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# Colombia

# Biofuels Annual

# Colombian Biofuels Use Close to reaching E10 and B10 Levels

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**Report Highlights:**
In 2011, ethanol production recovered to 351 million liters due to an increase in sugarcane supply, and in 2012 production is expected to reach 355 million liters. Moreover, Biodiesel production also recovered to 537 million liters in 2011.The expansion of 300,000 liters in production capacity is expected to boost ethanol production to 400 million liters in 2013. Blends target of B10 and E10 are yet to be reached for the entire country; Colombia is not expected to export biofuels in the next two years.

**Post:**
Bogota

## Executive Summary:

In 2011, better weather situation in the sugarcane area resulted in an increase in sugarcane supply for sugar and ethanol. Colombian ethanol production increased to 351 million liters, which is 25 percent higher than the year before. In 2012, Colombian ethanol production is expected at 355 million liters, and in 2013 we are expecting ethanol production to increase to 410 million liters.

In 2011, Colombia reached E8 and increased the biodiesel blend to B7 in the Atlantic region, while other region mixes reached B5 and B7. Colombian palm oil and sugarcane production well exceeded the local demand and generated a surplus that sustained biofuels production. They are also the main sources for biofuels expansion in Colombia. Ethanol production using cassava as feedstock has virtually been put on hold due to the unexpected low cassava supply. There are several studies in Colombia looking for financing to produce ethanol and biodiesel with feedstock other than sugarcane and palm oil.

Colombia biofuels capacity has not covered the initial biofuel blend mandate, thus, the Colombian government has allowed biofuels mix to increase along with the increase in production as new facilities expand or enter into production. The Government target for B20 is 2015, and the Ethanol blend target for E10 is now 2013. Palm oil growers indicated that the current expansion in the palm oil area planted is able to supply palm oil for a B20 blend.

In December 2011, the Colombian government established at B10 and a range from E8 to E10 the biofuels blend level required in vehicles starting in January 1st 2012. The decree set a discretionary authority for changes in the biofuels blend along with local production capacity. Also the decree modified the use of flex-fuel level for new vehicles.

## Author Defined:

### Policy and Programs

***General policy:***

The Colombian government has promoted the production and use of biofuels aimed at diversifying their sources of energy by reducing its dependency on fossil-fuels, using environmentally friendly fuels to reduce greenhouse gas emissions, and also developing the Colombian agro-industry to promote agricultural employment in rural areas. For the energy sector as a whole, the Colombian government has set a policy on fuels aimed to progressively reduce the sulphur content to 50 ppm in diesel, and to 300 ppm in gasoline, and to improve overall fuel quality.

Colombia is a net exporter of palm oil and sugar, which secures inputs for a biofuel industry based on these two feed stocks without causing any disruption to local supply. In fact, biofuels production opened up new development for the agricultural sector that supported the GOC's policy of sustaining agricultural employment. The government role has been to define a legal framework for making biofuels production that is economically

sound.

The GOC established tax exemptions for ethanol and biodiesel consumption for the part of the blend constituted by biofuels. Also, the areas where biofuels facilities are built can be declared by the government as a permanent customs zone, which reduces the income tax paid from 35 percent to 15 percent. In addition, in 2004, the government granted a tax exemption to new palm oil planted over the next 10 years. Biofuels are exempt from the value added tax (VAT) and the global tax, which are charged to fossil fuels.

The Ministry of Energy (MOE) regulates prices and blend levels of fuel with biofuels in Colombia. The MOE defines a price formula for biofuels which grants a minimum price for biofuels producers. In addition, every month the MOE calculates a new price to be applied to ethanol and biodiesel.

***2011 changes:***
December 23rd, 2011, the Colombian government issued the decree 4892 establishing the biofuels blend level required in vehicles starting in January 1st 2012 at B10 and a range from E8 to E10. The decree set a discretionary authority for changes in the biofuels blend along with local production capacity. This decree also eliminates the requirement set in the decree 1135 of 2009 which stated that starting January 1st, 2012, 60% of the new vehicles sold in Colombia, with engines up to 2000 cm3, should be able to use E85 blend. The new decree established the following:

- The mandatory ethanol blend will range from E8 to E10 in 2012 year.
- In 2012 keeps the B10 blend for biodiesel.
    - For year 2013, the above levels can be modified by the GOC after consultation with the Biofuels Commission.
- Voluntarily for Flex-fuel vehicles only, the blend can range from E25 to E85.

The decree determines that the GOC should consider the following aspects before any change in the blend level defined in points 1 and 2: the viability given the environment conditions and the technology of the vehicles, the infrastructure for storage, and the distribution and transporting chain. In addition, the decree gives the authority to the ministries of Energy, Transporting, Environment, Health and Social Protection to regulate; production, storage, transporting, distribution, infrastructure, use, surveillance and control of the blend established.

The decree also set a flexible blend by establishing that the GOC can reduce the mandatory mix for biofuels taking in consideration local supply of Ethanol and Biodiesel.

**Bioethanol and Biodiesel**
**Production**
Ninety eight percent of Colombian ethanol production comes from sugarcane and two percent from cassava. Colombia produces almost all of its ethanol from sugarcane, while all biodiesel is produced from palm oil. Sugar and palm oil production almost double local demand, so the production surplus is exported and used for biofuels production. Colombian biofuels production neither competes with food supply nor takes land from food crops. Biofuels production has replaced so far, only 25 percent of sugar exports and 30 percent of palm oil exports.

Colombia's ethanol production is supplied by 5 ethanol facilities that are located next to sugar mill facilities. There is an additional ethanol facility to produce ethanol using yucca (cassava) as a feedstock. However, the yuca supply has been far lower than expected resulting in ethanol production from yucca to be virtually non-existent. There is one additional project being developed by a sugar mill that will also use sugar cane as feed stock for ethanol production and will enter into production at the end of 2013 year.

There are currently 6 plants in production which use palm oil as feed stock, four of these plants are owned by palm oil producers and the other two plants the National Oil Company is the main investor.

Some projects based on other feed stocks for ethanol production using sugar beets and yuca have been halted due to a lack of investment. Overall, the increase in production based on new projects and development is almost stagnant due to an absence of investment.

Colombia's biodiesel production can increase given that palm oil area continues to grow. The palm oil planted area has doubled since 2001; Fedepalma (Colombia Palm Growers Federation) considers that with the current expansion in the area planted, B20 would be reached.

**Consumption**

Colombia biofuels consumption will expand as the blend increase. Ethanol consumption has almost reached 9 percent of the intended mix of 10 percent for the entire country. Currently in the southern area of the country, E10 blend was reached, but in the Central and Northern areas of the country only E8 blend was reached.
The Colombian ethanol plant capacity will be equipped to supply the E10 blending at the end of 2013 for the entire country. The B10 blend expected for 2010 was not reached due to delays in new biodiesel projects, which are now projected to enter into operation in 2013. Biodiesel consumption reached B10 in the western area of the country, which covers 70 percent of the total population, and B7 blend in the rest of the country including the capital city.

Biodiesel consumption is stronger given the Colombian policy of improving the quality of its diesel and the replacement of the old public transportation vehicles with those that use cleaner fuels. The government and biodiesel producers in a joint effort have conducted research and tested the blend level capacity of the current public transportation system. As a result, it is estimated that levels of up to B50 could be used by the mass transit system.

**Trade**

Currently, Colombia neither imports nor exports biofuels. In the short term, given the lack of biofuels supply for covering the local demand, it is unlikely that exports will occur. Also, it is unlikely that imports will take place for current biofuels given the commitment from the local industry to supply the local demand and the government's flexibility to reach the blend as new facilities enter into production. However, in the medium term, it is expected that Colombia may become an exporter of biofuels, particularly biodiesel from palm oil, as expansion of palm oil area continues.

The basic import duty for ethanol is 10 percent. It was excluded in the Colombia – Mercosur trade agreement, and the basic import duty for biodiesel is 5 percent. Under the CAN-MERCOSUR agreement, imports from Brazil, Paraguay and Uruguay enter at zero duty while imports from Argentina pay a 1.55 percent duty. Under the Colombia-Central America triangle trade agreement, imports from Guatemala, Salvador and Honduras pay a 6 percent import duty. Imports from Chile and Mexico pay zero duty. Biofuels imports are under the Colombian regime of free importation which means there are no special requirements for imports.

**Stocks**

Colombia does not have programs to encourage the biodiesel industry to keep stocks. The stocks held by the industry are their working inventories.

**Tables**

| **Fuel Ethanol - Conventional & Advanced Fuels (Mil. Liters)** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Calendar Year** | **2006** | **2007** | **2008** | **2009** | **2010** | **2011** | **2012** | **2013** |
| **Production, Total** | 269 | 275 | 260 | 327 | 280 | 351 | 355 | 410 |
| Advanced Only | | | | | | | | |
| **Imports** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| **Exports** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| **Consumption** | 265 | 270 | 255 | 319 | 273 | 342 | 350 | 400 |
| **Ending Stocks** | 4 | 5 | 5 | 8 | 7 | 9 | 5 | 10 |
| **Production Capacity - Conventional** | | | | | | | | |
| No. of Biorefineries | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 7 |
| Capacity (Mil. Liters) | 378 | 378 | 378 | 378 | 378 | 459 | 459 | 603 |
| Capacity Use (%) | 71% | 73% | 69% | 87% | 74% | 76% | 77% | 68% |
| **Production Capacity - Advanced** | | | | | | | | |
| No. of Biorefineries | | | | | | | | |
| Capacity (Mil. Liters) | | | | | | | | |
| Capacity Use (%) | | | | | | | | |
| **Co-product Production - Conventional only (1,000 MT)** | | | | | | | | |
| Product Y | | | | | | | | |
| Product Z | | | | | | | | |
| **Feedstock Use - Conventional (1,000 MT)** | | | | | | | | |
| Sugarcane | 3,587 | 3,667 | 3,416 | 4,350 | 4,405 | 4,480 | 4,450 | 5,200 |
| Cassava | | | | | 8 | 8 | 8 | 8 |
| Feedstock C | | | | | | | | |
| Feedstock D | | | | | | | | |
| **Feedstock Use - Advanced (1,000 MT)** | | | | | | | | |
| Feedstock A | | | | | | | | |
| Feedstock B | | | | | | | | |
| Feedstock C | | | | | | | | |
| Feedstock D | | | | | | | | |

| **Biodiesel - Conventional & Advanced Fuels (Mil. Liters)** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Calendar Year** | **2006** | **2007** | **2008** | **2009** | **2010** | **2011** | **2012** | **2013** |
| **Production, Total** | | 9 | 80 | 330 | 420 | 537 | 545 | 550 |
| Advanced Only | | | | | | | | |
| **Imports** | | | | | | | | |
| **Exports** | | | | | | | | |
| **Consumption** | | | | | | | | |
| **Ending Stocks** | | | | | | | | |

| **Production Capacity - Conventional** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| No. of Biorefineries | | 1 | 2 | 6 | 6 | 6 | 7 | 7 |
| Capacity (Mil. Liters) | | 56 | 100 | 540 | 568 | 568 | 683 | 683 |
| Capacity Use (%) | | 16% | 80% | 61% | 74% | 95% | 80% | 81% |
| **Production Capacity - Advanced** | | | | | | | | |
| No. of Biorefineries | | | | | | | | |
| Capacity (Mil. Liters) | | | | | | | | |
| Capacity Use (%) | | | | | | | | |
| **Feedstock Use - Conventional (1,000 MT)** | | | | | | | | |
| Palm oil | | 8 | 71 | 291 | 369 | 473 | 473 | 473 |
| Feedstock B | | | | | | | | |
| Feedstock C | | | | | | | | |
| Feedstock D | | | | | | | | |
| **Feedstock Use - Advanced (1,000 MT)** | | | | | | | | |
| Feedstock A | | | | | | | | |
| Feedstock B | | | | | | | | |
| Feedstock C | | | | | | | | |
| Feedstock D | | | | | | | | |