113	112	173	140
Exports										
Fuel Exports	64	211	122	149	102	94	113	91	108	130
Consumption										
Fuel Consumption	18	21	124	160	167	173	180	185	194	200
Ending Stocks										
Fuel Ending Stocks	0	1	12	21	5	2	27	28	39	29
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	1	2	2	2	2	2	2	2	2	2
Nameplate Capacity	126	230	350	350	350	350	350	350	350	350
Capacity Use (%)	55.6%	84.8%	40.6%	58.3%	54.3%	43.4%	58.6%	47.1%	40.0%	51.4%
Co-product Production (1,000 MT)										
Bagasse	289	805	586	633	784	627	850	681	578	743
Feedstock Use for Fuel Ethanol (1,000 MT)										
Sugar cane	875	2,438	1,775	2,550	2,375	1,900	2,575	1,750	2,250	2,414
Market Penetration (Million Liters)										
Fuel Ethanol Use	18	21	124	160	167	173	180	185	194	200
Gasoline Use	1,658	1,843	1,931	2,047	2,147	2,223	2,303	2,373	2,487	2,564
Blend Rate (%)	1.1%	1.1%	6.4%	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 (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 2019 is forecast at 180 million liters, an increase of 28 percent from the previous year. This production increase is explained by an ethanol processing plant resuming production. Nameplate capacity is forecast to remain the same in the near future at 350 million liters with only a near 50% 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 2019 is forecast at 200 million liters, increasing three percent from 2018. 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.

Trade:

FAS Lima forecasts Peru's 2019 fuel ethanol exports at 130 million liters. Attractive European Union market prices have encouraged production. Fuel ethanol imports in 2019 are forecast at 140 million liters.

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 exports undenatured ethyl alcohol (2207.10). In 2018, it exported 108 million liters, of which 60 percent destined to the European Union.

Peruvian Undenatured Ethyl Alcohol Exports (220710) (Million Liters)			
	2016	**2017**	**2018**
World	113	91	108
Netherlands	84	50	64
U.K.	0	0	21
Colombia	14	16	3
Ecuador	7	13	14

Source: Peruvian Customs

Peruvian Undenatured Ethyl Alcohol Imports (220710) (Million Liters)			
	2016	**2017**	**2018**
World	47	66	19
U.S.	35	51	0
Bolivia	10	13	17
Ecuador	2	2	2

Source: Peruvian Customs

Peruvian Denatured Ethyl Alcohol Imports (220720) (Million Liters)			
	2016	**2017**	**2018**
World	113	112	173
U.S.	113	112	173

Source: Peruvian Customs

The average export price for Peruvian ethanol in 2017 was USD$ 0.54 per liter while ethanol was imported into Peru at an average price of USD$0.40 cents per liter. Peruvian ethanol is mostly exported to the Netherlands and now UK. Peruvian ethanol exported to the European Union (EU) benefits from price premiums for 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 cane ethanol has been California and that market is dominated by ethanol from 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.

V. Biodiesel/ Renewable Diesel

Production:

Peru is forecast to produce 110 million liters of biodiesel in 2019. After halting biodiesel production between 2014 and 2016, Peru resumed production in 2017. It produced 112 million liters of biodiesel in 2018. This production recovery is due to a decline in imports. This decline in imports is forecast to continue into 2019 due to antidumping duties assessed on Argentinean biodiesel. However, 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, including Indonesia and Malaysia.

Peru produces biodiesel using crude palm oil (CPO) as a feedstock. PetroPeru, the entity that regulates biodiesel production and imports, notes that palm oil diesel 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	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019f**
Beginning Stocks	2	1	1	6	11	9	9	59	35	12
Production	32	32	18	10	0	0	0	37	112	110
Imports	162	178	271	304	315	323	402	294	223	224
Exports	0	0	0	0	0	0	0	0	0	0
Consumption	195	210	284	309	317	323	352	355	358	335
Ending Stocks	1	1	6	11	9	9	59	35	12	11
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 (%)	9.1%	9.1%	5.1%	2.9%	0.0%	0.0%	0.0%	10.6%	32.0%	31.4%
Feedstock Use for Fuel (1,000 MT)										
Crude Palm Oil	29	29	17	9	0	0	0	34	103	101
Market Penetration (Million Liters)										
Biodiesel, total use	195	210	284	309	317	315	332	334	334	335
Diesel, total use	4,842	5,464	5,687	5,943	5,809	6,303	6,631	6,685	6,690	6,705
Blend Rate (%)	4.0%	3.8%	5.0%	5.2%	5.5%	5.0%	5.0%	5.0%	5.0%	5.0%

f: forecast

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

Peruvian Biodiesel Imports – 3826.00 (Million Liters)				
	2015	**2016**	**2017**	**2018**
World	290	291	282	202
Spain	0	0	19	58
Indonesia	35	17	140	49
Malaysia	0	2	0	45
Argentina	242	171	47	24
Netherlands	0	86	75	19

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)				
	2015	**2016**	**2017**	**2018**
World	33	111	12	21
U.S.	5	8	10	21

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

Consumption:

FAS Lima forecasts biodiesel consumption at 335 million liters in 2019, relatively unchanged from 2018. 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 2019 are forecast at 224 million liters, relatively unchanged from the previous year due to production in re-opened biodiesel plants and no increase in the blend mandate. Biodiesel imports, both 3826.00 (covering blends above B30 to B100) and 2710.20 (petroleum oils containing 1-30% biodiesel), enter Peru duty free. Post believes that product imported under 2710.20, all of which comes from the United States, contains 10% biodiesel. If this is the case, and soy oil biodiesel is used (the most common type of U.S. biodiesel), it would perform better in colder temperatures than domestic CPO-based biodiesel blended at five percent.

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 duties 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 biodiesel. 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 2018. Meanwhile, B100 Chapter 38 imports from Indonesia rose in 2017 and imports from Indonesia plus Malaysia remain significant in 2018 but have not fully offset the drop-in imports from Argentina. Total imports from all countries are thus lower in both 2017 and 2018. The outcome creates opportunity for Peru biodiesel plants to continue production in 2019 and onwards although there is risk that combined imports from Indonesia and Malaysia will continue to climb. 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

VI. 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.

VII. 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