USDA Foreign Agricultural Service
GAIN Report
Global Agricultural Information Network

Required Report - public distribution

Date: 7/11/2019
GAIN Report Number: CO1907

Colombia

Biofuels Annual

Colombian Policies Will Slow Ethanol Imports; Further Blending Increases Will Incentivize Production

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Report Highlights:
In January 2019, Colombia's Ministry of Commerce, Industry and Tourism initiated a countervailing duty (CVD) investigation on U.S. ethanol at the behest of the National Biofuels Producers Association. The preliminary decision of the CVD case imposed a preliminary 4-month ad valorem duty of 9.36 percent on U.S. ethanol imports, beginning May 9, 2019. Ethanol production is expected to reach 490 million liters in 2019, four percent higher than 2018, as a result of normal weather conditions, a higher blend mandate (E10) coupled with larger fuel pool, and more protection from U.S. ethanol imports. Imports from U.S. remain higher than past years but are expected to slow given the temporary duty, possible price regulation on imports, and the likelihood that U.S. ethanol prices will remain higher in the near future due to higher U.S. corn prices resulting from rain delayed planting. Fuel ethanol imports are estimated to reach 220 million liters in 2019.

Colombian biodiesel production is estimated to reach 670 million liters, seven percent higher than 2018. This increase is motivated by normal weather conditions and a possible increase of the blend mandate from B10 to B12. Colombia neither imports nor exports biodiesel.

I. Executive Summary:

The fuel market in Colombia is highly controlled by the Government. The Ministry of Mines and Energy (MME) has the authority to establish the biofuels blend mandates, regulate fuel and biofuels prices and set technical regulations on biofuel standards. There are two MME's proposed regulations that will affect Colombia's biofuels market. In February 2019, the MME published a proposed regulation that sets a methodology to establish the price for imported ethanol. In June 2019, the MME published a draft resolution that increases the biodiesel blend mandate to B12. None of these measures have become official yet.

In addition, in January 2019, Colombia's Ministry of Commerce, Industry and Tourism initiated a countervailing duty (CVD) investigation on U.S. ethanol at the behest of the National Biofuels Producers Association (FEDEBIOCOMBUSTIBLES). The preliminary decision imposed an initial 4-month duty of 9.36 percent on U.S. ethanol imports, beginning May 9, 2019 with 20 days transition period for ethanol shipments in transit. A final determination is expected by the end of 2019.

Colombian biofuels production is expected to further grow in 2019. This is the result of incremental increases in blend rates as fuel pools grow and expected normal weather conditions for sugarcane and palm-oil crops.

In 2019, Colombian sugarcane-based ethanol production, all used as fuel ethanol, is estimated to reach a record 490 million liters motivated by the E10 blend mandate, favorable weather conditions for sugarcane and more expensive U.S. ethanol. Fuel ethanol imports are estimated to increase to 220 million liters. Ethanol production, ethanol imports and gasoline consumption data suggest that the average ethanol blend in the country reached 9.3 percent in 2018. Colombia currently has an E10 blend mandate across most of the country.

In 2019, Colombian palm oil-based biodiesel production is estimated at a record 670 million liters. There is no international trade of biodiesel. Biodiesel production and diesel consumption data suggest that the average biodiesel blend in Colombia reached 9.9 percent in 2018, essentially meeting the current blend mandate of B10.

II. Policy and Programs

The Ministry of Mines and Energy (MME) is the authority that regulates Colombia's biofuels policy. Colombia manages its biofuel markets using a system of mandates, tax relief, environmental regulations and price controls. Tax incentives have been in place since 2002, but the implementation of Colombia's mandates have changed over time and across the country.

Biofuels blend mandates

The inconsistency in blend mandates has slowed market growth. In some cases, the government has removed the blend mandate entirely for periods of time due to a shortage of domestic production.

Since March 2018, the Colombian government introduced E10 and B10 across most of the country, except for three border departments with Venezuela where no blend mandate is established for ethanol and only two percent for biodiesel given cross-border smuggling issues. E10 and B10 are the highest blend mandates ever established. They were introduced to help with high levels of pollution in major metropolitan cities, contribute to Colombia's climate change commitments under the 2015 Paris Climate Conference (COP21), and incentivize local production. In June 2019, the MME published a draft resolution for comments that increase the biodiesel blend mandate to B12. If this measure becomes official, the higher biodiesel blend mandate will be effective in August 1st, 2019.

Tax policy

To promote biofuels use and production since 2002, the government eliminated the value-added tax (VAT) for biofuels and exempted them from a global tax. In addition, ethanol blended with gasoline is relieved from local surcharge fees. The most recent tax reform (Law 1819 of 2016) established a new tax imposed on fossil fuels. This tax is known as a "Green tax" or "Carbon tax." This bill creates a tax on the carbon content of all fossil fuels, including all oil derivatives and all types of fossil gas used for energy purposes. The rate is based on the release-of-carbon-dioxide (CO2) factor for each fuel, which would be expressed as the volume or weight of the fuel. The table below illustrates the current taxes on fossil fuels and biofuels:

Table 1. Current fuel and biofuel tax rates in Colombia (In Colombian pesos)

Tax	**Gasoline**	**Diesel**	**Biofuels**	**Regulation**
Global tax	$ 473.63 per gallon on regular gasoline (US¢15)	$453.34 per gallon (US¢14)	Exempt	Art. 167,168,173 - Law 1607 of 2012 Art. 218,219,220 - Law 1819 of 2016
Value added tax (VAT)	19 percent	19 percent	Exempt	Art. 183 - Law 1819 of 2016 Art. 477 - Estatuto Tributario (Biofuels exempt)
Carbon tax	$ 133.20 per gallon (US¢4)	$ 149.40 per gallon (US¢5)	Exempt	Dec. 926 of 2017 Art. 221, 222, 223 - Law 1819 of 2016
Local surcharge fee	25 percent of the reference price. Reference price for July 2019: $5,701.01 per gallon (US$1.79)	6 percent of the reference price. Reference price for July 2019: $5,864.60 per gallon (US$1.84)	Exempt on ethanol blended with gasoline. There is not surcharge tax relief on biodiesel.	Art. 117 to 121 - Law 488 of 1998 MME's resolution 40575 of 2018
Note: Values are in Colombian pesos (COP). Specific tariffs are valid for 2019 and updated on annual basis. Exchange rate used 1USD=3,190 COP				

Source: Fuel Information System (SICOM), MME.

Regulated biofuel prices have favored local industry

Colombia's biofuels policy gives a unique advantage to palm oil and sugarcane production as the government established formulas to calculate the price of biofuels based on the opportunity cost of using these raw materials to supply other markets. This mechanism of administered prices creates market opportunities for biofuels producers abroad that use less expensive feedstock or in general are able to produce at lower costs.

The MME sets the price for gasoline and diesel at wholesale markets periodically. These prices include the price that fuel distributors or blenders must pay to domestic producers of biofuels, and are calculated based on a formula previously defined by the regulation. The current fuel price structure is established through MME's resolution 41281 of 2016. Reference fuel prices change across the country depending on the transportation and distribution costs to each region.

The formula to calculate the ethanol price paid to producers is defined by the MME's resolutions 181232 of 2008 and 91865 of 2012. The fuel ethanol price is established as the higher of the following two calculations: the opportunity cost of using refined sugar to produce ethanol (the international price equivalence for refined sugar at the London market) and the international price for gasoline adjusted by technical factors (increased octane and reduction on sulfur content).

The formula to calculate the biodiesel price paid to producers is defined by the MME's resolutions 181780 of 2005, 181966 of 2011, and 181489 of 2012. The biodiesel price is established within a price band: the ceiling price is calculated as the import parity price of fossil diesel adjusted by technical factors, and the floor price is expressed as the export parity price of palm oil at the Rotterdam market adjusted by freight costs and technical factors.

The most recent MME mandated price for a liter of ethanol is approximately $0.62. For biodiesel, the most recent MME mandated price per liter is about $0.78. Imported biofuels are not subject to MME mandated prices. This creates opportunities for imports, but a new proposed regulation may change this price incentive for foreign fuel ethanol.

MME's proposal to regulate the price of imported fuel ethanol

In February 2019, the MME published a proposed regulation for comments that sets a methodology to establish the price for imported ethanol. According to the MME, the measure tries to transfer price savings of imported ethanol to the end consumer. The proposed measure establishes a price for ethanol imports using a complex methodology based on arbitrary international reference prices and imposes a cap of four percent on the profit margin for importers and distributors of ethanol. The proposed resolution takes as reference Houston and Santos Platts prices. Colombia's requirements for ethanol in terms of greenhouse gas (GHG) emissions and quality have led Colombian importers to use U.S. ethanol with specific standards, which is priced considerably higher than these reference prices. The U.S. government, U.S. industry and Colombian importers have raised concerns about this proposed measure.

The Colombian biodiesel market is entirely supplied by local production, therefore no similar measure to regulate imported biodiesel is proposed.

Environmental and technical requirements

Since 2012, Colombia has been working on a Low-Carbon Development Strategy to identify and prioritize mitigation measures in different economic sectors. In addition, under COP 21, Colombia committed to reduce its GHG emissions by 20 percent with reference to the Projected Business as Usual Scenario (BAU) emissions by 2030. Environmental commitments were established given the potential increase in Colombia's GHG emissions as the economy and energy demand grows.

To meet its environmental commitments, Colombia has increased biofuel blend mandates to E10 and B10, and there is a proposed regulation to increase biodiesel blend mandate to B12. In addition, quality and environmental standards have been established for ethanol and quality standards for biodiesel.

The quality standards for ethanol used as fuel (water content, acidity and conductivity) were established through resolution 789 issued in May 2016, which has been in place since May 2018. Through resolution 182142 of 2007, the MME issued the technical and safety requirements for the production, distribution and import of biofuels used in diesel engines.

Regarding the carbon footprint regulation, which only applies to fuel ethanol, the Ministry of Environment published a resolution on September 25, 2017 to be effective on December 29, 2017. This regulation establishes a maximum carbon intensity value associated with the greenhouse gas inventory of denatured anhydrous ethanol fuel. The Colombian sugar-ethanol industry committed to reach a 20 percent reduction of GHG emissions from base year 2016. According to the Ministry of Environment, a 20 percent reduction by 2021 would mean that the calculations for the biofuel index quotient would set a value of 780 kg of CO2e/Cubic meter fuel ethanol. By 2021, the limit will represent an approximate 61 percent reduction in GHG emissions of ethanol relative to gasoline. The table below illustrates the gradation included in the regulation on fuel ethanol:

Table 2. Maximum allowable limit graduation of GHG emissions index

Year	Baseline	Year 1 (2017)	Year 2 (2018)	Year 3 (2019)	Year 4 (2020)	Year 5 (2021)
Limit: kg CO2e/Cubic meter fuel ethanol	962	924	889	853	817	780
Relative GHG reduction of fuel ethanol relative to gasoline	51.8%	53.7%	55.5%	57.3%	59.1%	61%

Source: Ministry of Environment Resolution 1962, 2017.

Import policy

Under the U.S. Colombia Trade Promotion Agreement (CTPA), Colombia's import duties for the provision HS 2207.10 (un-denatured ethanol) were immediately eliminated when the agreement entered into force in 2012. In the case of the provision HS 2207.20 (denatured ethanol) the 15 percent base rate duty was removed in five equal annual stages beginning in 2012. Therefore, since 2016, U.S. denatured ethanol, which is the one used as fuel ethanol, entered duty-free.

In January 2019, the Ministry of Commerce, Industry and Tourism of Colombia (MINCIT) initiated a CVD investigation on U.S. ethanol at the behest of the National Biofuels Producers Association (FEDEBIOCOMBUSTIBLES). The incumbent stakeholders, including U.S. government, U.S. industry and importers delivered the required information to MINCIT under the CVD investigation.

On May 7, 2019, MINCIT informed the U.S. government of the preliminary determination after reviewing the provided information. According to MINCIT findings, Colombia will implement an initial 4-month duty of 9.36 percent on U.S. ethanol exports, beginning May 9, 2019, with 20 days transition period for ethanol shipments in transit.

On June 25, 2019, MINCIT conducted a CVD hearing where the United States government expressed its concerns regarding the preliminary determination. A final determination is expected by the end of 2019.

III. Gasoline and Diesel Market

According to the Ministry of Mines and Energy (MME), gasoline and diesel demand will rise during the next ten years mainly because improved fleet efficiency requirements are not imposed while population and economic growth continue. The table below presents the history and outlook for the present year for gasoline and diesel fuel pools.

Table 3. Total Fuel Use in Colombia

Fuel Use (Million Liters)										
Calendar Year	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019f**
Gasoline Total (2)	4,219	4,696	4,869	5,104	5,456	6,159	6,816	6,905	7,143	7,314
Diesel Total (1)	6,702	7,206	7,637	7,620	7,747	8,112	8,373	8,630	8,903	9,177
On-road (2)	4,833	5,634	5,792	5,883	6,071	6,296	6,315	6,183	6,282	6,387
Agriculture										
Construction & Mining										
Shipping & Rail (1)	754	943	1,000	1,029	1,057	1,085	1,111	1,144	1,174	1,206
Industry										
Heating										
Jet Fuel Total										
Total Fuel Markets	10,921	11,902	12,506	12,724	13,203	14,271	15,189	15,535	16,046	16,491

Source: (1) Unit of Mining and Energy Planning (UPME). (2) Ministry of Mines and Energy.
Note: On-road fuel use data is updated by information provided by the MME in June, 2019.

The Ministry of Mines and Energy established temporary fleet efficiency goals for new vehicles in 2012, but that policy was eliminated shortly after its announcement due to domestic auto industry complaints. This was a disappointing development since auto manufacturers are meeting fleet efficiency improvement goals set by many countries, and this action is one of the most effective tools to reduce GHG emissions. The Colombian Vehicle Manufacturers Association only supports voluntary blends up to E10 and B5. However, tests performed by Colombian private universities in support of the national biofuels industry show that most vehicles on the road today can run on higher blends like E15 for gasoline engines. E15 is approve for all model years 2001 and later in the United States, and virtually all diesel engines in the United States are approved for B20. B7 is approved for all model years in Europe, the nationwide diesel fleets in Brazil and Argentina run on B10, and Indonesia is now expanding all road transport blending to B20.

IV. Fuel Ethanol

Production

Colombian ethanol production is estimated to reach 490 million liters in 2019. From January to April 2019, ethanol production has been three percent higher than the previous year. If weather conditions are favorable, and supposing normal growth and cane sugar content, local industry should maintain production levels to meet E10 demand if import estimate is realized.

Colombia's ethanol production is supplied by seven ethanol distilleries with a production capacity of 660 million liters. It is derived entirely from sugarcane. While sugarcane juice is used for ethanol production, sugarcane bagasse is used to generate energy and produce paper. Most Colombian ethanol plants are energy self-sufficient and generate surplus power that is sold to the national electric grid.

Six of Colombia's 14 sugar mills also produce ethanol for fuel use. Small volumes of ethanol used as other industrial products are imported and not produced locally. These six ethanol plants with an annual capacity of 540 million liters are located near the city of Cali in south central Colombia. The plants in this region are able to produce almost year round, except for a period of 30 to 40 days when the plants close operations due to technical maintenance. One additional ethanol facility called *Bioenergy* is located in the eastern plains in the Meta Department. *Bioenergy* has a current annual capacity of 120 million liters. This new distillery that began operations in 2017 is sourcing sugarcane from 20,000 hectares established near the area. In this region, climate conditions only allow to harvest sugarcane during eight months per year. This plant processes sugarcane for ethanol production only and it is the first ethanol facility in Colombia not linked to the sugar industry.

Consumption

In 2019, Colombia fuel ethanol consumption is estimated to reach 705 million liters driven by higher gasoline demand, the E10 blend mandate and increased local production and imports. Domestic demand is supplied by 70 percent with local produced ethanol and 30 percent with imported ethanol in both 2018 and 2019.

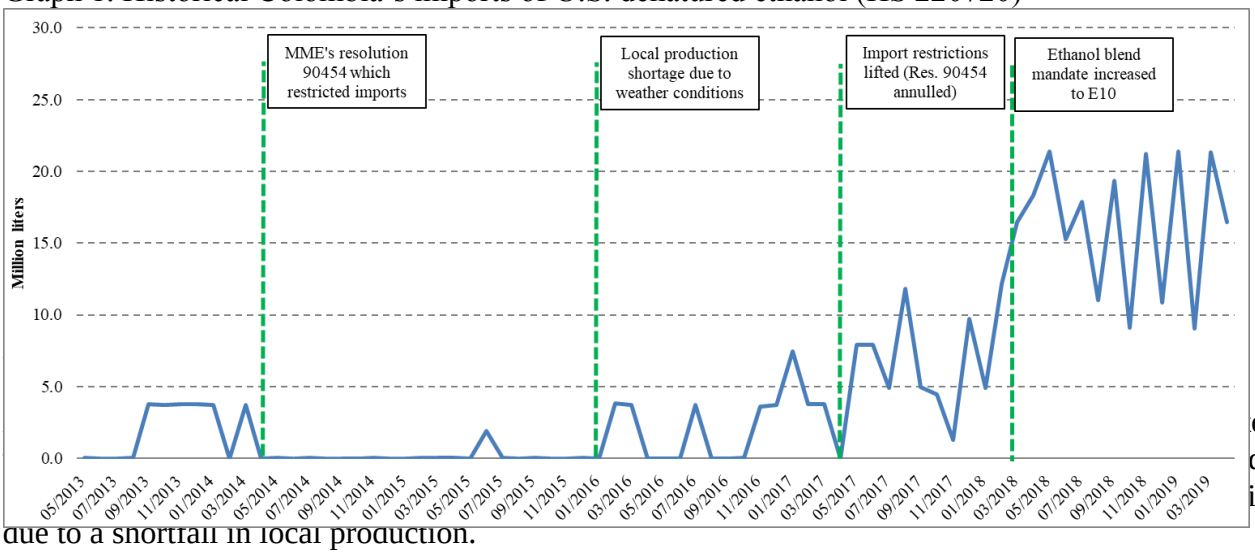
The blend mandate changes across the country primarily along with the ethanol industry growth and import supplies. In the three border departments with Venezuela no blend mandate is established due to ongoing problems with cross-border smuggling, but in most of the rest of the country E10 is in place. In several periods, the MME has suspended the ethanol blend mandate due to shortage in local production. There is no official data on the nationwide blend level. However, Post calculations based on annual ethanol production and gasoline consumption show that the sugarcane-based ethanol industry has been unable to supply the country with enough biofuel to reliably meet the previous E8 blend mandate. The new ethanol plant (*Bioenergy*), which brings additional production capacity on line, along with increase in imports should permit the country to reach an average E9.6 blend rate, which is only just below the current E10 blend mandate covering most of the country.

Trade

Colombia fuel ethanol imports are forecast to slightly increase to 220 million liters in 2019. If realized and assuming the modest increase in production, imports will cover 30 percent of domestic use this year which remains at record level and unchanged from 2018. Imports' presence in the domestic market remained minimal up thru 2016 and then began rising. Imports are not expected to grow at as fast as in 2018 given temporary CV duties of 9.36 percent imposed on U.S. fuel ethanol since May and the likelihood U.S. ethanol prices will remain elevated due to higher U.S. corn prices. This year, it is expected that most fuel ethanol imports will continue being sourced from the United States, but Colombian importers keep looking for sugarcane-based ethanol providers in Peru and Central America. This interest is fueled by the possibility that Colombia's carbon footprint standards for imports could become a trade barrier in the longer term for U.S. corn-based ethanol. In fact, in 2018, 19 million liters of Peruvian ethanol were imported. However, importers claim Peruvian ethanol is not supplied on a regular basis.

The graph below illustrates fuel ethanol monthly imports from the United States and key policy changes that have impacted trade:

Graph 1. Historical Colombia's imports of U.S. denatured ethanol (HS 220720)



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due to a shortfall in local production.

As of May 2017, the Colombian market is open to ethanol imports without any regulatory restrictions, except for the compliance with fuel quality and carbon footprint standards. This has resulted in record imports of U.S. ethanol. U.S. ethanol imports dramatically increased after the ethanol blend mandate increased to E10 in early 2018, reaching 180 million liters in 2018, 161 percent higher than the previous year.

Stocks

Colombia does not have programs to encourage storage or long-term stocks of biofuels. However, gasoline and diesel fuel regulations require stocks to adequately supply the market at 10 days of total fuel demand, which represents approximately 20 million liters of fuel ethanol in 2019. Stock levels in the ethanol balance table assume this requirement is met.

Table 4. Ethanol Balance

Ethanol Used as Fuel and Other Industrial Chemicals (Million Liters)										
Calendar Year	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019f**
Beginning Stocks	12	8	11	12	15	11	10	10	13	15
Fuel Begin Stocks	12	8	11	12	15	11	10	10	13	15
Production	291	337	370	388	406	456	434	393	470	490
Fuel Production	291	337	370	388	406	456	434	393	470	490
Imports	70	55	89	138	98	108	108	160	265	290
Fuel Imports	6	7	8	21	18	7	23	75	201	220
Exports	0	0	0	0	0	0	0	0	0	0
Fuel Exports	0	0	0	0	0	0	0	0	0	0
Consumption	365	390	457	523	508	566	542	550	733	775
Fuel Consumption	301	341	377	406	428	464	457	465	669	705
Ending Stocks	8	11	12	15	11	10	10	13	15	20
Fuel Ending Stocks	8	11	12	15	11	10	10	13	15	20
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	5	5	5	5	5	6	6	7	7	7
Nameplate Capacity	378	378	412	412	412	465	540	600	660	660
Capacity Use (%)	77.1%	89.3%	89.7%	94.1%	98.7%	98.2%	80.4%	65.5%	71.2%	74.2%
Co-product Production (1,000 MT)										
Bagasse	1,053	1,220	1,336	1,402	1,469	1,650	1,569	1,419	1,698	1,750
Feedstock Use for Fuel Ethanol (1,000 MT)										
Sugarcane	3,509	4,065	4,454	4,673	4,897	5,499	5,229	4,736	5,660	5,880
Market Penetration (Million Liters)										
Fuel Ethanol Use	301	341	377	406	428	464	457	465	669	705
Gasoline Use	4,219	4,696	4,869	5,104	5,456	6,159	6,816	6,905	7,143	7,314
Blend Rate (%)	7.1%	7.3%	7.7%	8.0%	7.8%	7.5%	6.7%	6.7%	9.4%	9.6%

V. Biodiesel

Production

Colombian biodiesel production is estimated to continue growing in 2019 to reach 670 million liters assuming normal weather and no trade. The industry is responding to the higher B10 biodiesel blend mandate introduced across most of the country in March 2018 that may increase to B12 later this year.

There are 12 operational biodiesel plants in Colombia (up from 8 plants in 2017) using palm oil as the feedstock, and one of them produced small quantities of biodiesel from used cooking oil. Some of these plants were not operational or produced small quantities given low crude palm oil production. However, since 2018 these small plants restarted operations given palm oil production recovery and a higher blend mandate. Only six of the 12 plants are members of the National Biofuels Producers Association (FEDEBIOCOMBUSTIBLES). Nonetheless, these six plants are fully operational and produced about 91 percent of the total Colombian biodiesel production in 2018.

The palm oil sector capacity for electric power is estimated at 340 MW. Palm oil producers generate energy from biomass and/or biogas to support self-sufficiency. Currently, there are only three palm oil plants that generate surplus, but there is no comprehensive information on quantity. The palm and ethanol industries claim to be capable of generating more power resources to sell to local utilities.

Consumption

Colombian biodiesel consumption is estimated to increase to 660 million liters in 2019 assuming increasing production supported by a growing diesel-biodiesel pool, blending mandates holding at B10 and anticipating B12 blending for most of the country, and no imports. The national average blend rate is estimated to be at 10.3 percent.

Colombia biodiesel consumption is dependent on local production to meet the government blend mandate, which varies by location. On February 27, 2018, the MME increased the blend mandate on-road from B9 to B10 in Colombia's central region, Bogota and the eastern plains. The blend mandate for the Caribbean and Pacific coasts and the south-central part of the country stays at B10. Some remote areas and border departments with Venezuela are permitted to blend at a lower rate (B2) as there are constant issues with cross-border fuel smuggling.

Trade

Colombia neither imports nor exports biodiesel. Even though there is an authorized biodiesel importer since July 2017, to date there have been no biodiesel imports registered under the codes HS 382600 (biodiesel-diesel blends above B30 by volume to pure B100 biodiesel) or HS 271020 (petroleum oils containing up to 30% biodiesel by volume). Apparently, prices have not been attractive to import.

The biofuels industry aspires to export with facilities running under full capacity, but the prospects are dim for palm oil-based biodiesel from Colombia with little opportunity for sales in the two largest biodiesel markets. Colombia is one of seven countries threatening a trade dispute with the European Union (EU) because EU use of biodiesel made from palm oil (classified as a high-risk Indirect Land

Use Change biofuel) is capped and then phased out (with only potential for minor exceptions) by 2030 under RED II. In addition, Colombia's palm oil biodiesel does not meet obligations under the United States' Renewable Fuel Standard (RFS) and thus cannot generate Renewable Identification Numbers (RINs) because the U.S. Environmental Protection Agency has not completed a carbon emissions lifecycle assessment on the fuel additive. Colombia has provided information to the United States and the EU claiming that the palm oil biodiesel produced in the country complies with all social and environmental standards, as palm oil crops are in already existing agricultural land and do not destroy virgin forest. EPA is reviewing this information.

Stocks

Gasoline and diesel fuel regulations require stocks to adequately supply the market at 10 days of total fuel demand. In 2019, biodiesel ending stocks are estimated at 25 million liters given increasing production and assuming requirement is met.

Table 5. Biodiesel Balance

Biodiesel (Million Liters)										
Calendar Year	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019f**
Beginning Stocks	5	5	9	11	14	15	13	11	13	15
Production	384	506	557	573	590	583	530	545	627	670
Imports	0	0	0	0	0	0	0	0	0	0
Exports	0	0	0	0	0	0	0	0	0	0
Consumption	384	502	555	570	589	585	532	543	625	660
Ending Stocks	5	9	11	14	15	13	11	13	15	25
BalanceCheck	0	0	0	0	0	0	0	0	0	0
Production Capacity (Million Liters)										
Number of Biorefineries	2	5	5	6	6	6	8	8	12	12
Nameplate Capacity	204	525	525	590	590	590	590	700	900	900
Capacity Use (%)	188.1%	96.4%	106.0%	97.1%	100.0%	98.8%	89.8%	77.9%	69.7%	74.4%
Feedstock Use for Fuel (1,000 MT)										
Crude Palm Oil	353	466	512	527	543	515	463	480	550	590
Used Cooking Oil	0	0	0	0	0	22	25	26	30	30
Market Penetration (Million Liters)										
Biodiesel, on-road use	384	502	555	570	589	585	532	543	625	660
Diesel, on-road use	4,833	5,634	5,792	5,883	6,071	6,296	6,315	6,183	6,282	6,387
Blend Rate (%)	7.9%	8.9%	9.6%	9.7%	9.7%	9.3%	8.4%	8.8%	9.9%	10.3%
Diesel, total use	6,702	7,206	7,637	7,620	7,747	8,112	8,373	8,630	8,903	9,177

VI. Advanced Biofuels

There is no production of advanced biofuels in Colombia. Some universities and private sector companies have conducted research on advanced biofuels without relevant results.

VII. Notes on Statistical Data

The source of production data for biofuels is FEDEBIOCOMBUSTIBLES, which receives information from the Colombian National Association of Sugar Producers (ASOCAÑA) for ethanol and the National Federation of Palm Oil Growers (FEDEPALMA) for palm oil and biodiesel. The Colombian

Customs Authority (DIAN) and the National Department of Statistics (DANE) are the primary source for trade data. Fuel consumption data is sourced by the Ministry of Mines and Energy. Stocks are unknown and estimated by an average of 10-day fuel supply according to fuel regulations. Biofuels consumption (treated as a “residual”) is used to balance supply and demand once production, trade and stocks are calculated.