



BIODIESEL POLICIES AND MARKETS: SUCCESS STORIES AROUND THE WORLD

*Issued: June 2020
Author: SGS INSPIRE team*



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Introduction

This project covers the examples of biodiesel regulatory frameworks of Latin American, Asian and European markets. These biodiesel policy frameworks are explained and compared to the Brazilian market, and conclusions are drawn as to what policies have been successful and beneficial to develop the biodiesel markets. This report has been prepared for the Brazilian Association of Fuel Importers (ABICOM) to answer the question whether the Brazilian biodiesel policy and market model is similar to any other biodiesel relevant market.

Brazilian's biodiesel market is based on auctions that only can be entered by domestic biodiesel producers and imports are not considered. Other Latin American countries have certain policies to promote the use of biodiesel in their countries, but are based on subsidies, price control or biodiesel blend mandates. This is the case of Argentina and Colombia.

In Asia, Indonesia and Malaysia are the major biodiesel producers. Biodiesel markets in Asian countries are based on the government mandate and may be adjusted depending on the availability of domestic biodiesel production. Indonesia currently implements the highest biodiesel blend percentage for regular grade diesel - at 30% v/v (B30).

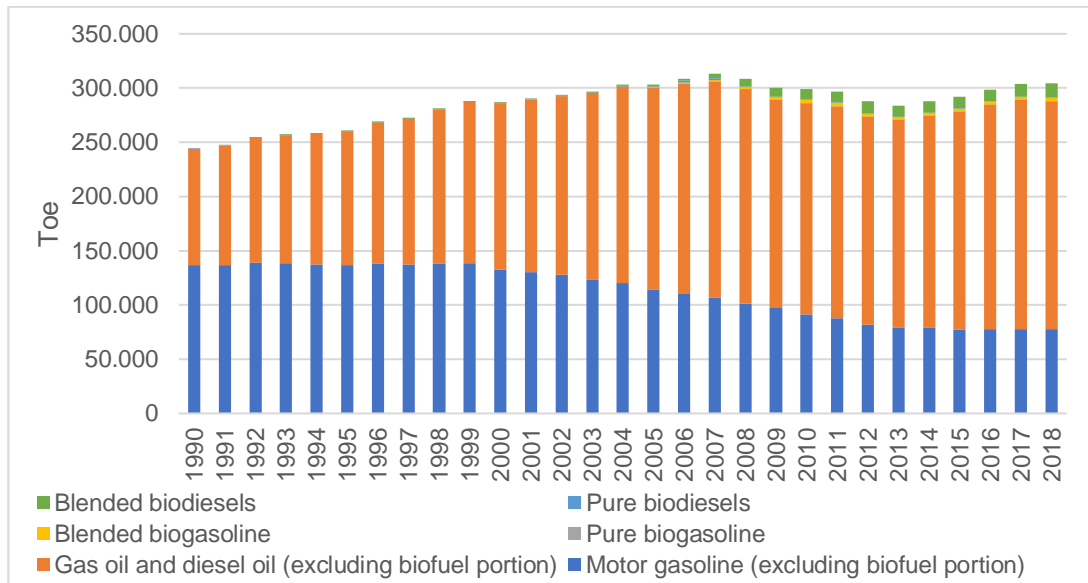
In Europe, France is one of the largest biodiesel and bioethanol producers. The biofuel consumption, especially rapeseed biodiesel and cereal-based ethanol have been promoted through biofuel blending mandates. Germany has the largest biodiesel production capacity in the European Union, and it is the largest biodiesel producer as well.

European Union

Germany and France are members of the European Union (EU) and their regulatory measures are largely based on the legislation set at the EU level. The EU sets the renewable energy goals for the transport sector (e.g. 10% in 2020) and approves the fiscal support measures to the biofuel production and sales. The EU member states' legislation implementing the EU legislation may set tighter standards, for example, a higher renewable energy share target but not lower.

Biodiesel produced from feedstocks grown on land has been the main beneficiary of the EU renewable energy policy for the transportation sector, largely because of the dieselized vehicle fleet (including passenger cars) in most of the EU member states and lower excise duty for diesel. To meet the renewable energy share target for transport, fuel suppliers chose to blend biodiesel in diesel as its consumption is much larger than the consumption of ethanol. Only those countries that had a specific mandate for bioethanol, had a stronger bioethanol market.

Fossil diesel, gasoline, biodiesel and bioethanol consumption in the transport sector



Source: Eurostat, 2020

Regulatory framework

Biofuels promotion, 2003-2009

Between 2003 and 2009, the EU set an indicative 5.75%¹ target by energy content for the transportation sector.

RED I, 2009-2021

In 2009, the EU approved Renewable Energy Directive 2009/28/EC² (RED I) that member states should have transposed by December 5, 2010. The RED I required EU member states to have a 10% renewable energy share in energy consumed by transportation by 2020. RED I permitted the double counting of certain biofuels (e.g. produced from cellulosic, lignocellulosic, waste and residues) towards the 10% renewable energy target. This option promoted in particular blending of biodiesel produced from used cooking oil and animal fat. It had a negligible effect on other feedstocks, e.g. cellulosic, since their usage required advanced and costly technologies, which were not commercially available. Only those biofuels that complied with the sustainability criteria could be counted toward the renewable energy share target.

¹ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=LEGISSUM:l21061>

² <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32009L0028>



Indirect Land Use Change – “ILUC”

In 2008, the European Commission’s (EC) impact assessment³ accompanying RED I had indicated that biofuels produced from land-based feedstock, e.g. cereals and rapeseed, would be the main source for achieving the target. However, in 2015, the so-called “ILUC Directive⁴” limited the use of biofuels produced from the feedstock grown on land to 7% for the purposes of their contribution to the 10% renewable energy target due to the greenhouse gas (GHG) emissions caused by increasing the production of land-based feedstock for the biofuel industry⁵. The EU member states should have transposed the ILUC Directive by September 10, 2017.

The ILUC also introduced a list of feedstocks such as waste, residues, used cooking oil and animal fat. Only biofuels produced from these feedstocks can be double counted toward the renewable energy share target.

The RED I was updated on December 11, 2018. The EU MS should transpose the directive by June 31, 2021. RED II sets the EU wide renewable energy target at 14%⁶ for the transportation sector to be achieved by 2030. The target, among other elements, is composed of:

- A cap for food and feed based biofuels (7% maximum)
- A sub-target for advanced biofuels (3.5%)
- The share of biofuels produced from feedstock with a high ILUC risk should be phased out by 2030

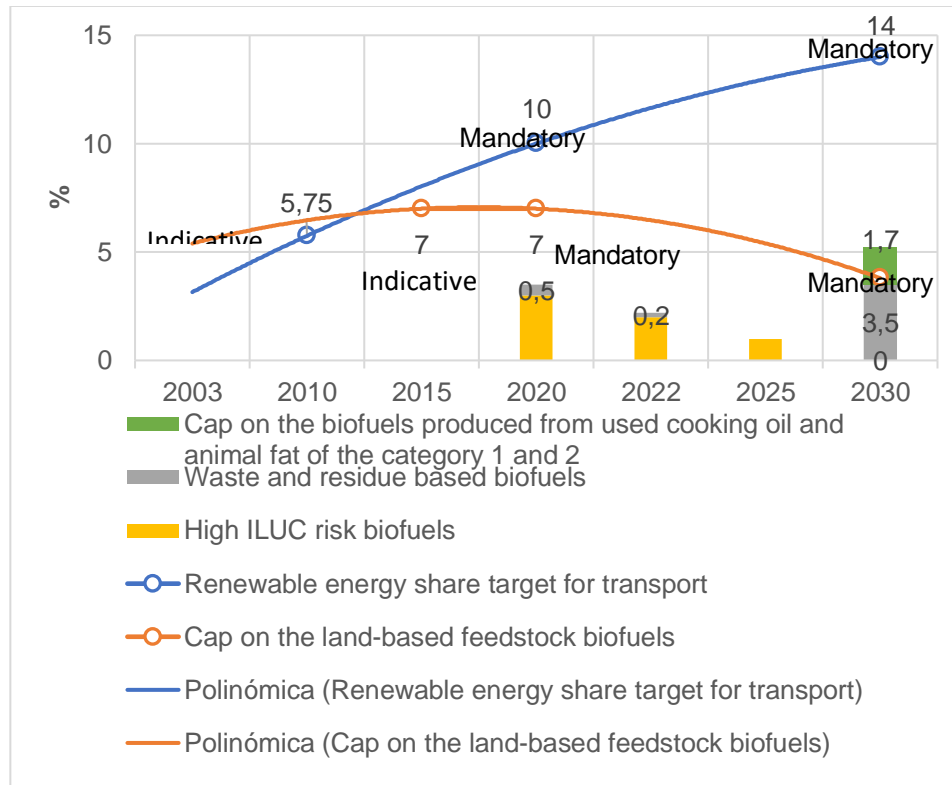
³ https://ec.europa.eu/smart-regulation/impact/ia_carried_out/docs/ia_2008/sec_2008_0085_en.pdf

⁴ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32015L1513>

⁵ *While biofuels are important in helping the EU meet its greenhouse gas reductions targets, biofuel production typically takes place on cropland that was previously used for other agriculture such as growing food or feed. Since this agricultural production is still necessary, it may lead to the extension of agriculture land into non-cropland, possibly including areas with high carbon stock such as forests, wetlands and peatlands. This process is known as indirect land use change (ILUC). As this may cause the release of CO₂ stored in trees and soil, indirect land use change risks negating the greenhouse gas savings that result from increased biofuels.*

⁶ https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2018.328.01.0082.01.ENG&toc=OJ:L:2018:328:TOC

EU renewable energy share targets for transport



Source: SGS INSPIRE based on the EU legislation

Life cycle greenhouse gas (GHG) emission reduction target

In 2009, the Fuel Quality Directive 98/70/EC⁷ (FQD) was amended with provisions on life cycle GHG emission reduction target of 6% (or 10% if a member state decides so) from energy used in the transportation sector compared with the 2010 baseline, to be achieved by 2020. Fuel suppliers are the obligated parties to meet this target at the member state' level. The target applies to the energy used by road transport and non-road machinery. The member states may decide to include the biofuels used by the aviation sector.

While the 6% reduction target is obligatory, the additional 4% GHG emission reduction could be met through:

- An indicative additional target of 2% by December 31, 2020, through one or both of the following methods:
 - Any type of low-carbon energy for transport supplied for use in any type of road vehicle, non-road mobile machinery (including inland waterway vessels), agricultural or forestry tractor, or recreational craft
 - The use of any technology (including carbon capture and storage) capable of reducing life cycle GHG emissions per unit of energy from fuel or energy supplied
- An indicative additional target of 2% by December 31, 2020, through the use of credits purchased through the Clean Development Mechanism of the Kyoto Protocol

The GHG emissions reductions are calculated against a 2010 baseline of 94.1 gCO₂eq/MJ.

⁷ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:01998L0070-20181224>



Fiscal policy

Many member states reduce taxes on biofuels as a measure of fiscal support, but there are EU-level rules governing how they can do this. In 2003, the EU revised the legal framework for energy taxation and approved Directive 2003/96/EC⁸, allowing member states to reduce excise duties on biofuels. Depending on the country, the excise duty can greatly affect fuel retail prices. In June 2016, taxes and duties accounted for a weighted average of 65% of retail prices for unleaded gasoline and 60% of retail prices for diesel in the EU-15⁹. Refineries or traders can claim these tax reductions when they blend biofuel into transport fuel for consumption, and they are expected to pass on this benefit to the final consumer. Thus, this measure is meant to prevent fuel suppliers from transferring the costs of compliance with biofuel mandates to the final consumer. In member states that choose to reduce excise taxes on biofuels, if the value of this incentive is passed on to consumers, this measure should have a major impact on the market competitiveness of biofuel blends. The allowance for excise duty reductions applied equally to first-generation biofuels and advanced fuels. This changed, according to the 2014 state aid guidelines described below. However; as an overall result of the EU taxation policy, to-date first-generation biofuels have been the main beneficiaries of the excise duty reduction.

In addition to the Energy Taxation Directive, EU member states are required to follow certain guidelines¹⁰ when granting fiscal support for biofuels and must request the EC's approval. This procedure aims to ensure that member states do not overcompensate producers for biofuel through tax benefits or direct funding. In 2014, the EC introduced new guidelines¹¹ that limited member states' fiscal support options for biofuels produced from feedstocks competing with food and feed production. Beginning in 2014, these guidelines prohibit direct subsidies or tax benefits for investment in new food-based biofuel capacity. Fiscal support may still be provided for the production of food-based biofuels at existing installations, but such funding may not continue beyond 2020. Theoretically, the 2014 guidelines should result in a competitive advantage for advanced alternative fuels, since non-food feedstocks are not subject to these same limitation. However, similar to the cap on food-based biofuels, the state aid limitations might have been introduced too late to significantly increase investment in advanced alternative by 2020.

France

France's biodiesel market

France is an interesting example of biodiesel market in terms of building a successful producing capacity and maintaining the capacities utilization through strong policy support measures. As indicated in the figure below, the local biodiesel production capacity has been utilized at full for most of the years because of a strong biodiesel blending mandate as indicated in the policy section below. The country has low dependency on biodiesel imports, and it has facilitated strong biodiesel blending in the conventional gasoline grade. For example, Spain, has a bigger biodiesel production capacity than France, but France is a bigger biodiesel producer.

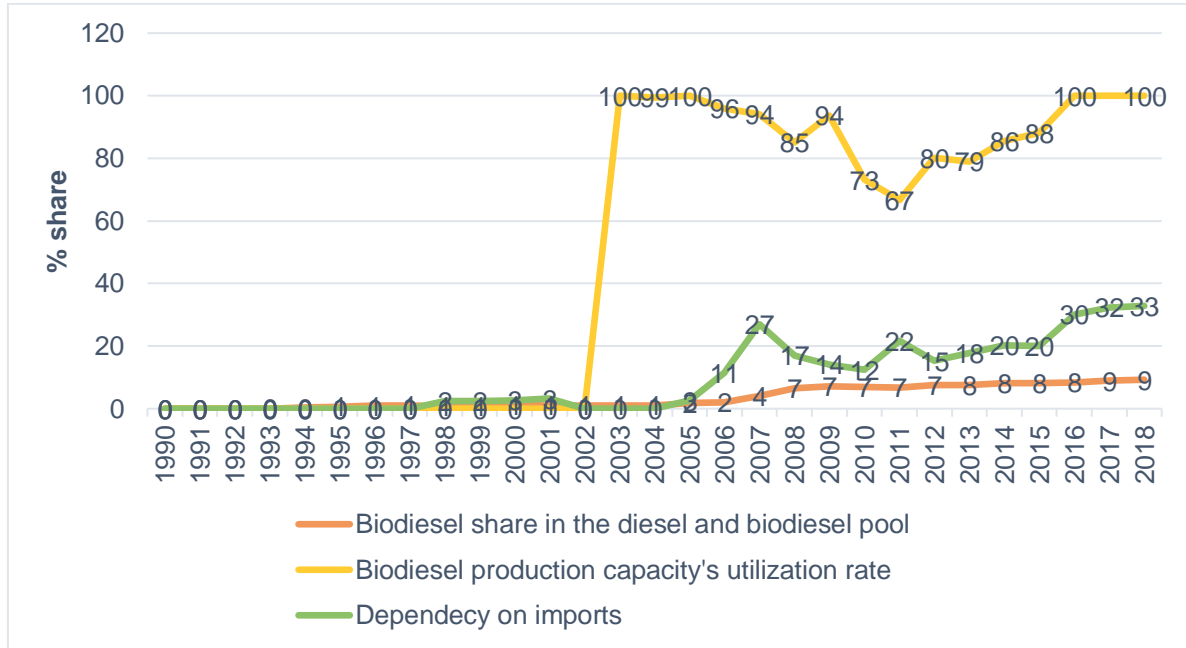
⁸ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32003L0096>

⁹ <https://www.eea.europa.eu/data-and-maps/indicators/fuel-prices-and-taxes/assessment-6>

¹⁰ [http://eur-lex.europa.eu/legal-content/EN/ ALL/?uri=CELEX:52008XC0401\(03\)](http://eur-lex.europa.eu/legal-content/EN/ ALL/?uri=CELEX:52008XC0401(03))

¹¹ [http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52014XC0628\(01\)](http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52014XC0628(01))

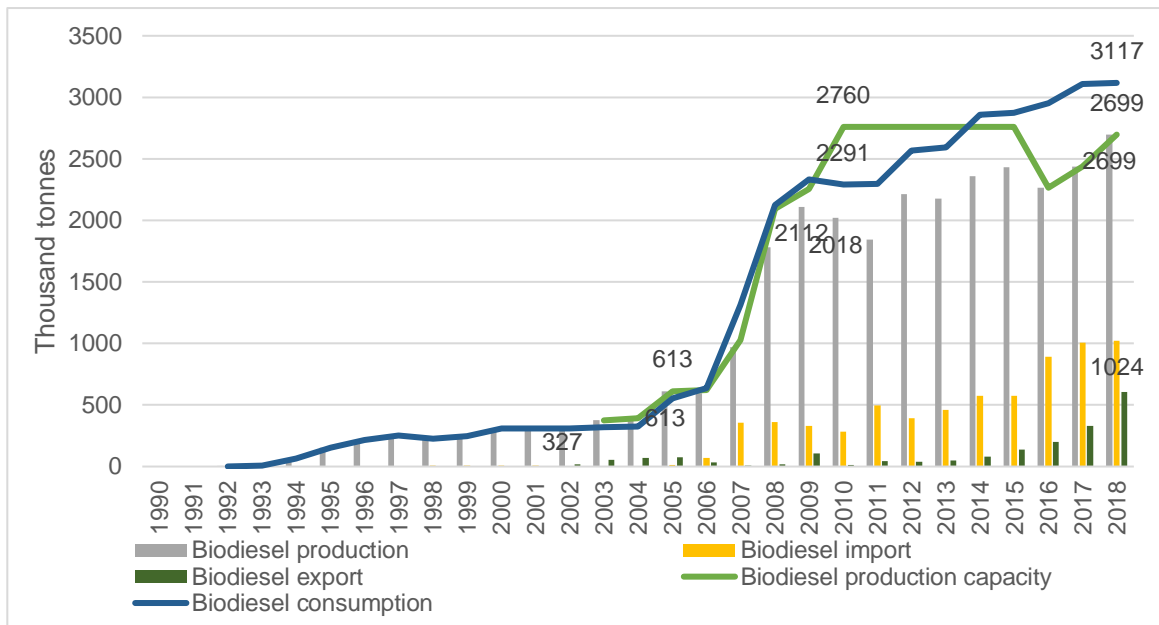
Biodiesel production capacity's utilization rate, dependency on import and biodiesel share in the diesel type of fuels in France



Source: Eurostat, 2020

In the past few years, France's biodiesel capacity had dropped and restarted growing again; the imports increased but so the exports. France's biodiesel consumption has been experiencing a steady growth in the past years.

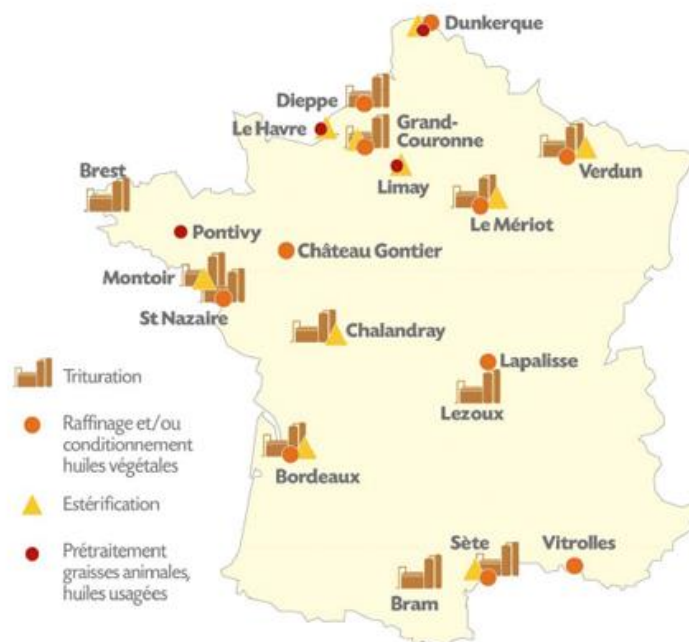
Biodiesel production capacity (including bio-paraffinic diesel), production, consumption, import and export



Source: Eurostat, 2020

The figure below indicates the location of the biodiesel producers.

Biodiesel producers in France



Source: Esterifrance, 2020¹²

¹² <http://www.esterifrance.fr/>



The table below lists the biodiesel producers in France.

Biodiesel producers in France

	Capacity, thousand tonnes
Avril (Diester Industrie) 1	1,800 tonnes ¹³
Avril (Diester Industrie) 2	
Avril (Diester Industrie) 3	
Avril (Diester Industrie) 4	
Avril (Diester Industrie) 5	
Estener ¹⁴	75
Centre Ouest Cereales ¹⁵	100
Daudruy oil refining ¹⁶	200 (vegetable oil)
Ecogras	60
INEOS, Baleycourt, Verdun ¹⁷	220

Source: Esterifrance, 2020¹⁸

Regulatory framework

Since 2005, there has been a biofuels incorporation obligation in France, set by the Energy Code Article L641-6¹⁹. The level of this obligation increased annually until 2010 for diesel replacements and until 2009 for gasoline replacements. It has remained at 7% blending for both fuel types since then, except for a one-time further increase in the target for diesel replacements to 7.7% in 2014.

The biofuels obligation is renewed annually. In 2015²⁰, the incorporation target was extended to non-road diesel. The biofuels obligation allows double counting of advanced biofuels. Eligible feedstocks include used cooking oil, certain animal oils and fats, wine-making byproducts, cellulosic materials of non-food origin, and lignocellulosic material. In 2014, France published an order limiting the double counting of biofuel made from used cooking oil at 0.35% by energy content and from advanced bioethanol at 0.25% toward the biofuel quota to limit potential fraud²¹. The Customs code²² establishes a fine in the form of the General Tax on Polluting Activities (TGAP) that fuel suppliers must pay for failing to comply with the biofuels quota.

According to the Law No 2015-99223 of August 17, 2015, and Energy Code²⁴, France has set the following renewable energy share targets for transport (by energy content):

- 10% by 2020
- 15% by 2030

¹³ <https://www.reuters.com/article/us-france-biodiesel-avril/frances-avril-raises-biodiesel-output-on-higher-oil-prices-demand-idUSKBN1KE1IN>

¹⁴ <http://www.estener.com/>

¹⁵ <https://www.centrouestcereales.fr/internet/filieres-amp-metiers/centre-ouest-cereales-industries/l-unite-de-transformation-a-chalandray-1064.aspx>

¹⁶ <http://www.nord-ester.fr/nos-produits/>

¹⁷ <https://champlor.com/category/produits/biodiesel/>

¹⁸ <http://www.esterifrance.fr/>

¹⁹ <https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEX T000023974937&categorieLien=id>

²⁰ <https://ec.europa.eu/energy/en/topics/renewable-energy/ progress-reports>

²¹ <https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=LEGITEXT000028795147>

²² <https://www.legifrance.gouv.fr/affichCode.do?cidTexte=LEGITEXT000006071570>

²³ <https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000031044385&categorieLien=id>

²⁴ <https://www.legifrance.gouv.fr/affichCodeArticle.do?cidTexte=LEGITEXT000023983208&idArticle=LEGIARTI000023987347&dateTexte=&categorieLien=cid>



Order of April 24, 2016²⁵ relating to the renewable energy development objectives sets more specific targets for biomethane and advanced biofuels (RED II, Annex IX, part A):

- 0.7 TWh of biomethane consumed in 2018
- 2 TWh of biomethane in 2023, with the prospect that biomethane represents 20% of gas consumption in 2023 in transport
- Advanced biofuels (see table below)

Targets for Advanced Biofuels (RED II, ANNEX IX, PART A) in France, % by energy content

	2018	2023
Gasoline	1.6%	3.4%
Diesel (on and non-road diesel)	1%	2.3%

Source: Order of April 24, 2016

In order to reach these targets, the quota of biofuels to be blended within conventional fuels is defined for each fuel type. In case of companies releasing fuel for consumption that do not respect the biofuels' quota, they are subjected to the tax on polluting activities (TGAP) (Article 266 quinquies, Code des Douanes²⁶).

Biofuels Blending Quota, % Share by Volume

Year	2019	2020
TGAP t (€/hectoliter)	101	104
% target for diesel	8%	8%
% target for gasoline	8.2%	8.6%

Source: Code de Douanes, 2020

According to the Law N° 2019-1479²⁷ of December 28, 2019 - Art. 213 (V) palm oil is not considered biofuel. Therefore, any biofuel produced from this feedstock would have to pay the TGAP.

High indirect land use change (ILUC) biofuels²⁸ usage should decrease according to the timeline defined in the following table.

Timeline to Decrease High ILUC Biofuel Usage in France

Year	From 2020 to 2023	2024	2025	2026	2027	2028	2029	2030	From 2031
Percentage	100%	87.5%	75%	62.5%	50%	37.5%	25%	12.5%	0%

Source: Code de Douanes, 2020

²⁵ <https://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000032452174&categorieLien=id>

²⁶

https://www.legifrance.gouv.fr/affichCode.do;jsessionid=45EB32502128E6E89B661BBD62113596.tplqfr36s_3?idSectionTA=LEGISCTA000006122062&cidTexte=LEGITEXT000006071570&dateTexte=20200224

²⁷

https://www.legifrance.gouv.fr/affichTexteArticle.do;jsessionid=45EB32502128E6E89B661BBD62113596.tplqfr36s_3?cidTexte=JORFTEXT000039683923&idArticle=LEGIARTI000039792935&dateTexte=20191230

²⁸ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32019R0807>



On top of the aforementioned limitations, the Code de Douanes imposes a general limit of food crop based biofuels and other biofuels.

Blending Cap for Certain Feedstock Used for Biofuel Production

Year	2020	From 2021
Raw material category	Threshold beyond which the share of energy from all the raw materials in the category is not taken into account under the target	Threshold beyond which the share of energy from all the raw materials in the category is not taken into account
1. Cereals and other plants rich in starch, sugar or oilseeds and other products from the main crops of agricultural land mainly used for energy production, including co-products and residues from the processing of these cereals, plants and products, other than the materials listed in Annex IX to the above-mentioned Directive 2009/28 / EC of the European Parliament and of the Council of 23 April 2009	7%	7%
2. Poor sewers from sugar plants and obtained after two sugar extractions, up to 45% of their energy content, and residual starches from plants rich in starch, at the end of the starch transformation process	0.4%	0.8%
3. Tall oil	0.1%	0.1%
4. Used cooking oil and animal fat as mentioned in Part B of Annex IX to Directive 2009/28 / EC of the European Parliament and of the Council of 23 April 2009	0.9%	0.9%

Source: Code de Douanes, 2020

The following table indicates the feedstocks usage for biofuel production which would grant permission to double count these biofuels towards the biofuel blending mandate. Only biofuels within the respective blending cap would be double counted and would be eligible for the TGAP exemption.

Feedstock Usage Which Can Double Count Towards Their Targets, %v/v

Year	2020	From 2021
Raw material category	Threshold beyond which the share of energy from all the raw materials in the category is not double counted	Threshold beyond which the share of energy from all the raw materials in the

		category is not double counted
Feedstocks listed in RED II, Annex IX, part A, with the exception of tall oil	Difference between the target percentage set in the table “Biofuels Blending Quota, % Share by Volume” and 7%: <ul style="list-style-type: none"> • 1% for diesel • 1.2% for gasoline 	Difference between the target percentage set in table “Biofuels Blending Quota, % Share by Volume” and 7%: <ul style="list-style-type: none"> • 1% for diesel • 1.6% for gasoline
Feedstock listed in Part B of Annex IX to RED II	Diesel: threshold provided for in Table 4 for the same materials Gasoline: 0.1%	Diesel: threshold provided for in Table 4 for the same materials Gasoline: 0.2%

Source: Code de Douanes, 2020

Fuel retailers, which are the obligated parties under the target, may achieve their quotas through transferring the certificates from one party to another.

Fiscal policy

From 2002 to 2015, the French Customs Code granted a partial reduction from the domestic consumption tax to approved quantities of biofuels on an annual basis. The level of this tax reduction ranged from 15% to 21% depending on biofuel type in 2009 and decreased to 3%–7% in 2015. Starting in 2016, the tax reduction was abolished.

The Ministry of Ecological and Inclusive²⁹ Transition informs about the main rates of internal consumption tax on energy products (TICPE) applicable in 2020 according to the table B of the first paragraph of article 265 of the customs code (modified by law n ° 2019-1479³⁰ of December 28, 2019 on finance for 2020). There are no specific tax benefits to biodiesel.

TICPE Prices in EUR Between 2018 and 2020, Excluding VAT

Products	Unit	2018 (USD)	2019 (USD)	2020 (USD)
E85	100 liters	11.83 (12.86)	11.83 (12.86)	11.83 (12.86)
Superchargers SP95-E5 and SP98	100 liters	68.29 (74.23)	68.29 (74.23)	68.29 (74.23)
Premium fuel SP95-E10	100 liters	66.29 (72.06)	66.29 (72.06)	66.29 (72.06)
Diesel	100 liters	59.40 (64.57)	59.40 (64.57)	59.40 (64.57)
Non-road diesel	100 liters	18.82 (20.46)	18.82 (20.46)	18.82 (20.46) until June 30 then 37.28 (40.52) to July 1

Source: SGS INSPIRE based on the French legislation, 2020

²⁹ <https://www.ecologique-solidaire.gouv.fr/fiscalite-des-energies>

³⁰ <https://www.ecologique-solidaire.gouv.fr/fiscalite-des-energies>



Comparison with Brazilian biodiesel market

In France, the rollout of biodiesel production and sales was supported through the mandates to biodiesel blending combined with the fiscal support measures for upscaling the biodiesel production capacity and reduction/ exemption of the energy tax on biodiesel. After the land-based feedstock biodiesel price was relatively close to the fossil diesel price, the fiscal support measures for biodiesel were phased out.

Currently, France, as Brazil, has specific biodiesel mandates, but they are based on energy content, as opposed to Brazil, who sets mandates by volume. France also imposes certain blending caps for certain feedstock used for biofuel production with the objective of promoting those feedstocks.

Moreover, in France, some feedstocks can count higher toward the target, depending on the origin of the feedstock. Advanced biofuels (non-crop biofuels) have an advantage over crop biofuels in this sense.

There are no public auctions to supply biodiesel in the market in France. The biodiesel market is based on free-market rules, when biodiesel producers and distributors are free to negotiate their contracts. There are no specific rules set on prices.

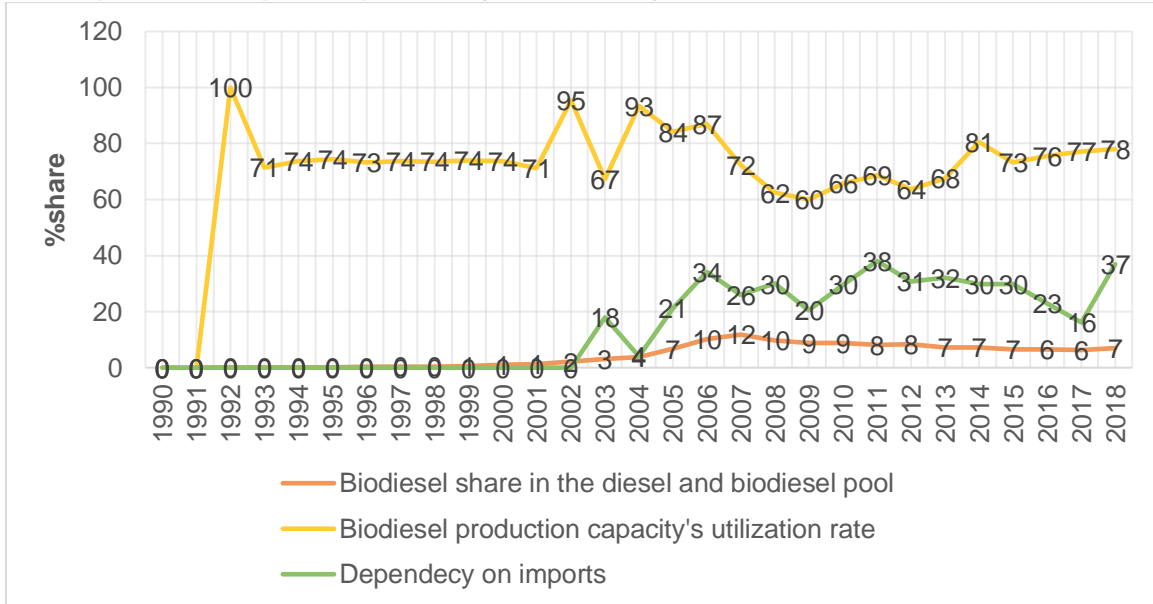
There are two main taxes on French fuels: the tax on polluting activities (TGAP) and the internal consumption tax on energy products (TICPE). The TGAP applies to palm oil biodiesel, since it is not considered a biofuel in France, and biodiesel is not exempt from TICPE either.

Germany

Germany's biodiesel market

Germany has the largest biodiesel production capacity in the European Union, and it is the largest biodiesel producer as well. For most of the past years, its capacity was utilized at fairly good level as indicated in the figure below.

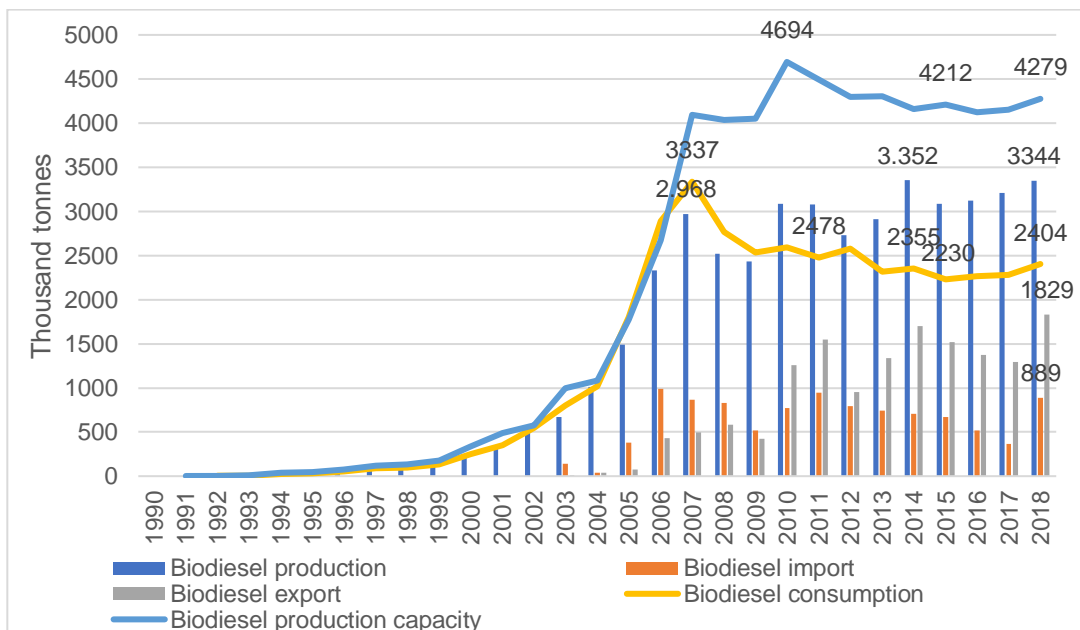
The utilization rate of the biodiesel production capacity, biodiesel share in the diesel pool and import dependency in Germany



Source: Eurostat, 2020

Germany's import dependency has slightly increased in 2018. The transition from the biodiesel mandate based on energy content to the mandate based on life cycle GHG emission reduction target drove usage of biofuels with higher GHG emission reduction options that resulted in the reduction of biodiesel consumption. Germany also started importing hydrotreated vegetable oil (HVO). Germany is the major biodiesel exporter in the EU.

Biodiesel production capacity, production, consumption, import and export in Germany



Source: Eurostat, 2020



The following table indicates the biodiesel producers in Germany.

Biodiesel producers in Germany

Company	Capacity (tonnes per year)
ADM Hamburg AG	no information
ADM Mainz GmbH	no information
AT Niederpollnitz GmbH	58,000
Biowerk Sohland GmbH	80,000
Bunge Deutschland GmbH	100,000
Cargill GmbH	300,000
EcoMotion GmbH	162,000
German biofuels GmbH	130,000
KFS Biodiesel Koln GmbH	85,000
Louis Dreyfus Company Wittenberg GmbH	200,000
NEW Natural Energie West GmbH	260,000
TECOSOL GmbH	75,000
Verbio Diesel Bitterfeld BmbH & Co.KG	190,000
Verbio Diesel Schwedt GmbH & CO.KG	250,000
Munzer Bioindustrie GmbH	140,000
Total	2,030,000

Source: AGQM³¹, Biodiesel, 2020

Regulatory framework

From 2007 to 2014, Germany required fuel suppliers to blend biofuels under the biofuel obligation in the Federal Emission Control Act³². Required blend levels increased annually from 2007 to 2010 and remained at 2.8% by energy content for gasoline and 4.4% for diesel through 2014. Certain types of wastes and residues, as well as cellulosic and lignocellulosic material, were double counted toward the quota.

Since 2015, Article 37 a of Federal Emission Control Act - BImSchG³ requires fuel suppliers to reduce the GHG intensity of the fuel mix they supply by 3.5% in 2015–2016, 4% in 2017–2019, and 6% from 2020 onward. Fuel suppliers and biofuel producers may trade certificates for GHG emission reductions to achieve their obligations, and they are fined if they do not meet these obligations. ILUC accounting toward the GHG emission reduction target is not required.

The Ordinance laying down further provisions for greenhouse gas reduction in fuels - 38th BImSchV⁵ requires fuel suppliers to fulfil an annual advanced biofuel target:

- 0.05% by energy content from 2020 for companies that have placed more than 20 petajoules of fuel on the market in the previous commitment year
- 0.1% by energy content from 2021 for companies that placed more than 10 petajoules of fuel on the market in the previous commitment year
- 0.2% by energy content from 2023 for companies that placed more than 2 petajoules of fuel on the market in the previous commitment year
- 0.5% by energy content percent from 2025

³¹ Source: https://www.agqm-biodiesel.de/application/files/3115/5869/8725/AGQM_Jahresbericht_2018_web.pdf

³² <https://www.gesetze-im-internet.de/bimschg/>

Article 37 b BImSchG defines hydrogenated biogenic oils as biofuels if they are obtained from biogenic oils or fats that are themselves biomass in the sense of the Biofuels Ordinance and if the hydrogenation has not been carried out in a refinery process together with oils of mineral oil (i.e. co-processing). Under these conditions, hydrogenated biogenic oils are to be treated in their entirety as biofuels.

The biofuels described below cannot be counted toward the GHG emission reduction target:

- Biogenic oils that have been hydrogenated together with oils derived from mineral oils in a refinery process (co-processing)
- The biofuel content of energy products with a bioethanol content of less than 70% by volume, to which bioethanol-containing gasoline has been added
- Biofuels made wholly or partly from animal oils or fats
- Biofuels for which tax relief has been or will be granted

The Ordinance laying down further provisions for greenhouse gas reduction in fuels - 38th BImSchV³³ rules that the share of energy from biofuels produced from cereals and other crops with a high starch content, sugar plants, oil plants and from crops grown as main crops primarily for energy production on agricultural land may not exceed 6.5% of the final energy consumption in the transport sector in 2020.

Fiscal policy

Germany completely exempted biofuels from excise duties from 2002 to mid-2006. From that point onward, Germany gradually increased excise duties on biofuels. Since January 2013³⁴, conventional biofuels have been subject to the same tax rate as fossil fuels to prevent overcompensation. An exception is that certain types of advanced biofuels, including synthetic hydrocarbons and cellulosic ethanol produced from biomass (biomass-to-liquids or BtL fuels), qualified for full tax exemption through 2015. In addition, suppliers of E85 (85% ethanol blended in gasoline) could apply for an excise duty reduction through 2015.

Energy Taxation in Germany

Tax item	Tax rate, EUR/1,000 liters (USD/liters)
Gasoline, unleaded with a sulfur content of more than 10 mg/kg ("sulfurized" or "low sulfur")	669.80 (752.30)
Gasoline, unleaded with a sulfur content of not more than 10 mg/kg ("sulfur free")	654.50 (735.11)
Leaded gasoline (all motor and aviation fuels)	721.00 (809.80)
Medium-heavy oils (mainly petroleum and kerosene)	654.50 (735.11)
Diesel with a sulfur content of more than 10 mg/kg ("sulfurized" or "low sulfur")	485.70 (545.52)
Diesel with a sulfur content of not more than 10 mg/kg ("sulfur-free")	470.40 (528.34)

Source: Germany's Custom³⁵, 2020

³³ https://www.gesetze-im-internet.de/bimschv_38_2017/BJNR389200017.html

³⁴ <http://www.gesetze-im-internet.de/energiestg/index.html>

³⁵ https://www.zoll.de/DE/Fachthemen/Steuern/Verbrauchssteuern/Energie/Grundsaeetze-Besteuerung/Steuerhoehe/steuerhoehe_node.html



Comparison with Brazilian biodiesel market

Germany, as Brazil, has specific biodiesel mandates, but they are based on energy content and the reduction of greenhouse gas (GHG) emissions of the fuels pool. Brazil sets mandates by volume. The targets are based on the amount of biofuel placed on the market in the previous year.

Moreover, in Germany, there are several biodiesel's feedstocks that are not allowed to count towards the GHG reduction targets, and its utilization has been demoted for this reason.

There are no public auctions to supply biodiesel in the market in Germany. The biodiesel market is based on free-market rules, when biodiesel producers and distributors are free to negotiate their contracts. There are no specific rules set on prices.

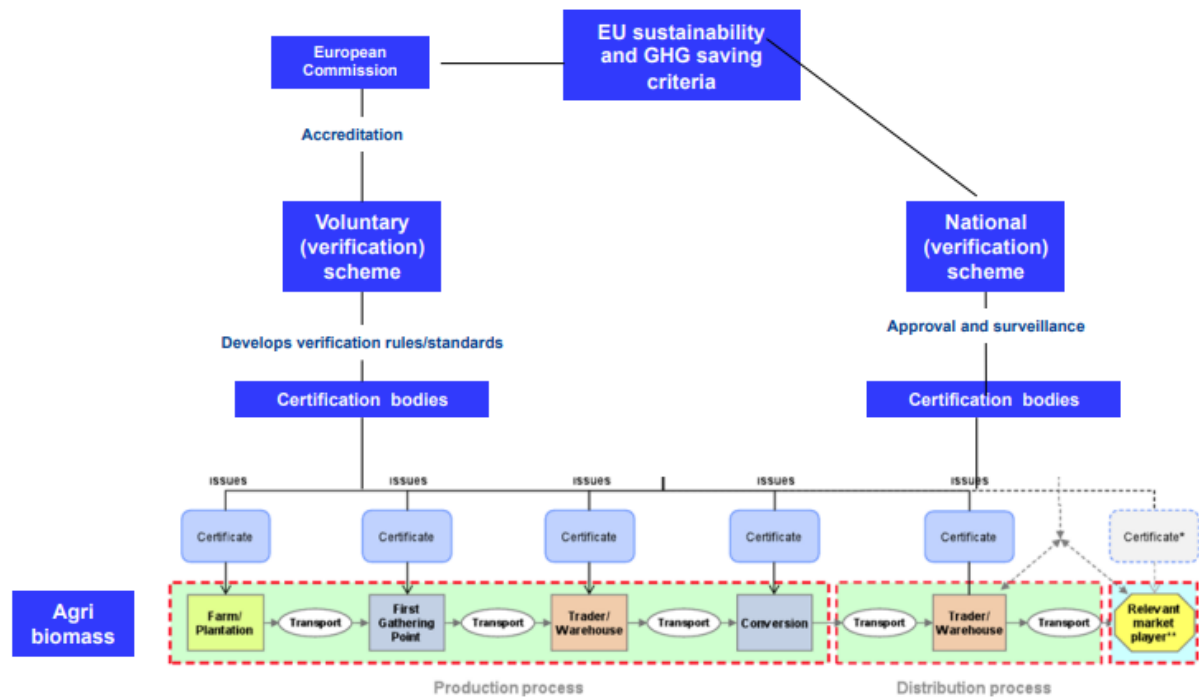
Conventional biodiesel should pay the same taxes than conventional diesel in Germany to avoid overcompensation. It is important to note, that the rollout of biodiesel production and sales was supported through the mandates to biodiesel blending combined with the fiscal support measures for upscaling the biodiesel production capacity and reduction/ exemption of the energy tax on biodiesel. After the land-based feedstock biodiesel price was relatively close to the fossil diesel price, the fiscal support measures for biodiesel were phased out.

Biodiesel supply in the EU member states

Sustainability certification

According to the European Union's Renewable Energy Directive (RED), only sustainable biofuels can be counted toward the GHG emission reduction target and the renewable energy mandate. RED sets specific criteria related to the land where the feedstock was grown and the overall GHG emissions emitted during the production and transportation process. The part on the biodiesel supply chain should be certified and the final mix should have the documentation proving the sustainability along the supply chain as indicated in the figure below.

EU sustainability verification system



Source: European Commission, 2020

Indonesia

Biodiesel Mandate

Biodiesel blending in Indonesia started in October 2008 with the government mandated biodiesel to account for 1 %v/v of total public service obligation (PSO) grade diesel used by the transportation sector, 3% v/v of total diesel used by the industry and commercial sector and 0.1 %v/v of total diesel used by the electricity generation sector. The mandate was then increased in stages to reach 20 %v/v by 2025.

In 2013, the government amended the mandate, taking a more aggressive approach and increased the mandate in earlier years by about fourfold from the original 2008 mandate. This amendment set the blending percentage to 25 %v/v by 2025.

The government amended the mandate again in March, increasing the blending percentage to 30 %v/v (B30) and push this forward by five years from 2025 to 2020. The blend percentage will remain at 30 %v/v beyond 2020.

To further reduce diesel imports, in the first half of 2020, the government plans to increase the percentage of biomass-based diesel in diesel by adding 10 %v/v hydrogenated vegetable oil (HVO) into the current B30, resulting in B40 (30% v/v biodiesel blended with 10% v/v HVO and 60% v/v conventional diesel) in by mid-2021. However, decline in diesel demand and widening price gap between diesel and biodiesel amid COVID-19 pandemic resulted in postponement to 2023-2024. The table below shows Indonesia's biodiesel mandate from 2008 until now.



To ensure the mandate is fulfilled, the Ministry of Energy and Mineral Resources announced an annual biodiesel quota. The latest quota under the Ministry of Energy and Mineral Resources Decree No. 111K/10/MEM/2020 announced in June 10, 2020, amended the Decree No. 199K/20/MEM/2019 announced in October 2019 pertaining to quota on biodiesel supply for the period of January – December 2020.

Indonesia's Biodiesel Mandate

ORIGINAL (2008)						
Sector	10 - 12 2008	01/2009	01/2010	01/2015	01/2020	01/2025
Transportation PSO	1%	1%	2.5%	5%	10%	20%
Transportation non-PSO	0%	1%	3%	7%	10%	20%
Industry & Commercial	3%	3%	5%	10%	15%	20%
Electricity Generation	0.1%	0.25%	1%	10%	15%	20%
2013 AMENDMENT						
Sector	09/2013	01/2014	01/2015	01/2016	01/2020	01/2025
Transportation PSO	10%	10%	20%	20%	20%	25%
Transportation non-PSO	3%	10%	20%	20%	20%	25%
Industry & Commercial	5%	10%	20%	20%	20%	25%
Electricity Generation	7.5%	20%	30%	30%	30%	30%
2015 AMENDMENT (CURRENT AND FUTURE) (ESDM Decree No. 12/2015)						
Sector	04/2015	01/2016	01/2020	01/2025		
Micro, fisheries, agricultural, transportation and public service (PSO)	15%	20%	30%	30%		
Transportation non-PSO	15%	20%	30%	30%		
Industry & Commercial	15%	20%	30%	30%		
Electricity Generation	25%	30%	30%	30%		

Note: ESDM: Ministry of Energy and Mineral Resources

Source: Ministry of Energy and Mineral Resources, 2015

Fiscal Policies

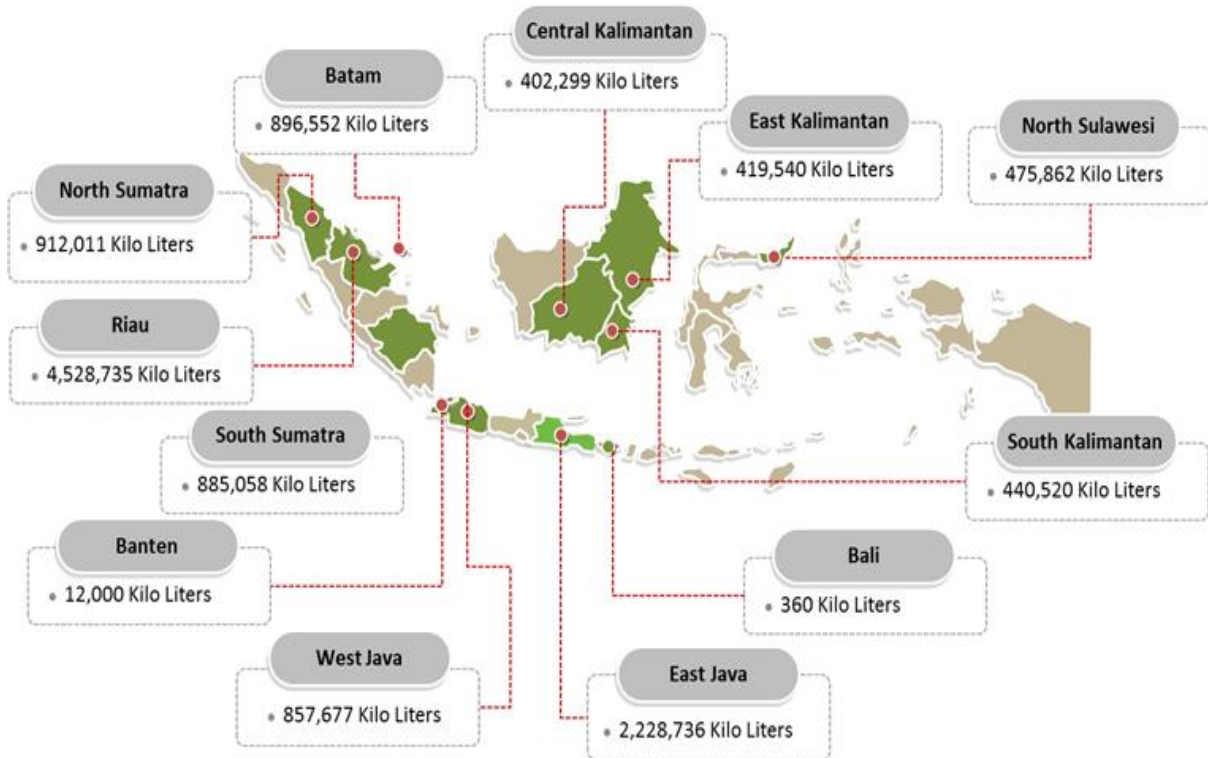
Contrary to the international world's perception that the Indonesian biodiesel producers got subsidies, the government does not subsidize biodiesel production. Instead, the subsidy is given at the fuel retailers to reduce the gap in prices between biodiesel and conventional diesel.

Prior to 2014, the subsidy fund was sourced from the government's annual budget and approved by the Parliament. Since 2015, biodiesel subsidy has been funded from the palm oil fund and the amount varied depending on the price gap. The palm oil fund, which came from crude palm oil export levy, is used for biodiesel subsidy, oil palm replanting program and research and development of oil palms. In short, through the palm oil fund, the government gives subsidy to close the price gap between biodiesel and diesel, so the oil marketing companies are not making any losses due to biodiesel blending.

Biodiesel Production and Consumption

At the end of 2017, Indonesia's biodiesel production capacity reached 12 million tonnes. Biodiesel producers' locations are spread from the western part to the central part of the country. Till date, there are no biodiesel producers in the eastern part of Indonesia. The figure below shows biodiesel producers in Indonesia.

Biodiesel Production Capacity until 2017



Source: Data from the Ministry of Energy and Mineral Resources, 2019

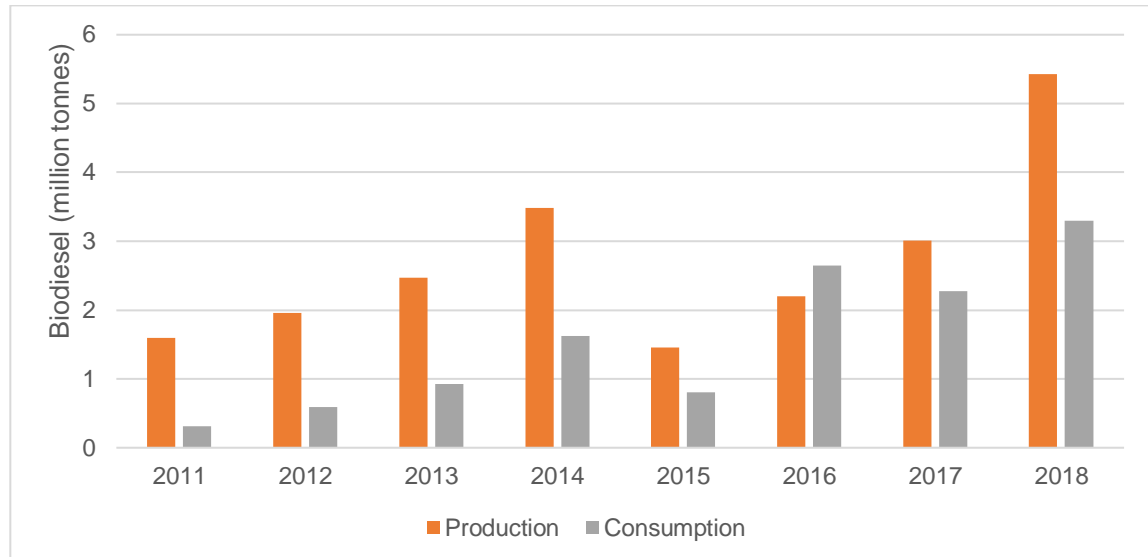
To ensure the volume supplied for domestic consumption, every year, the government announces the quota allocation of biodiesel supply for every producer to respective oil marketing companies.

The latest one was announced in June 10, 2020 for the supply of 9,597,456 m³ biodiesel to be blended in January – December 2020. This amended the previous quota allocation for the supply of 9,590,131 m³ for the same period. The Ministry of Energy and Mineral Resources announces monthly biodiesel market index, which serves as the base price. Then the price difference between the producers only happened because of the delivery cost.

In 2018, biodiesel production reached 5.4 million tonnes. The average utilization rate of the production facilities reached about 45%. Biodiesel consumption in the same year reached 3.3 million tonnes. The remaining volume was exported to China and Europe.

Due to declining of biodiesel and crude palm oil demand from their traditional export markets, the government aggressively promotes the use of biodiesel and contemplates to increase the blending percentage even higher than B30 in the domestic market. This is mainly to utilize the production facilities and abundance feedstock, to help absorbing domestic biodiesel and crude palm oil production. The figure below shows biodiesel production and consumption from 2011 to 2018.

Biodiesel Production and Consumption (2011-2018)



Source: Ministry of Energy and Mineral Resources, SGS INSPIRE, 2020

Comparison with Brazilian biodiesel market

The biodiesel market in Indonesia is more similar to Brazil compared to the EU. Indonesia, as Brazil, has specific biodiesel mandates based on volumes. Furthermore, the targets increase based on a specific schedule, as in Brazil.

There are no public auctions to supply biodiesel in the market in Indonesia. The government announces the quota allocation of biodiesel supply for every producer to respective oil marketing companies every year.

Biodiesel prices in Brazil are derived from the tender that takes place every two months. In Indonesia, the palm oil fund, which came from crude palm oil export levy, is used for biodiesel subsidy. The base price is regulated through the monthly biodiesel market index announced by the Ministry of Energy and Mineral Resources. The difference in the price of biodiesel paid by the oil marketing companies lies on the transportation cost to deliver the biodiesel from the production plants to the blending terminals.

Indonesia is also using domestic production to increase the biodiesel blending mandate, as Brazil, but in much higher levels. In Brazil there is still some concern to increase the blend level up to 15 %v/v.

Malaysia

Biodiesel Mandate

The biodiesel industry in Malaysia was originally set to cater for the export market. However, when the price of crude palm oil (CPO) shoot up in mid-2010, the country's targeted export markets reduced their biodiesel demand. This drove the government to mandate the biodiesel blending in domestic diesel market.



B5 (5 %v/v biodiesel blended with 95 %v/v conventional diesel) mandate was implemented in stages, starting from the central region in June 2011 and planned to cover the whole country in December 2014.

In August 2014, the government announced its plan to implement B7 (7 %v/v biodiesel blended with 93 %v/v conventional diesel) from the first quarter of 2015. It then accelerated the B7 implementation to November 2014 due to high inventory and the low price of CPO. By December 2014, all diesel sold in Malaysia was B7.

Further decline in demand from export markets resulting in the government's decision to increase the biodiesel blending percentage from 7 %v/v to 10 %v/v (B10). B10 was implemented in Peninsular Malaysia from December 2018 and nationwide from February 2019. However, diesel with a maximum sulfur content of 10 mg/kg (also known in Malaysia as Euro 5 diesel) and diesel sold in mountainous areas including Cameron Highlands are exempt from the B10 requirement and are allowed to remain as B7.

In the second quarter of 2019, the government decided to increase the blending percentage to 20 %v/v (B20) in 2020. In mid-2019, the government announced that diesel used by the industry sector will be included to the diesel grades with exemption from B20 and remain at B7 blending level.

In February 2020, B20 was introduced in Langkawi. The plan was to expand the introduction to Kedah in and Labuan this year and to complete the switch to B20 in July 2021. However, due to COVID-19 outbreak, the government decided to postpone the B20 introduction in Kedah to August 2020 and Labuan to early 2021. The nationwide completion target remains.

Furthermore, the government is currently contemplating to follow Indonesia to increase the blending percentage to reach 30 %v/v at the latest by 2025.

Note that unlike that in other countries where the governments announce biodiesel mandate in the form of regulations, the Malaysian government usually announces the biodiesel blending percentage in a press release and then send the instruction directly to the oil marketing companies.

Fiscal Policies

The previous administration deregulated the retail price of gasoline and diesel in December 2014. However, in April 2015, the government put the price regulation for diesel and RON 95 gasoline grade back in place, while leaving only the RON 97 gasoline price floated as per the market forces.

On June 3, 2020, the government published the Federal Gazette stating that the Price Control and Anti-Profiteering (Determination of Maximum Retail Price for Petrol and Diesel) (No.8) Order 2020 is revoked. With this revocation, the government has been deregulating the retail price of gasoline and diesel, leaving them floated as per the market forces. However, there is no clear guidance whether the government regulate the price of biodiesel. However, understanding the price gap between crude palm oil and diesel, the government is highly likely giving out subsidy for biodiesel to ensure the continuity of biodiesel blending program.

As of June 15, 2020, regular diesel (Euro 2M quality) is sold at MYR 1.730 (USD 0.405) per liter.

Biodiesel Production and Consumption

At the end of 2018, there were 17 biodiesel producers operating in Malaysia with a total annual capacity of 2.175 million tonnes. 13 producers are located in the Peninsular Malaysia, three in Sabah and one in Sarawak.



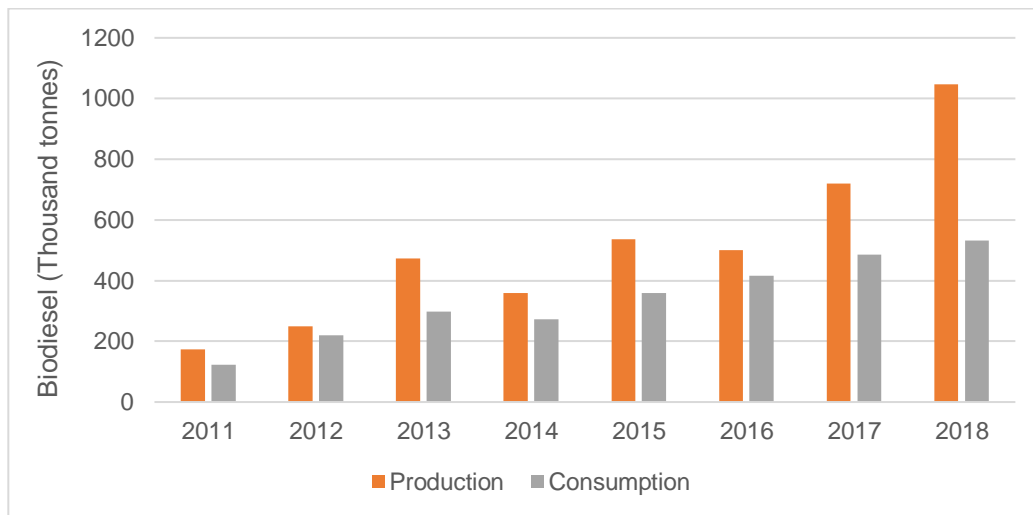
In 2018, total biodiesel production reached about 1.05 million tonnes. This means that the average plant utilization rate only reached 48%.

To increase the plant utilization rate and absorb more domestic CPO production, especially when export of CPO to Europe getting more difficult and India's demand is softening, the government aim to increase the blending to reach 20% v/v.

Biodiesel consumption in 2018 reached about 531,850 tonnes, or only accounted for 51% of total biodiesel production.

In Malaysia, the producers supply biodiesel directly to the oil companies with the agreed price. The table below shows production and consumption of biodiesel in Malaysia in 2011-2018.

Production and Consumption of Biodiesel in Malaysia (2011-2018)



Source: Malaysia Palm Oil Board, SGS INSPIRE, 2020

Comparison with Brazilian biodiesel market

The biodiesel market in Malaysia is similar to the Indonesian market. Malaysia, as Brazil, has specific biodiesel mandates based on volumes. Furthermore, the targets increase based on a specific schedule, as in Brazil.

There are no public auctions to supply biodiesel in the market in Malaysia. While the government just revoked the regulation setting the ceiling price of gasoline and diesel earlier in June 2020, the price components of diesel at the retail market are not publicly accessible. Nevertheless, with the price gap between petroleum diesel and biodiesel, SGS INSPIRE believes that biodiesel in Malaysia is subsidized and it is integrated in the fossil diesel prices. In Brazil, biodiesel prices are derived from the tender that takes place every two months.

Malaysia is also using domestic production to increase the biodiesel blending mandate, as Brazil, but in higher levels. In Brazil there is still some concern to increase the blend level up to 15 %v/v.



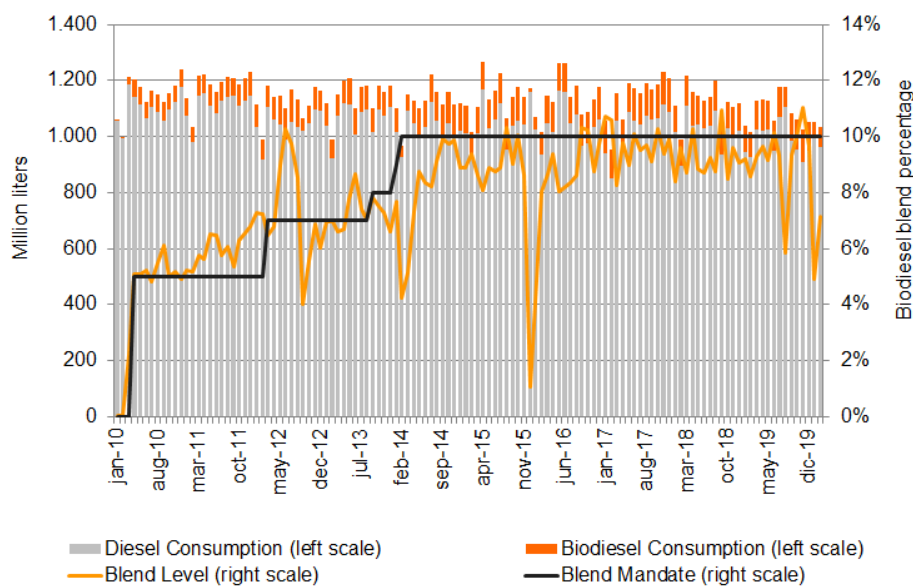
Argentina

Biodiesel Blending Policy

Biodiesel blending in Argentina started with the policy that implemented the biodiesel mandate, which began with 5 %v/v in 2010 according to [Law 26093/2006](#).

The following figure shows the volume of biodiesel blended in gasoline since 2010. It can be observed that the biodiesel volume blended in diesel does not always comply with the biodiesel blend mandate in Argentina. This has been caused by the various biodiesel supply agreements that the government signed with providers to increase the biodiesel blend above the consecutive mandates. They were not compulsory, but sometimes there was more biodiesel in the market than what was requested by law. Moreover, domestic prices set by the government, and the availability to export biodiesel, also impacted the amount of biodiesel available in the market.

Biodiesel Blended in Gasoline in Argentina, 2010-2020



Source: Ministry of Energy and Mining, Secretary of Energy, SGS INSPIRE Compilation

Biodiesel Mandates

[Law 26093/2006](#), on the regulation and promotion of the sustainable production and use of biofuels, initiated the blending mandates in Argentina with a 5 %v/v of biodiesel in diesel beginning in 2010. Over the course of 2014, the biodiesel mandate increased gradually to 10 %v/v and has been maintained at that level with [Resolution 37/2016](#) from April 6, 2016, until the date of publication of this report.

The biodiesel blend statistic is calculated by aggregating all fuel used in on-road transport, off-road agriculture, off-road construction, mining, shipping and rail.

Additionally, a 10 %v/v biodiesel blend requirement was added for power generation plants technically able to use a biodiesel blend, but it was never enforced and virtually none is used in this sector.



Biodiesel Blend Mandates in Argentina

Piece of legislation	Date of implementation	Volume mandate (% vol.)
Law 26093/2006	April 2010	5
Resolution 56/2012	March 2012	7
Resolution 450/2013	September 2013	8
Resolution 1125/2013	January 2014	9
Resolution 1125/2013	February 2014	10
Resolution 37/2016	April 2016	Maintained 10

Source: SGS INSPIRE Compilation

The biodiesel industry is trying to push to maintain the biodiesel governmental support. In 2019, 13 Argentinean Congressmen proposed a bill to promote the production and consumption of biofuels and to create the National Biofuels Plan 2030.

The bill aimed at complementing Law 26.093 and was developed by the governors of the main biofuel producing provinces in Argentina, concerned about the lack of leadership from the current government in terms of biofuels. The bill did not have enough support to be adopted by Parliament.

In May 2021, the current biofuels support framework will expire. The government is expected to continue its support with biofuels at least until 2023, but it is uncertain as to which kind of support, since subsidized prices could be phased out.

The European Union (EU) and the United States (U.S.) are not likely to be opened to import more Argentinean biofuels in the future, and an important share of the production capacity (70%) is idle. For these reasons, the local biodiesel industry and provincial governments are trying to increase the blend mandate to 12 %v/v and 20 %v/v for the agroindustry. The government has not decided on this and it is not likely that it will decide anytime soon.

Fiscal Policies

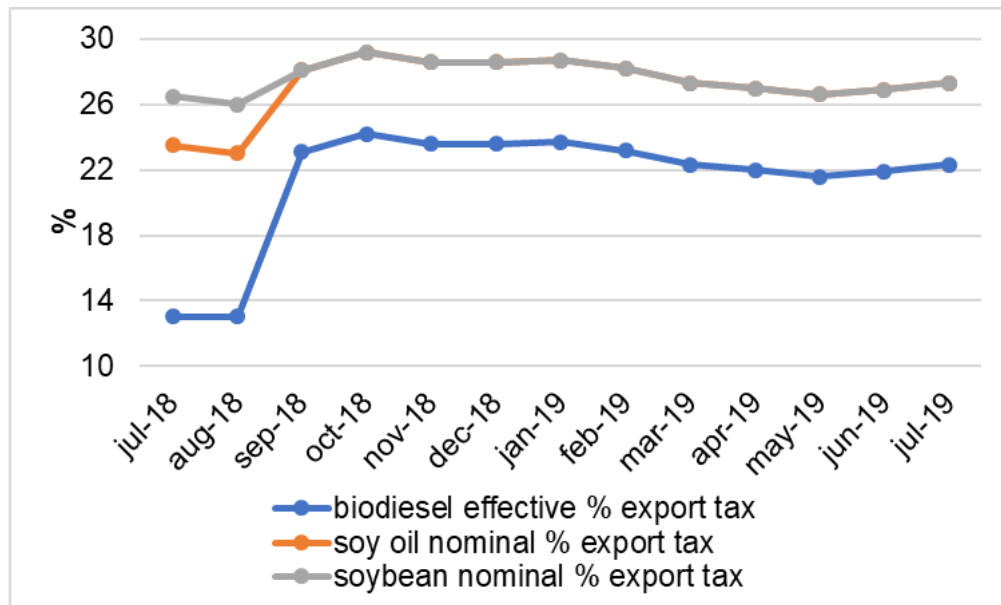
Argentina does not provide any direct incentives, such as production subsidies or grants, to biofuel producers, but they are exempt from taxes.

One of the measures traditionally used to support the biodiesel industry in Argentina has been the differential export tax on biodiesel compared to soybean oil. The tax difference has fluctuated until recently, when biodiesel and soybean and soy oil taxes have similar values. [Decree 1025/2017](#) imposed a biodiesel export tax of 8% as from January 1, 2018, and [Decree 486/2018](#), from May 2018, increased the biodiesel export tax to 15% as from July 2018.

Furthermore, in September 2018, [Decree 793/2018](#) fixed an additional 12% export duty for all primary agricultural products until December 31, 2020. The Decree establishes that this 12% cannot be higher than 4 pesos (ARS) per US\$.

The export tax for biodiesel, soy oil and soybean in recent months is shown in the figure below. As explained, export taxes for biodiesel, soybean and soy oil are very similar since September 2018, and do not constitute a competitive advantage for exporting biodiesel any longer.

Export Taxes for Biodiesel, Soybean and Soy Oil in Argentina (%)



Effective tax = $(100 \times \text{nominal tax}) / (100 - \text{nominal tax})$

Source: Ministry of Energy and Mining, Secretary of Energy, SGS INSPIRE Compilation

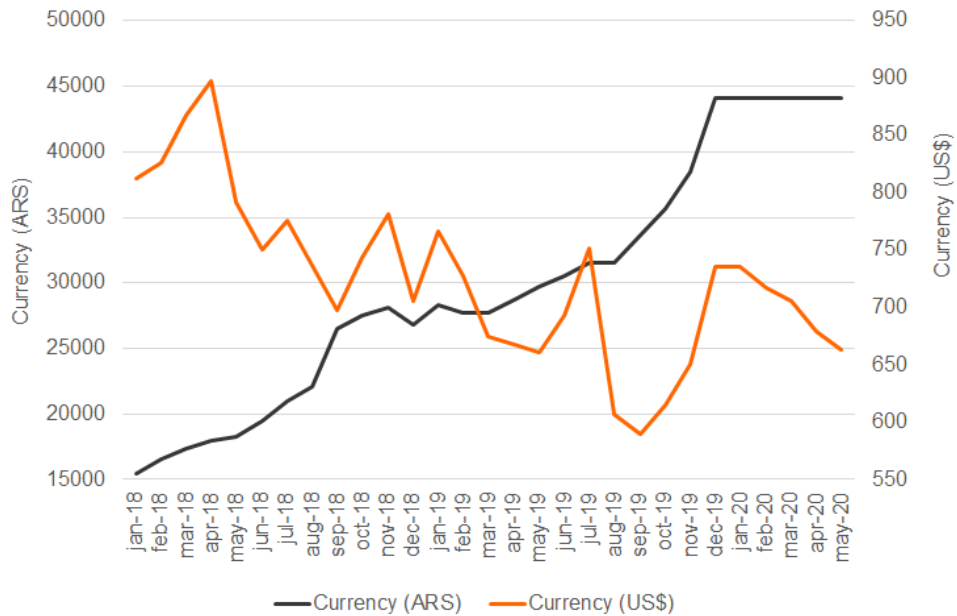
In 2010, Argentina implemented the biodiesel mandate, and official prices that producers could charge for biofuel sales to fuel retailers were set.

Prices for biodiesel depended on the category of the company. Until October 2017, they were divided in four categories: large, large not integrated (depending on the internal structure of the company), medium and small company. From November 2017 until December 2017, there were only three categories; medium and small were united into small medium enterprises (SMEs). Since January 2018, the price did not depend on the category of the company.

[Resolution 83/2018](#) determined the price formula for biodiesel from January 2018 to December 2018. [Resolution 2/2019](#) and [Disposition 23/2019](#) further modified the price formula, increasing biodiesel prices in Argentina. Since last year, the industry has struggled with the high prices imposed on biodiesel by the government.

The biodiesel price depends on the soybean oil cost, methanol cost, workforce cost and return of capital.

Biodiesel Prices in Argentina (Argentinean pesos and US\$ per Ton)

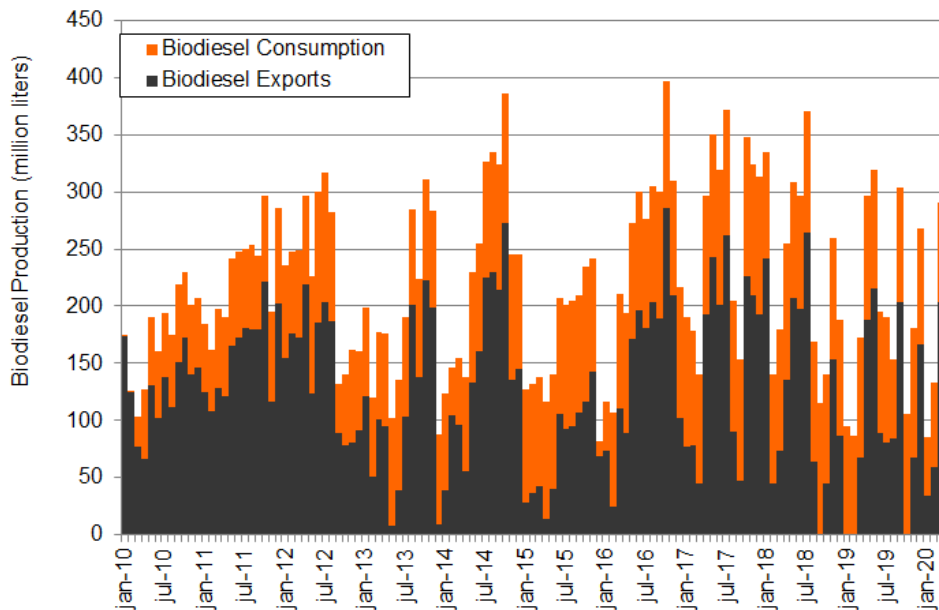


Source: Ministry of Energy and Mining, Secretary of Energy, SGS INSPIRE Compilation

Biodiesel Production and Consumption

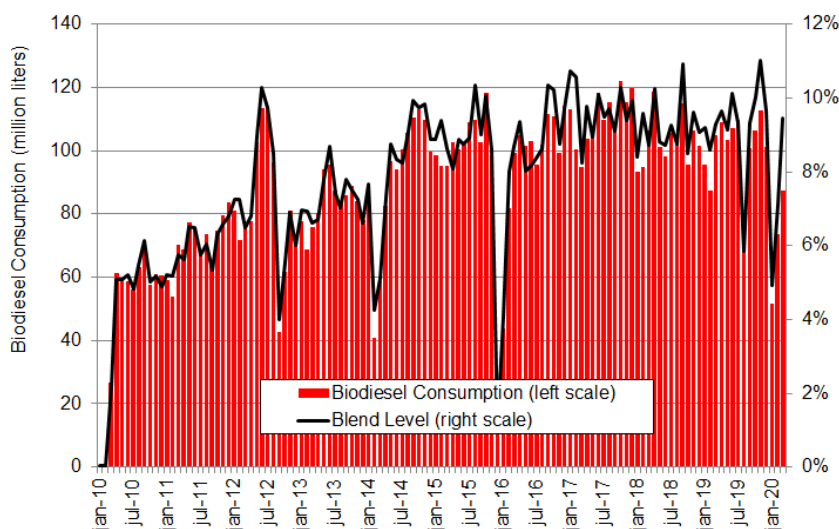
There are 36 biodiesel plants in Argentina, with a total production capacity of 5 billion liters. All plants use soy oil for biodiesel production.

Biodiesel production in Argentina, 2010-2019



Source: Secretary of Energy, SGS INSPIRE Compilation

Biodiesel consumption in Argentina, 2010-2019



Source: Secretary of Energy, SGS INSPIRE Compilation

The Secretary of Energy has a quota system in place for biodiesel companies in Argentina. Each company has a quota for how much biodiesel they may put on the market, and oil companies also have quotas they need to fulfill as to how much biodiesel they blend. The table below shows for 2019, the production companies, oil refining companies blending biodiesel, and their fulfillment quotas:

Biodiesel Companies, Total Production and Sales, 2019

Company	Production (Tons)	Production Capacity (Tons)
UNITECBIO	69,097	240,000
EXPLORA	60,561	480,000
ESTABLEC. EL ALBARDON	50,176	100,000
PATAGONIA BIOENERGIA	49,460	50,000
ROSARIO BIOENERGY	48,974	50,000
VICENTIN	46,260	50,000
PAMPA BIO	43,275	50,000
ARIPAR CEREALES SA	40,260	120,000
CREMER	39,712	50,000
REFINAR BIO	39,572	200,000
BIOBAL	39,426	50,000
BIOCORBA	38,935	50,000
BIOBIN	38,784	50,000
DIA SER	37,846	50,000
CARGILL	37,407	50,000
BIOBAHIA	37,339	50,000
ADV. ORG. MAT. SA.	35,483	50,000
LATIN BIO	35,393	50,000
ENRESA	34,973	36,000
MOLINOS AGRO	34,424	48,000
DIFEROIL	30,803	96,000



BIONOGOYA	30,796	24,000
VILUCO	30,528	610,000
NOBLE (COFCO)	28,850	18,000
BIORAMALLO	27,999	14,400
OLEAGINOSAS MORENO SA	18,143	18,000
ERA SRL	17,142	120,000
LDC COMMODITIES	14,282	240,000
AGD SA	13,890	10,800
BUNGE SA	12,679	120,000
SOY ENERGY	12,345	10,800
COLACAO DEL VALLE	10,924	8,000
HECTOR BOLZAN	8,099	7,800
DOBLE L BIOENERGIAS SA	6,282	480,000
BH COMBUSTIBLES	5,574	12,000
AGRO M Y G	5,332	240,000
NEW FUEL	2,544	480,000
Total	1,134,273	4,383,800

Source: Secretary of Energy, SGS INSPIRE Compilation

Accumulated Purchases of Biodiesel by Oil Companies, 2019

	Tonnes	% of all Purchases	Fulfilment of Quota per Company
YPF	662,464	58.40%	95.83%
AXION	160,108	14.11%	88.97%
SHELL	151,122	13.32%	85.12%
TRAFIGURA	70,055	6.18%	101.62%
REFINOR	13,300	1.17%	90.37%
PETROIL SRL	3,404	0.30%	78.28%
REFIPAMPA	2,629	0.23%	68.17%
NEW AMERICAN OIL	2,106	0.19%	83.75%
PETROBRAS	1,656	0.15%	0%
DIVERSE FUEL	840	0.07%	41.41%

Source: Secretary of Energy, SGS INSPIRE Compilation

Comparison with Brazilian biodiesel market

The biodiesel market in Argentina is based on specific biodiesel mandates based on volumes, as Brazil. Furthermore, the targets increase based on a specific schedule, also as in Brazil.

There are no public auctions to supply biodiesel in the market in Argentina. There are not any direct incentives either, such as production subsidies or grants, to biofuel producers, but biodiesel is exempt from taxes.

One of the measures traditionally used to support the biodiesel industry in Argentina has been the differential export tax on biodiesel compared to soybean oil. Other measures traditionally used to support the biodiesel industry in Argentina has been the differential export tax on biodiesel compared to soybean oil. Finally, the Government sets official biodiesel prices that producers could charge for



biofuel sales to fuel retailers were set. In Brazil the prices are derived from the tender that takes place every two months.

Additionally, Argentina has a quota system in place for biodiesel companies. Each company has a quota for how much biodiesel they may put on the market, and oil companies also have quotas they need to fulfill as to how much biodiesel they blend. This policy is similar than the Indonesian one.

Argentina is a net biodiesel exporter, but since exports are currently decreasing, the biodiesel industry is asking the Government to increase the biodiesel blend mandate up to 15 %v/v.

Colombia

Biodiesel Blending Policy

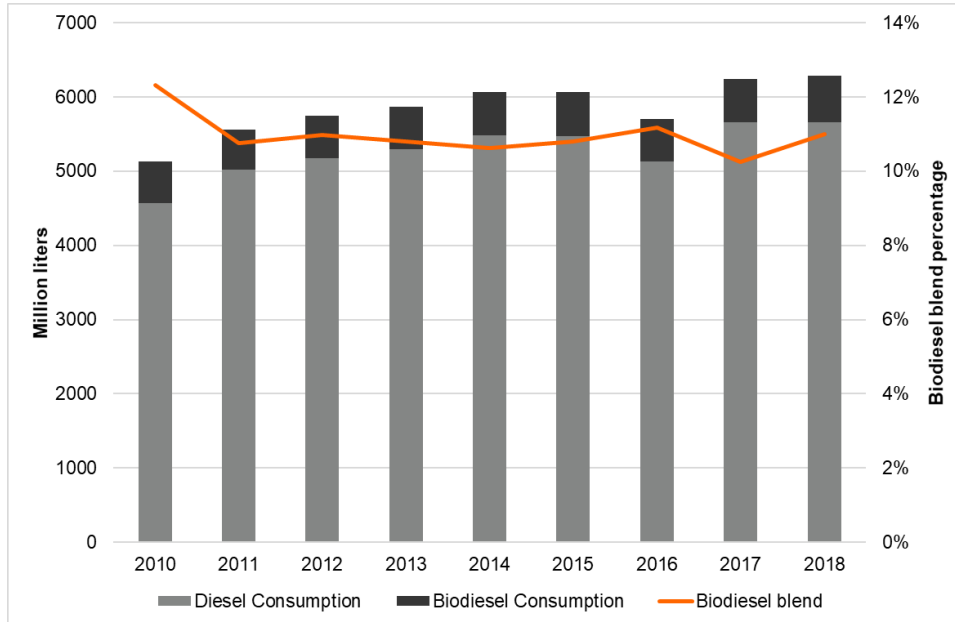
The Ministry of Mines and Energy (MME) has the authority to establish the biofuels blend mandates, regulate fuel and biofuels prices and set technical regulations on biofuel standards.

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.

Biodiesel blending in diesel in Colombia began with Law [939/2004](#), which established measures to promote biodiesel blending in diesel through tax rebates. The [National Development Plan 2006-2010](#), encouraged the institutions to approve a B5 biodiesel mandate as of 2010, but [Decree 2629/2007](#) increased the mandate to 10 %v/v from January 1, 2010 onwards. This Decree also mandated new vehicles to be able to function with B20 diesel. There have been several modifications of the blend mandate, but biodiesel blending has been more consistent than ethanol blending and has been maintained between 8 and 10 %v/v since then.

The figure below shows the volume of biodiesel blended in diesel since 2010. It can be observed that the biodiesel volume blended in diesel has complied with the biodiesel blend mandate in Colombia, considering that the B10 mandate has been implemented nationwide except for the provinces bordering Venezuela. Biodiesel blending in Colombia has more to do with the availability of biodiesel in the market than with fulfilling the mandate, since there has not been significant biodiesel trade in and from Colombia.

Biodiesel Blended in Diesel in Colombia, 2010-2018



Source: Mining and Energy Planning Unit, Fedebiocombustibles, SGS INSPIRE Compilation

With Resolution 40174 from February 24, 2019, the Ministry of Mines and Energy and the Ministry of Environment and Sustainable Development of Colombia increased the biodiesel blend mandate from B10 to B12 in the provinces of Nariño, Valle del Cauca, Cauca, Risaralda, Caldas, Quindío, Antioquia, Santander, Cesar, Bogotá, the center of the country and Llanos Orientales as of February 25, 2019. This Resolution applied until March 8, 2019 and was introduced mainly as a remedy to technical problems in the refinery of Barrancabermeja, property of Ecopetrol, which reduced the normal supply of diesel.

The government decided to increase the biodiesel blend permanently in Colombia. Furthermore, on June 6, 2019, a new bill was published by the Ministry of Mines and Energy, proposing to implement B12 in the aforementioned provinces permanently as of August 1, 2019. Vehicle associations complained about this governmental initiative, as it was not accompanied by a technical analysis on the impact of the increase in the biodiesel blend on vehicles.

However, Resolution 4 0730 from September 20, 2019, reduced the biodiesel blend mandate after palm oil and biodiesel producers' associations communicated to the Ministries of the difficulties they are encountering to supply the required biodiesel to fulfil the mandate due to tight palm oil supplies.

The government decided to cut the mandate to B2 from B12 for the remaining days of September and increase it steadily as of October, following the next schedule:

Timeline	Biodiesel blend mandate
Remaining of September when Resolution is passed	2 %v/v
October	6 %v/v
November	8 %v/v
December	10 %v/v

Source: Resolution 4 0730 from September 20, 2019



Fiscal Policies

On December 27, 2002, Article 477 of Colombia's [National Tax Statute](#), superseded by [Law 1819 of 2016](#), and Article 171 of [Law 1607 of 2012](#) exempted biodiesel from the value-added tax (VAT), and the global tax on diesel.

[Law 1819 from December 29, 2016](#), the last tax reform carried out in Colombia, implemented a carbon tax on fossil fuels, including oil derivatives and fossil gas derivatives used for energy purposes if they are used in combustion. DIAN, the Colombian Tax Authority, regulates taxes in Colombia.

The carbon tax considers a carbon dioxide (CO₂) emission factor for each fuel in volume (kg of CO₂ per Terajoule), according to the fuel volume or weight. The fee started at COP 15.000 (USD 4.4) per CO₂ ton, and the value per fuel unit of diesel started at COP 152 per gallon (USD 0.01 per liter). These values are updated every year. Biodiesel is exempt from the carbon tax. The figure below describes all taxes applied for diesel and biodiesel in Colombia.

Current Diesel and Biodiesel Tax Rates in Colombia, 2019

Tax	Diesel	Biodiesel	Regulation
Global Tax	Diesel: COP 503.71 per gallon (USD 0.13 per liter) as of February 2019 B2 diesel: COP 493.63 per gallon (USD 0.13 per liter) B4 diesel: COP 483.56 per gallon (USD 0.13 per liter) B8 diesel: COP 463.41 per gallon (USD 0.12 per liter) B10 diesel: COP 453.34 per gallon (USD 0.12 per liter)	Exempted	Law 1819 from December 29, 2016 Resolution 000009, January 2019
Value-added Tax	19% (Government has approved a reduction to 5%)	Exempted	National Development Plan 2018-2022
Carbon Tax	COP 152 per gallon (USD 0.01 per liter)	Exempted	Law 1819 from December 29, 2016 Resolution 000009, January 2019
Local Surcharge Fee	6% of the reference price. Reference price for October 2019: COP 6577 per gallon (USD 1.72 per liter)	There is not surcharge tax relief on biodiesel	Law 488 of 1998

Source: USDA Foreign Agriculture Service and Colombian Tax Authority (DIAN), SGS INSPIRE Compilation

Colombia's biodiesel policy favors palm oil 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 can produce at lower costs.



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.

Biodiesel Production and Consumption

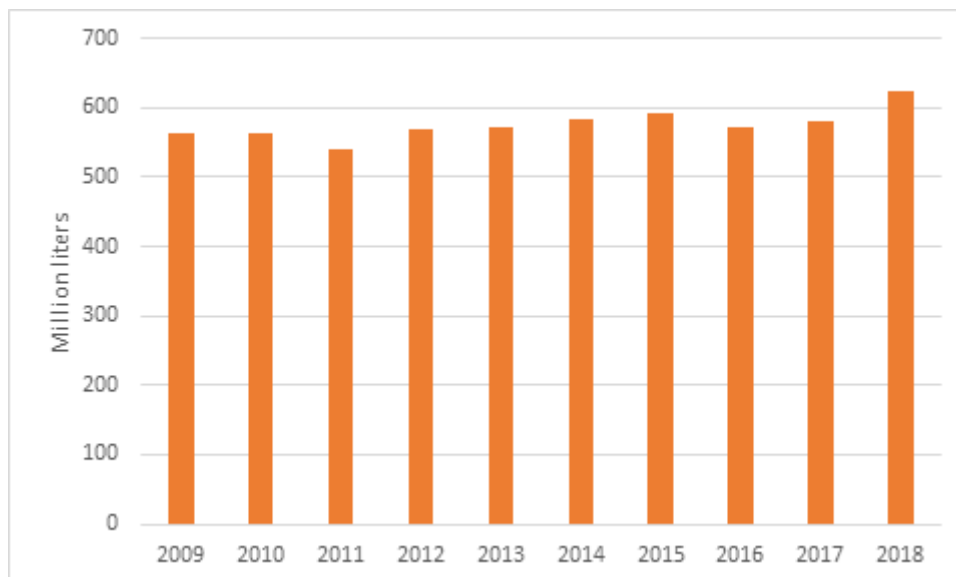
Diesel on the market contains 10% v/v biodiesel currently, in 2020.

Colombia uses 100% palm oil as feedstock for the production of biodiesel. There are 11 biodiesel plants in Colombia, with a total production capacity of 2.6 million liters per day. However, only nine are producing currently. The figure below depicts biodiesel production plants in Colombia and its production capacity.

Plant	Region	Biodiesel (l/day)
Biocombustibles Sostenibles del Caribe	Santa Marta, Magdalena	470,551
Oleoflores	Codazzi, Cesar	216,701
Romil de la Costa	Barranquilla, Atlántico	-
Biodiésel de la Costa	Gálapa, Atlántico	-
Odín Energy	Santa Marta, Magdalena	108,350
BioD	Facatativá	619,147
Ecodiesel Colombia	Barrancabermeja, Santander	356,009
Aceites Manuelita	San Carlos de Guaroa, Meta	371,488
Inversiones La Paz	San Carlos de Guaroa, Meta	216,701
ALPO	Barrancabermeja, Santander	37,149
Biocosta Green Energy	Santa Marta, Magdalena	216,701

Source: Fedebiocombustibles

Biodiesel Production in Colombia, 2009-2018

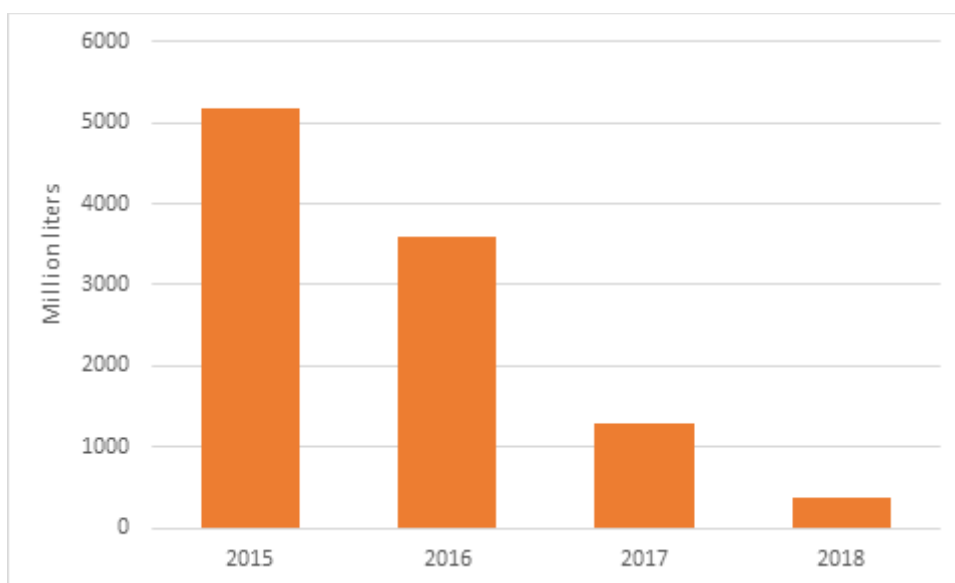


Source: Fedebiocombustibles



Biodiesel imports were needed when blending started in Colombia, however, in more recent years, production is virtually the same as consumption. In 2017, the Colombian government approved the ability for companies to import biodiesel without quotas or limits, however, the price for imported biodiesel disincentivizes its presence in the Colombian market. Currently, Colombia does not export nor import biodiesel.

Biodiesel Consumption in Colombia, 2009-2018



Source: Fedebiocombustibles

Comparison with Brazilian biodiesel market

The biodiesel market in Colombia is based on specific biodiesel mandates based on volumes, as Brazil. Furthermore, the targets increase based on a specific schedule, also as in Brazil.

There are no public auctions to supply biodiesel in the market in Colombia. There are not any direct incentives either, such as production subsidies or grants, to biofuel producers, but biodiesel is exempt from taxes.

The Government's biodiesel policy favors palm oil production as formulas are established to calculate the price of biofuels based on the opportunity cost of using these raw materials to supply other markets. In Brazil the prices are derived from the tender that takes place every two months.

Conclusions

The experience of the largest biodiesel producers and consumers in the world shows that a regulatory framework establishing a schedule of biodiesel blend mandates is a successful policy to introduce a biofuel in the market. There are two approaches to this: mandates by volume and by energy. Usually, mandates by volume are in place in biodiesel producing countries, where this industry is key to the economy, and mandates by energy are chosen in countries that have focused on reducing greenhouse gas (GHG) emissions from the fuel transportation pool.

The countries subject to study have used or are using fiscal policies to support the growth and maintenance of the biodiesel local industries. Most countries exempt biodiesel from taxes, others have implemented direct subsidies (most countries do not use this policy any longer) and other



countries regulate biodiesel prices. Germany, as an example, has phased-out all kinds of fiscal support on biodiesel to avoid overcompensation, after ensuring the industry was well-developed. Argentina regulates biodiesel prices, but it has proven an inefficient measure to the biodiesel industry, since the prices do not usually reflect the average producing costs and the market fluctuations.

Some countries have also a biodiesel quota system in place. The quota system can be perceived as an obligation incentive, since it aims at introducing given quantities of biodiesel in the market. The quota system offers long-term visibility to industries willing to produce biodiesel. In the case of a country with domestic biodiesel production, the quota system progress can consider national production and promote the domestic biodiesel industry.

In the EU, biodiesel market was boosted through fiscal support measures (excise duty reduction and/or subsidies for scaling up the capacity) combined with the mandatory targets expressed in volume and/or renewable energy share targets. The fiscal subsidies have been phased out in most of the EU countries nowadays as the land-based feedstock biodiesel production costs have considerably decreased and the EU has decided to promote waste and residue based biofuels rather than land-based feedstock biofuels to prevent indirect land use change. Biodiesel volume percentage mandates have been the best option to promote biodiesel blending in biodiesel producing countries. In the case of renewable energy share target, biodiesel must compete with bioethanol. Moreover, in Europe, strong biodiesel blending has been determined by dieselized vehicle fleet (light- and heavy-duty vehicles). Since diesel consumption is much larger than gasoline, fuel suppliers prefer blending biodiesel to meet the renewable energy share targets.

No country to the knowledge of SGS INSPIRE, except for Brazil, organizes bimonthly public auctions to place biodiesel in the market. Most countries have free-market rules for the supply and distribution of biodiesel, although some countries do not import biodiesel because it's now allowed or the regulation disincentivizes it, being Colombia or Indonesia an example of this. In this sense, we also find two types of countries: countries that protect the domestic biodiesel industry forbidding biodiesel imports, and other countries where locally produced and imported biodiesel has to comply with specific requirements (sustainability criteria) to be accounted toward the renewable energy share target, as most European countries.

In conclusion, countries have found different measures to develop their biodiesel industries, and their regulatory frameworks have evolved following the level of deployment of the markets. The majority of countries have policies based on incentives and free-market rules for the supply and distribution of biodiesel. A combination of mandates and fiscal exemptions to biodiesel has proven to work in mature biodiesel markets.