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# **Report Name:** Biofuels Annual

**Country:** Colombia

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**Report Highlights:**

In 2021, Colombia's fuel ethanol production is estimated to decrease to 370 million liters in response to a lower blend mandate despite partial recovery in the fuel pool. The Colombian government decreased its ethanol blend mandate from E10 to E4 in anticipation of local supply shortages due to excessive rains in the main producing region and increasing U.S. ethanol prices that could discourage imports. Fuel ethanol imports are estimated to decline to 160 million liters due to lower demand. While Colombia's government decreased its ethanol blend mandate, the biodiesel blend mandate increased from B10 to B12 in most of the country. Domestic biodiesel production and use are expect to reach record levels in 2021, despite there being no trade.

## I. Executive Summary:

In 2021, Colombia's gasoline and diesel consumption is estimated to increase 15 and 10 percent, respectively, as the country's economy recovers. Despite larger fossil fuel demand, Colombian sugarcane-based ethanol production is estimated to decrease to 370 million liters in 2021. On March 31, 2021, the Colombian government issued a resolution to decrease the ethanol blend mandate from E10 to E4 starting on April 1, 2021, up to June 30, 2021. The measure establishes that the mandatory blending will gradually return to E10 by September 2021. The stated justification in the measure is excessive rain from the La Niña weather phenomena, which impacted domestic sugarcane production affecting ethanol plant operations and their raw material. In addition, the resolution noted increasing U.S. ethanol prices and depressed imports, however U.S. ethanol is subject to an imposed countervailing duty of $0.066/kg. As a result of lower demand, in 2021, fuel ethanol imports are estimated to decline sharply to 160 million liters. Ethanol production, ethanol imports, and gasoline consumption data suggest that the average ethanol blend in the country will reach 7.8 percent in 2021 which is a decrease from previous three years.

In 2021, Colombian palm oil-based biodiesel production is estimated to increase 21 percent to 690 million liters due to an increased biodiesel blend mandate. On April 9, 2021, the Colombian government issued a resolution to increase the biodiesel blend mandate from B10 to B12 in most of the country. The stated justification in the resolution is that Colombia's biodiesel capacity allows to increase blend mandate. Biodiesel production and diesel consumption data suggests that the average biodiesel blend in Colombia will reach a record 11 percent in 2021.

The Colombian government tightly controls the Colombian fuel market. The Ministry of Mines and Energy (MME) has the authority to establish the biofuels blend mandates, regulate fuel and biofuel prices, and set technical regulations on biofuel standards. Since 2005, when Colombia's implementation of biofuel blend mandates started, multiple changes were implemented and application is inconsistent throughout the country. By 3030, Colombia committed to reduce its greenhouse gas (GHG) emissions by 51 percent from business-as-usual projections made in 2010, but reducing renewable fuel mandated blends, like Colombia has done in the case of ethanol, reverse Colombia's previous efforts to improve air quality.

## II. Policy and Programs

Colombia's policy on biofuels was primarily developed to support the rural economy through additional revenue streams for the sugarcane and palm oil industries. It also aimed to diversify Colombia's sources of energy by decreasing its dependency on fossil fuels, and more recently, Colombia has added the goal of introducing environmentally friendly fuels to reduce GHG emissions. MME is the authority that regulates Colombia's biofuels policy. Colombia manages its biofuel market using a system of mandates, tax relief, environmental regulations, and price controls. Colombia's biofuel strategy originated from two MME laws (Law 693 of 2001 for ethanol, and Law 939 of 2004 for biodiesel) that set fuel quality

standards and determine taxes, price setting, and mandate support. Tax incentives have been in place since 2002, but the implementation of Colombia's mandates have changed over time and are not applied evenly throughout the country.

***GHG Emissions Policy***

Since 2012, Colombia has been working on a Low-Carbon Development Strategy to identify and prioritize mitigation measures in different economic sectors. Colombia recently updated its commitment to reduce its GHG emissions 51 percent from business-as-usual projections by 2030, taking the 2010 national emissions inventory as a starting point. The new target is twice as ambitious as the previous target in Colombia's 2016 Nationally Determined Contributions, which sought to reduce emissions by 20 percent by 2030. To meet its environmental commitments, and reduce its fossil fuel use, Colombia increased biofuel blend mandates and established quality and environmental standards for ethanol and quality standards for biodiesel.

The quality standards for ethanol used as fuel (i.e., 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, 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 go into effect on December 29, 2017. This regulation established 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 1. 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.*

Colombia's E10 adoption in 2018 was in part to curb high air pollution in urban centers. However, the issuance of an emergency measure in March 2021 to temporarily decrease the ethanol blend mandate from E10 to E4 reversed Colombia's previous commitment to improve air quality. The U.S. industry

reports that moving from E10 to E4 would increase carbon emissions by 60,000 metric tons per month in Colombia.

***Biofuel Blend Mandates***

Backsliding on blend mandates across the nation when domestic feedstock supply is inadequate has led to stagnation in the ethanol market, especially from 2014-2017, and a mostly stagnant biodiesel market over the past decade with some backsliding as well in 2016 and 2017.

In some cases, the government has removed the biofuel blend mandates for periods of time due to a shortage of domestic production, even though imports could have supported sustained higher use. In March 2018, the Colombian government introduced E10. Then in September 2019, the government introduced B12. These mandates apply to all areas except for three departments bordering Venezuela where there is no blend mandate for ethanol and only 2 percent for biodiesel given smuggling issues. The E10 and B12 mandates, the highest ever established, were introduced to reduce levels of pollution in major metropolitan cities, contribute to Colombia's climate change commitments, and incentivize local production.

Since mid-2017, Colombia maintained ethanol blend mandate between E8 and E10 in most of the country due to increasing ethanol imports and steady local production. In 2020, despite there was a temporary 4-month ban on ethanol imports under the COVID-19 sanitary emergency, ethanol blend levels continued. The ban on imports was aimed to prevent the collapse of domestic sugar production, linked to ethanol production, as gasoline consumption temporarily reduced due to lockdown measures that affected ethanol storage capacity of sugar producers. However, on March 31, 2021, the Colombian government issued an emergency resolution to decrease the ethanol blend mandate from E10 to E4. The measure attributed the blend mandate change to inclement weather that impacted domestic production, and it also attributed this change to increasing U.S. ethanol prices that discouraged imports. The resolution decreased the ethanol blend mandate from E10 to E4 starting on April 1, 2021 up to June 2021. Subsequently, the blend mandate will increase to E6 in July 2021, to E8 in August 2021, and to E10 in September 2021, subject to the issuance of new MME resolutions.

Despite increasing the biodiesel blend mandate to B12 in September 2019, after only 20 days, Colombia decreased it again due to lower domestic production of palm oil. A resolution established that the biodiesel blend mandate would decrease to B2 by the end of September 2019 and gradually increase again to B10 in December 2019. In 2020, the biodiesel blend mandate was B10. On April 9, 2021, the Colombian government issued a resolution to increase the biodiesel blend mandate from B10 to B12 starting in April 2021 throughout most of the country.

***Tax Policy***

Since 2002, to promote biofuel use and production, the government eliminated the value-added tax (VAT) for biofuels and exempted them from a global carbon tax on fossil fuels. In addition, ethanol

blended with gasoline is exempt from local surcharge fees. The 2016 tax reform established a new tax in addition to the global carbon tax imposed on fossil fuels. This tax is known as a "green tax" or "carbon tax." This bill created 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, expressed as the volume or weight of the fuel. The table below illustrates the current tax rates on fossil fuels and biofuels.

Table 2. Current fuel and biofuel tax rates in Colombia (In Colombian pesos)

| **Tax** | **Gasoline** | **Diesel** | **Biofuels** | **Regulation** |
|---|---|---|---|---|
| Global tax | $532.85 per gallon on regular gasoline (US¢15) | $467.51 per gallon (US¢13) | Exempt | Art. 167,168,173 - Law 1607 of 2012<br>Art. 218,219,220 - Law 1819 of 2016 |
| Value added tax (VAT) | 19 percent | 19 percent | Exempt | Art. 183 - Law 1819 of 2016<br>Art. 477 - Estatuto Tributario (Biofuels exempt) |
| Carbon tax | $152.64 per gallon (US¢4) | $157.52 per gallon (US¢4) | Exempt | Dec. 926 of 2017<br>Art. 221, 222, 223 - Law 1819 of 2016 |
| Local surcharge fee | 25 percent of the reference price. Reference price for June 2021: $5,078.8 per gallon (US$1.39) | 6 percent of the reference price. Reference price for June 2021: $5,024.6 per gallon (US$1.38) | Exempt on ethanol blended with gasoline.<br><br>There is not surcharge tax relief on biodiesel. | Art. 117 to 121 - Law 488 of 1998 |
| *Note: Values are in Colombian pesos (COP). Specific tariffs are valid for 2021 and updated on annual basis. Exchange rate used 1USD=3,650 COP* | | | | |

*Source: Fuel Information System (SICOM), MME.*

***Regulated Biofuel Prices***

Colombia's biofuel policy gives an advantage to palm oil and sugarcane production. 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 created market opportunities for biofuel producers abroad that use less expensive feedstock, or in general, are able to produce at lower costs, including U.S. ethanol. While still economically competitive compared to Colombia ethanol, imported U.S. ethanol prices have increased as a result of international price increases (including corn), Colombian peso devaluation against the U.S. dollar, and the countervailing duty (CVD) in place, and a greener fuel to meet the noted Colombian environmental requirements.

MME periodically sets the price for gasoline and diesel at wholesale markets. 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 of each region.

The formula to calculate the ethanol price paid to producers is defined by 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 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 $0.64 ($2.42 per gallon), with no significant change from the same period last year. For biodiesel, the most recent MME mandated price per liter is about $1.16 ($4.40 per gallon), a 40 percent increase year-over-year following upward trend of palm oil price. Imported biofuels are not subject to MME mandated prices.

***Import Policy***

Under the U.S. Colombia Trade Promotion Agreement (CTPA), Colombia's import duties covering HS 2207.10 (un-denatured ethanol) were immediately eliminated when the agreement entered into force in 2012. In the case of HS 2207.20 (i.e., 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 fuel ethanol falls under, has entered duty-free.

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

On May 7, 2020, MINCIT issued a final ruling in its CVD investigation of U.S. ethanol. It placed a $0.066/kg duty on imports of ethanol from the United States for the next two years until May 2022. FAS Bogota estimates this $0.066/kg duty represents an ad valorem tariff of 10.5 percent assessed on the declared CIF value when compared to the prices of U.S. ethanol shipments in January to March, 2021.

There is no specific biodiesel import policy. The Colombian market is open to biodiesel imports without any regulatory restrictions, except for the compliance with quality standards and the MME authorization to be an importer. As of now, there is only one authorized biodiesel importer.

## III. Fuel Ethanol

### *Consumption*

In 2021, Colombia's fuel ethanol consumption is estimated to decrease to 550 million liters, down 12.7 percent from the previous year, driven by a lower ethanol blend mandate and despite gasoline demand expected to recover by 15 percent. In 2020, lower gasoline demand, due to COVID-19 containment measures, impacted fuel ethanol demand. In 2020, local production supplied 61 percent of domestic use, while imports supplied 39 percent. In 2021, given current market dynamics of lower blend mandate and high international ethanol prices, imported ethanol share in domestic use is estimated to decrease to 30 percent. Assuming Colombia reimposes ethanol blend levels as planned (see biofuels blend mandates in policy section), and imports resume in the second part of the year, the ethanol blend rate is expected to be 7.8 percent in 2021.

According to the MME, gasoline demand in normal conditions is estimated at 600 million liters per month. This means 60 million liters of ethanol are required to meet the E10 blend mandate. Colombia's ethanol production capacity is estimated at 55 million liters when all plants are fully operational. However, historical production data shows that average ethanol production per month is 37 million liters, which usually only supplies south and central Colombia due to the geographical location of distilleries. This dynamic results in nearly 40 percent of the demand needing to be supplied by imports. Imported ethanol is mostly consumed in the Colombian north coast region. Only when imported price is competitive enough to compensate high internal land transportation costs, imported ethanol supplies other cities in central Colombia.

### *Production*

Colombian ethanol production is estimated at 370 million liters in 2021, a decrease of 6.3 percent from the previous year, and a third consecutive year of domestic ethanol production heading in a downward trend following record sales in 2018. The 2021 decrease is primarily tied to unfavorable weather conditions in producing regions. Excessive rains and cloudiness in March and April 2021 from the La Niña weather phenomena affected the sugarcane harvest resulting in a shortage of raw material. The Colombian Institute of Meteorology's (IDEAM) estimates that rainfall has resumed its historical average since the second quarter of the year. The national strike, which started on April 28, 2021 when huge protests erupted across the country against President Duque's administration, also adversely impacted sugarcane and ethanol production, but only to a limited degree. Colombia's southwest, where six out of seven ethanol plants are located, has been one of the focal points of the protests and one of the most affected regions due to the road blockages and unrests. The Sugar Producers Association

(Asocaña) indicated all sugar mills and plants have operated intermittently during the four week-long national protest as raw material could not reach the plants due to blockades.

Currently Colombia's ethanol production is supplied by seven ethanol distilleries with a production capacity of 660 million liters using sugarcane as the feedstock. Of the 14 sugar mills in Colombia, six own ethanol refineries. These ethanol plants have an annual capacity of 540 million liters and are located near the city of Cali in Colombia's southwest. 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 not linked to the sugar industry, called *Bioenergy*, is located in the eastern plains in the Meta Department. This distillery is sourcing sugarcane from 20,000 hectares established near the area. In this region, climate conditions only allow to harvest sugarcane during 8 months per year. In 2020, Bioenergy started a liquidation process due to illiquidity issues, however, a new administration took ownership of the company and obtained resources to continue operating.

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. The current sugar sector capacity for electric power generation is 316 megawatts (MW), of which 140 MW is for supporting self-sufficient plant operations with the remaining amount sold to utilities for public consumption. Bioenergy had an electric power generation capacity of 35 MW.

***Trade***

In 2021, Colombia fuel ethanol imports are forecast to decrease to 160 million liters driven by the lower blend mandate. In the first 3 months of the year, fuel ethanol imports were nearly 40 million liters, a 44 percent decrease from the same time period a year ago. According to fuel distributors, no ethanol imports took place in April and May due to high international prices and the strong U.S. dollar against the Colombian peso. If the Colombian government reinstitutes ethanol blend levels as planned, imports will take place in the second part of the year assuming the recent moderation in ethanol prices continues. The United States is expected to be the main supplier.

In 2020, despite a 4-month ban, a CVD duty in place, and decreasing demand of gasoline due to COVID-19 containment measures, fuel ethanol imports registered 255 million liters, only a 3.8 percent decrease from the previous year. According to Colombian fuel distributors, increasing ethanol imports in the second part of the year were motivated by a shortage of domestic production. In the last quarter of 2020, Colombia imported 48 percent of 2020's total imports.

Most of the imported ethanol is used to supply the Colombian north coast. Due to geographic and logistical issues, it is costly and inefficient for Colombia's domestic ethanol industry to supply to the

northern region. However, when international prices are favorable, importers may purchase larger quantities to supply more cities in the center of Colombia. Domestic ethanol production is the predominate supplier to the southern and central regions.

***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. Stock levels in the ethanol balance table assume this requirement is met. In 2020, ending stocks were higher than expected due to large imports in the last quarter of the year. In 2021, ending stocks are estimated at 20 million liters which represents approximately 10 days of total biofuel demand at the E10 blend level.

Table 3. Colombia's Production, Supply and Demand for Ethanol

| Ethanol Used as Fuel and Other Industrial Chemicals (Million Liters) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Calendar Year | **2012** | **2013** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** | **2021f** |
| **Beginning Stocks** | 11 | 12 | 15 | 11 | 10 | 10 | 13 | 15 | 20 | 40 |
| Fuel Begin Stocks | 11 | 12 | 15 | 11 | 10 | 10 | 13 | 15 | 20 | 40 |
| **Production** | 370 | 388 | 406 | 456 | 434 | 393 | 470 | 450 | 395 | 370 |
| Fuel Production | 370 | 388 | 406 | 456 | 434 | 393 | 470 | 450 | 395 | 370 |
| **Imports** | 89 | 138 | 98 | 108 | 108 | 160 | 265 | 275 | 260 | 175 |
| Fuel Imports | 8 | 21 | 18 | 7 | 23 | 75 | 201 | 265 | 255 | 160 |
| **Exports** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Fuel Exports | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Consumption** | 457 | 523 | 508 | 566 | 542 | 550 | 733 | 720 | 635 | 565 |
| Fuel Consumption | 377 | 406 | 428 | 464 | 457 | 465 | 669 | 710 | 630 | 550 |
| **Ending Stocks** | 12 | 15 | 11 | 10 | 10 | 13 | 15 | 20 | 40 | 20 |
| Fuel Ending Stocks | 12 | 15 | 11 | 10 | 10 | 13 | 15 | 20 | 40 | 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 | 6 | 6 | 7 | 7 | 7 | 6 | 7 |
| Nameplate Capacity | 412 | 412 | 412 | 465 | 540 | 600 | 660 | 660 | 540 | 660 |
| Capacity Use (%) | 89.7% | 94.1% | 98.7% | 98.2% | 80.4% | 65.5% | 71.2% | 68.2% | 73.1% | 56.1% |
| **Co-product Production (1,000 MT)** | | | | | | | | | | |
| Bagasse | 1,247 | 1,308 | 1,371 | 1,540 | 1,464 | 1,326 | 1,585 | 1,518 | 1,340 | 1,258 |
| **Feedstock Use for Fuel Ethanol (1,000 MT)** | | | | | | | | | | |
| Sugarcane | 4,454 | 4,673 | 4,897 | 5,499 | 5,229 | 4,736 | 5,660 | 5,420 | 4,760 | 4,477 |
| **Market Penetration (Million Liters)** | | | | | | | | | | |
| Fuel Ethanol Use | 377 | 406 | 428 | 464 | 457 | 465 | 669 | 710 | 630 | 550 |
| Gasoline Pool | 4,869 | 5,104 | 5,456 | 6,159 | 6,816 | 6,905 | 7,143 | 7,421 | 6,117 | 7,010 |
| Blend Rate (%) | 7.7% | 8.0% | 7.8% | 7.5% | 6.7% | 6.7% | 9.4% | 9.6% | 10.3% | 7.8% |

Note: 2021 figures are FAS Bogota estimates.

## IV. Biodiesel

***Production***

Colombian biodiesel production is estimated to increase to 690 million liters in 2021, a 21 percent increase year-over-year, driven by a higher biodiesel blend mandate, increasing prices, and no change in trade, which remains zero. If realized, this would be a record production level. Weather conditions are

expected to be normal for crop development. In 2020, palm oil production decreased 6.5 percent compared to the previous year due to lower diesel demand driven by COVID-19 containment measures.

There are 12 operational biodiesel plants in Colombia (up from 8 plants in 2016) using palm oil as the feedstock, and one of them produces small quantities of biodiesel from used cooking oil. Only six of the 12 plants are members of the National Biofuels Producers Association (Fedebiocombustibles). These six plants are fully operational and produce over 90 percent of the total Colombian biodiesel production.

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 entirely dependent on local production to meet the government blend mandate. Colombian biodiesel consumption is estimated to increase to a record 685 million liters in 2021, responding to the higher biodiesel blend mandate in most of the country and recovery in the diesel pool.

Colombian biodiesel consumption is dependent on changes in diesel pool size and local biodiesel production to meet the government blend mandate, which varies by location. On April 9, 2021, MME increased the blend mandate on-road from B10 to B12 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 will increase to B12 starting in October 2021. Some remote areas and border departments with Venezuela will gradually increase the biodiesel blend mandate from B2 to B6 starting in October 2021, and B12 in April 2022. Given unused biodiesel production capacity and currently adequate palm oil supply, Colombia decided to increase the biodiesel blend mandate to meet its more ambitious environmental commitments.

***Trade***

Colombia neither imports nor exports biodiesel. Even though there is an authorized biodiesel importer in Colombia 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 percent biodiesel by volume). Prices have not been attractive to import.

The biodiesel industry operates with a third of its production capacity unused and aspires to export with facilities running at 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 – Europe and the United States –

and no access to the other really large market in Brazil which is controlled by an auction systema that excludes foreign suppliers.

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 (EPA) has not completed a carbon emissions lifecycle assessment for any plant in Colombia. In late 2019, Colombia shared an updated report on Colombian biodiesel GHG emissions, and the 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 2021, biodiesel ending stocks are estimated at 25 million liters given higher biodiesel consumption if the B12 mandate remains and the diesel pool grows as expected.

Table 4. Colombia's Production, Supply and Demand for Biodiesel

| Biodiesel (Million Liters) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Calendar Year | **2012** | **2013** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** | **2021f** |
| **Beginning Stocks** | 9 | 11 | 14 | 15 | 13 | 11 | 13 | 15 | 20 | 20 |
| **Production** | 557 | 573 | 590 | 583 | 530 | 545 | 627 | 610 | 570 | 690 |
| **Imports** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Exports** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Consumption** | 555 | 570 | 589 | 585 | 532 | 543 | 625 | 605 | 570 | 685 |
| **Ending Stocks** | 11 | 14 | 15 | 13 | 11 | 13 | 15 | 20 | 20 | 25 |
| BalanceCheck | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Production Capacity (Million Liters)** | | | | | | | | | | |
| Number of Biorefineries | 5 | 6 | 6 | 6 | 8 | 8 | 12 | 12 | 12 | 12 |
| Nameplate Capacity | 560 | 590 | 590 | 590 | 590 | 700 | 900 | 900 | 900 | 900 |
| Capacity Use (%) | 99.4% | 97.1% | 100.0% | 98.8% | 89.8% | 77.9% | 69.7% | 67.8% | 63.3% | 76.7% |
| **Feedstock Use (1,000 MT)** | | | | | | | | | | |
| Crude Palm Oil | 512 | 527 | 543 | 536 | 468 | 479 | 554 | 535 | 498 | 604 |
| Used Cooking Oil | 0 | 0 | 0 | 0 | 22 | 25 | 26 | 30 | 30 | 35 |
| **Market Penetration (Million Liters)** | | | | | | | | | | |
| Biodiesel, on-road use | 555 | 570 | 589 | 585 | 532 | 543 | 625 | 605 | 570 | 685 |
| Diesel Pool, on-road use | 5,792 | 5,883 | 6,071 | 6,296 | 6,315 | 6,183 | 6,282 | 6,422 | 5,686 | 6,250 |
| Blend Rate (%) | 9.6% | 9.7% | 9.7% | 9.3% | 8.4% | 8.8% | 9.9% | 9.4% | 10.0% | 11.0% |
| Diesel Pool, total 1/ | 7,637 | 7,620 | 7,747 | 8,112 | 8,373 | 8,630 | 8,903 | 9,102 | - | - |

Notes: 1/ Data was not available for 2020 and 2021. 2021 figures are FAS Bogota estimates.

## V. 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.

## VI. 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 Trade Data Monitor are the primary sources for trade data. MME provides the fuel consumption data. The 2021 fuel consumption estimates are calculated considering current market dynamics and the International Energy Agency projections updated on the March 2021 Oil Market Report. Stocks are unknown and estimated by an average of 10-day fuel supply according to fuel regulations. In 2021, biofuel consumption is based on fuel pool projections and assumed blend rates.

**Attachments:**

No Attachments