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Report Highlights:

Consumption mandates and fossil fuel demand continue to define the size of the Spanish biofuels market. Since the second quarter of 2020, COVID-19 related movement restrictions lowered demand for conventional fuels. Shifting consumer preferences for modes of transportation are also altering fuel consumption dynamics. Spain's reduced biofuels market is anticipated to take a toll in domestic production and imports of biodiesel. Conversely, the bioethanol industry has managed to partially offset the drop in demand by supplying ethanol for the production of disinfectants.

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THIS REPORT CONTAINS ASSESSMENTS OF COMMODITY AND TRADE ISSUES MADE BY USDA STAFF
AND NOT NECESSARILY STATEMENTS OF OFFICIAL U.S. GOVERNMENT POLICY

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Disclaimer:

This report presents the situation and outlook for biofuels in Spain. This report presents the views of the authors and does not reflect the official views of the U.S. Department of Agriculture (USDA). The data are not official USDA data. Official government statistics on biofuels are not available in many instances. Spain, as a member of the European Union (EU), conforms to EU directives and regulations on biofuels. It is therefore recommended that this report is read in conjunction with the [EU-28 consolidated Biofuels Report 2020](#).

Executive Summary

With all other incentives phased out, biofuel consumption in Spain is solely driven by mandates. The consumption targets and demand for fossil fuel define the size of Spanish biofuel market.

COVID-19 related movement restrictions imposed during the second quarter of 2020 reduced expectations for fossil fuel consumption. Initially, it resulted in a more significant decline in gasoline numbers compared to diesel. Gasoline is mainly used on private vehicles, while the use of diesel is largely used in public transportation and transport of goods, which continued operations during lockdown. In 2020, Spanish consumption of fossil fuels will be contingent upon a few factors such as the evolution of the economic activity and consumers' transport preferences.

The Renewable Energy directive (RED) II sent a signal to maximize High Indirect Land Use Change (ILUC) biofuels use in 2019, to keep options open for 2023 when the cap on high ILUC becomes effective. Given Spain's HVO strong reliance on palm oil as feedstock, the industry will face the limits imposed to this type of raw material. However, the anticipated growth in palm oil use was nullified by the enforcement of double counting since the last quarter of 2019. This enforcement triggered the use of double-counting eligible biofuels, some of them obtained from palm by-products such as EFB (Empty Fruit Bunches).

Post anticipated an increase in consumption of virgin oils-based Fatty Acid Methyl Ester (FAME) in response to RED II incentive to set the baseline for the 2020 - 2030 period. The slowdown in activity in hotel, restaurants, and institutions (HRI) related to COVID-19 reduced the availability of UCOs (Used Cooking Oils), favoring crude oils participation in the biodiesel mix. However, soybean oil exports to other EU MS and North African countries have peaked upward in 2020, reflective of the lower in-country biodiesel production. In 2019, FAME imports and exports remained strong. Double counting implementation drove domestic production down, as the higher mandate was met with lower volumetric needs. In 2020, the smaller biodiesel market size along with the introduction of duties on Indonesian biodiesel is anticipated to reduce imported volumes, favoring the competitiveness of domestic biodiesel.

As far as the bioethanol market is concerned, trade actions imposed at the EU level continue to limit bioethanol imports from suppliers outside the EU. Despite movement restrictions, Spain-based bioethanol facilities have managed to keep a large rate of capacity utilization, as they started delivering ethanol for sanitary purposes. The introduction of E10 non-labelled blend since 2020 is yet another factor encouraging mandate compliance through gasoline blends.

Looking ahead, RED II transposal to Spanish law will need to establish the consumption mandates from 2021 to 2030. According to the National Integrated Plan for Climate and Energy (PNIEC), biofuels consumption mandates will play a pivotal role along with the electrification of terrestrial transport. The introduction of aviation mandates to meet the 28 percent national target will also play a role. However, because of the progressive electrification and decarbonization of transport, the projected volumes of biofuel needed to fulfil the mandates may be lower than the current levels of consumption. Conversely, the post-COVID19 economic situation may dampen the anticipated switch from an internal combustion-based fleet to an electric fleet, and the installation of charging stations.

Regulatory Framework affecting Spain

Currently, the EU policy for renewable energy is set in the in RED as a part of the EU Energy and Climate Change Package (CCP), and the 2009 Fuel Quality Directive (FQD). This Package is applicable until December 31, 2020. On January 1, 2021, RED II will enter into force. Spain is a member of the European Union (EU) and follows EU directives and regulations. This section focuses on Spain's implementation of these rules.

[RED II](#) transposal to Spanish law is pending but open for public consultation at the [Ministry for Ecological Transition and Demographic Challenge website](#). Spain's State of Alarm Declaration in response to COVID-19 imposed a moratorium in administrative deadlines from March 15, 2020 to June 1, 2020. This may ultimately delay regulatory developments at the Member State level.

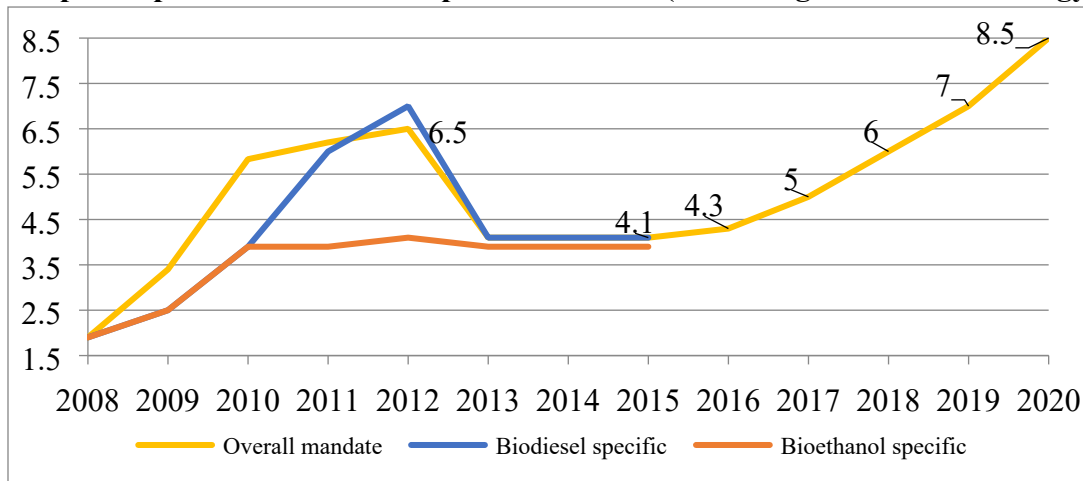
Biofuel Targets and Compliance

With all other incentives phased out¹, currently, domestic biofuel consumption is solely driven by mandates. RED I established a 10 percent renewable energy use target for total transport by 2020. Consumption mandates followed a steady upward trend until 2013, when the downward revision of mandates introduced by [Law 11/2013](#) reduced Spain's biofuels market size. [Royal Decree 1085/2015](#) eliminated specific targets for biodiesel and bioethanol since 2016 and slightly increased the consumption targets for the 2016-2020 period (See **Graph 1**).

¹ Hydrocarbon tax exemption phased-out in 2013. Since 2016 there have not been any production quotas in place.

On October 5, 2015, [Directive 1513/2015](#) introduced a non-binding 0.5 percent national target for advanced (non-food) biofuels. At the national level, [Royal Decree 235/2018](#) amended Royal Decree 1597/2011 and introduced an advanced biofuels target of 0.1 percent in energy content for 2020. For more information see Section on **Feedstock Related Provisions**). Electricity from renewable sources used for electric road vehicles or rail transport would cover the gap between the 8.5 percent biofuel consumption mandate and the 10 percent target for 2020.

Graph 1. Spain Biofuel Consumption Mandates (Percentage in terms of Energy)



Source: FAS Madrid based on Ministerial Order ICT/2877/2008. Ministry of Energy, Tourism and Digital Agenda and Royal Decrees 1738/2010 and 459/2011 and Royal Decree-Law 4/2013 and Law 11/2013

* According to MINETAD Resolution dated January 7th, 2011.

Royal Decree 1085/2015 on biofuels promotion.

For more information about biofuels mandates and how these are structured in other EU Member States (MS), please see GAIN Report [E42020-0025](#).

On December 21 2018, RED II ([Directive 2018/2001](#)) was published as part of the [Clean Energy for All Europeans package](#). This set an EU binding renewable energy target of 32 percent across all energy sectors by 2030, with an upward revision clause to be revisited in 2023. At the Member States' level, the 2030 target for renewable energy use the transport sector was set at 14 percent. In addition to liquid biofuels, biogas and renewable electricity will also be counted towards this target. However, it should be noted that this 14 percent target for renewable energy in transport will be met using multipliers. Hence, actual performance (without the use of multipliers) will fall short of 14 percent in most MS, if as expected, double counting is widely used.

Feedstock Related Provisions

Other governing regulations, affecting the biofuel sector and feedstock use include sustainability requirements implemented since 2016 and full enforcement has been in place since 2019. Double counting provision was transposed to national law and has been fully enforced since the last quarter of 2019.

Double counting: According to the Renewable Energy Directive 2009/28/EC, second generation biofuels will get double credit. The ILUC Directive included a New Annex listing raw materials that count double against the consumption mandates. The [Royal Decree 235/2018 amending Royal Decree 1597/2011](#) defines categories of raw materials eligible as advanced for double counting purposes classified in two groups (See **Table 1**). The Decree also sets January 1, 2019 as the beginning of the implementation of double counting in Spain. Nevertheless, the double counting was only fully enforced during the fourth quarter of 2019 once detailed guidelines were issued by a [CNMC release](#) as [amended](#).

Table 1. Advanced Biofuels and Double Counting Raw Materials²

Group	Raw Materials	Double Counting	Advanced
A	Algae, bacteria, Organic Fraction of Municipal Waste (OFMSW), industrial residues not fit for food or feed use, forest residues and other cellulosic or lignocellulosic material, brown grease, straw, cobs cleaned of kernels of corn, husks, animal manure, glycerin, tall oil pitch, palm oil mill effluent (POME) and empty palm fruit bunches (EFB), bagasse, grape marcs, wine lees, nut shells, and renewable liquid and gaseous fuels of non-biological origin.	YES	YES
B	Used Cooking Oils (UCO) and Animal Fats (Categories I and II according to Regulation (EC) 1096/2009)	YES	NO

Source: FAS Madrid based on Royal Decree 235/2018.

Double counting along with renewable electricity will facilitate achieving the 2020 binding target of 10 percent in the transport sector.

High-risk ILUC biofuels: RED II sets caps for high-risk ILUC biofuels at 2019 consumption levels thru 2023, it then phases out its use by 2030. [Delegated Act 2019/807](#) classified palm oil as High-ILUC risk feedstock. However, palm oil producers may opt to certify their feedstock as low-risk ILUC to keep their presence in the EU market beyond 2023.

² In the case of blends or different raw materials, only the share that is produced out of one of the listed products would count double. To be granted with the double credit, origin of the feedstock must be properly documented.

Cap on food-based biofuels: [Directive 1513/2015](#), also known as the ILUC directive, amended RED I and FQD, and was transposed to Spanish law by [Royal Decree 1085/2015](#) and then by [Royal Decree 235/2018](#). The ILUC directive established a 7 percent cap (energy basis) on crop-based biofuels. This limits the consumption of first generation or conventional biofuels to the wider 10 percent target for biofuels in MS transportation fuel in place today. Additionally, RED II limits the consumption of crop-based biofuels for 2020-2030 at the consumption level registered by each Member State in 2020. There is an additional allowance of 1 percentage point from 2020 levels up to the overall cap of 7 percent.

“Advanced” non-food-based biofuels targets: The ILUC Directive set a 0.5 percent non-mandatory national target for advanced biofuels in 2020. In Spain, according to [Royal Decree 1085/2015](#), the consumption target for advanced biofuels will be defined. [Royal Decree 235/2018 amending Royal Decree 1597/2011](#) introduced an advanced biofuels target of 0.1 percent in energy content for 2020. RED II set a climbing target of 0.2 percent in 2022, 1 percent by 2025, and 3.5 percent by 2030 for advanced, non-food biofuels. According to RED II, advanced biofuels will be double counted towards both the 3.5 percent target and towards the 14 percent target. All EU legislated targets are calculated on an energy basis and are not volumetric. At the same time, RED II limits the consumption of advanced biofuels made from waste fats and oils by 2030 to 1.7 percent (energy basis) (Annex IX, Part B in RED II: UCOs and some categories of Animal Fats). However, MS can modify this limit if justified by considering the availability of feedstocks.

[Sustainability](#)

For sustainability certification purposes, large and medium size Spanish biodiesel producers opted for EC approved company schemes³ as they rely heavily on imported raw materials, which would fall out of the scope of a National Scheme. On January 1, 2016, a transitory period started to allow for the progressive adaptation of the Sustainability verification under Spain’s National Scheme. During this transitory period, only sustainable biofuels were eligible for national mandate compliance, no verification was carried out under the national scheme and blenders could accredit sustainability through private schemes, which is the most extended option, or through a Responsible Declaration. Obligated parties must give information on the type of biofuel, origin, feedstock, origin, GHG reduction and soil use. Since January 1, 2019, Responsible Declarations were replaced by Sustainability Certification Reports, issued by a verification entity. This piece of regulation was fully enforced in the fourth quarter of 2019, once CNMC guidelines were issued. Implementation details are available in **Table 2**.

³ There are currently 17 certification schemes [recognized](#) by the EU.

Table 2. Sustainability Implementation Calendar

Date	Regulation	Comments	Implications
January 2016	-	Beginning of a transitory period (to allow for the progressive adaptation of the verification system)	Sustainability compliance is accredited using private schemes or Responsible Declaration .
January 2019	Royal Decree 235/2018 amending Royal Decree 1597/2011	Sustainability verification system fully in place . Full implementation since Q4 2019.	Sustainability compliance is accredited using private schemes or Sustainability Certification Reports issued by a Verification Entity.

Source: FAS Madrid

On January 29, 2019, the European Commission recognized the United Soybean Export Council Soybean Sustainability Assurance Scheme (USSEC SSAP-RED) as compatible with EU Sustainability Standards. This opened import opportunities for a few U.S. soybean vessels under SSAP-RED. The USSEC SSAP-RED will apply until June 30, 2021. U.S. industry' efforts are now focused on documenting the reduction achieved through U.S. soy production to meet the 50 percent threshold in 2020. For additional information on USSEC SSAP RED approval see GAIN Report: [EU Recognizes U.S. Soybean Industry Sustainability Scheme](#).

FQD: Technical fuel specifications in place

The EU Fuel Quality [Directive 2009/30](#) (FQD) enabled fuel operators to market non-labelled biofuel blends (B7 diesel and E10 gasoline). This piece of regulation was transposed into national regulation by [Royal Decree 1088/2010](#), which increased the biodiesel content allowed from five to seven percent and the bioethanol content permitted from five to ten percent in terms of volume. HVO has no blend limit and is fully substitutable if the EU fuel specifications are met. Blends with volumetric biodiesel content over seven percent, or volumetric bioethanol content over ten percent, or volumetric bioethanol content over five percent, and over 2.7 of oxygen content in terms of mass, must be labeled indicating the biofuel content.

In the case of gasoline blends, the supply of at least the lowest octane index gasoline with less than five percent bioethanol in terms of volume, and less than 2.7 percent of oxygen in terms of mass was mandatory for all petrol stations. This protected the oldest vehicles unable to operate on higher bioethanol contents. This type of gasoline was known as "protective petrol." The requirement of supplying protective petrol was extended on a yearly basis⁴, until it expired in late 2019. This allowed petrol stations to market E10 in all their gasoline pumps since January 2020.

⁴ This requirement's last extension was enforced by [Ministerial Order TEC/1367/2018](#).

Related Provisions for Greenhouse Gas Emissions

To qualify for RED I and FQD targets, biofuels must achieve minimum greenhouse gas (GHG) savings over fossil fuels. According to ILUC Directive, GHG emission saving from the use of biofuels must be:

Type of facility	Plant operation start date	Transport biofuels
Old installations	Before January 2017 ⁵	35 percent until December 31 st , 2017 and 50 percent since January 1 st , 2018
New installations	After January 2017	60 percent

RED II introduces new GHG emission savings criteria that biofuels used in transport must comply with to be counted towards the overall 14 percent target. Minimum GHG emission saving thresholds are as follows:

Plant operation start date	Transport biofuels	Transport renewable fuels of non-biological origin
Before October 2015 ⁶	50 percent (as in RED I)	-
After October 2015	60 percent (as in RED I)	-
After January 2021	65 percent (vs 50 percent in RED I)	70 percent
After January 2026	65 percent (vs 50 percent in RED I)	70 percent

The degree of GHG Emissions reduction in Spain are available in **Table 3** below:

Table 3. GHG Reduction (Percent)

Year	2015	2016	2017	2018	2019
Biodiesel	50	53	58	58	50
HVO	44	54	59	62	44
Bioethanol	73	64	70	66	73
Total Reduction	54	55	60	60	64
GHG Reduction Requirement	35	35	35	50	50

Source: CNMC.

FQD established that all fuel suppliers must meet a 6 percent reduction, compared to the base year of 2010, in GHG emissions by 2020 across all fuel categories supplied to the market.

⁵ This is the case of all Spain's biofuel plants.

[Other Policy Developments Affecting Spain's Biofuel Sector](#)

On March 2019, the Spanish Ministry for Ecological Transition submitted an update of Spain's Integral National Plan for Energy and Climate (PNIEC). The [plan](#) (in Spanish only) provides several pathways for the different sectors of the economy. The PNIEC aims for a 28 percent share in transport for 2030, well beyond the 14 percent required at the EU level. To this end, biofuels will play a pivotal role along with electrification of transport, via consumption mandates in terrestrial transport, labelled blends, and the introduction of mandates in aviation. Despite specific support for second generation fuels projected in the PNIEC, in the post-COVID-19 scenario, private investment incentives seem less certain. Likewise, the post COVID-19 economic situation may slowdown the anticipated switch to an electric fleet and the installation of charging stations.

[RED II](#) transposal to Spanish law is pending but open for public consultation in the [Ministry for Ecological Transition and Demographic Challenge website](#). Spain's State of Alarm Declaration in response to COVID-19 imposed a moratorium in administrative deadlines between March 15, 2020 and June 1, 2020. This may ultimately have delayed regulatory developments at the Member State level.

Spain's Gasoline and Road Diesel Consumption

As in most of the EU Member States, diesel is the main transport fuel in Spain. While the average EU diesel-gasoline ratio is 2:1, in Spain is 3:1. This means that ethanol's potential contribution to meet the renewable energy consumption targets is much less than is the case of the EU-wide fuel market. During the 2007-2013 period consumption of fossil fuels declined. However, since 2014, consumption has steadily recovered. The recovery of gasoil consumption started in 2013 and showed signs of stabilizing in 2019 (**Graph 2**).

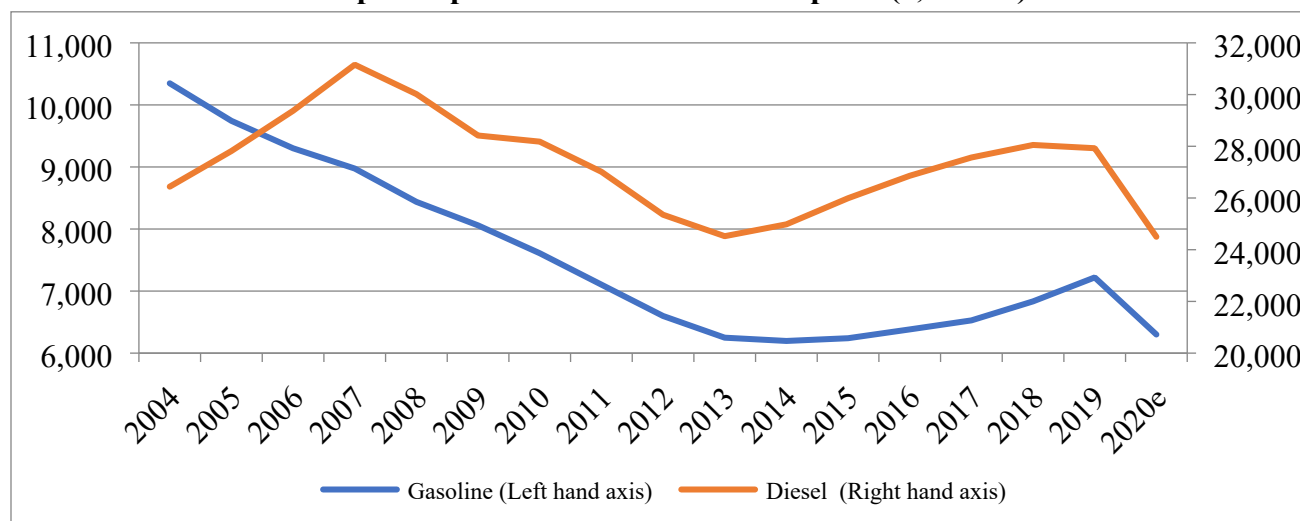
Movement restrictions in response to COVID-19 during the second quarter of 2020, lowered fossil fuels demand, especially in the case of light-duty vehicles. As consequence, data available for 2020 indicate that the movement restriction measures caused a more significant decline in gasoline numbers, as this fuel is mainly used for light-duty private vehicles. The impact was less in diesel fuel (See **Table 4**) largely used in heavy-duty vehicles used for public transportation and transport of goods, activities which were considered essential during lockdown. Considering 2020 as a whole, the evolution of fossil fuels consumption in Spain will depend on the post-crisis progress of the economic activity. Changes in consumer preference for modes of transportation will also play a role, such as increased preference for light-duty gasoline-based individual vehicles to the detriment of diesel-based public transport, or reduced use of kerosene-dependent flights.

Table 4. Variations of Fuel Deliveries. Comparison 2019-2020 (Percentage)

Date	March ⁶	April	May	June
Gasoline	-35	-78	-58	-25
Diesel	-14	-43	-32	-20

Source: CLH

Graph 2. Spain's Fossil Fuel Consumption (1,000 m³)



Source: FAS Madrid based in CORES data.

Biodiesel and Renewable Diesel

Installed Capacity

Biodiesel production capacity rapidly expanded until 2009, when poor market conditions and price volatility reduced capacity use and slowed down the pace of investments. Since 2013, installed capacity continues to decline (**Graph 3**). According to industry sources, less than 20 biodiesel plants are operative today. Biodiesel installed capacity is around 3.6 million m³. Even in years when production reached high levels, half of the capacity was still running idle.

Advanced Biofuels

Since 2011, Spain's advanced biofuels production capacity consists of HVO co-processing by petrol companies in seven refineries. The product obtained is a fuel indistinguishable from fossil diesel and hence not subject to the FQD blending limits. The annual capacity is 945 million litres and virtually all the HVO is produced out of refined palm oil. Repsol recently announced their intention to build a hydrogen-based decarbonization project near the port of Bilbao.

⁶ State of Alarm restriction of movements was enforced on March 15, 2020.

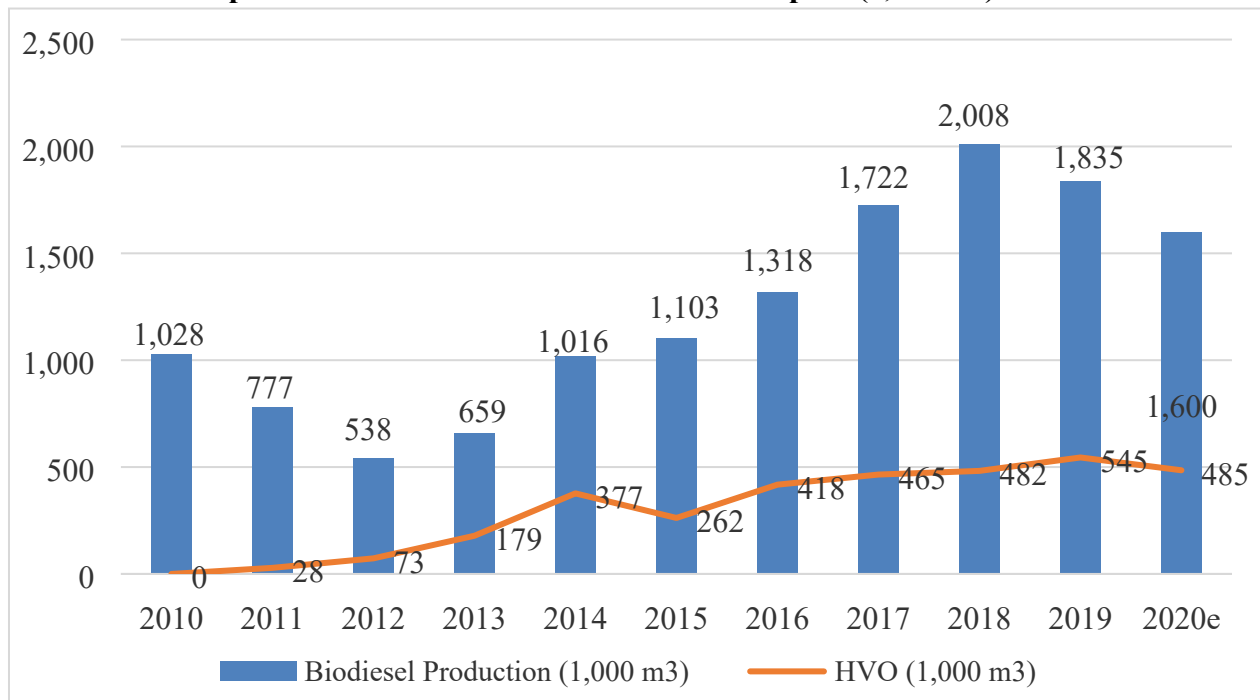
As the EC Report on [Research and innovation perspective of the mid-and long-term potential for advanced biofuels in Europe](#) suggests, targeted policies are crucial to unlock the potential of Spain’s advanced biofuels. Industry observers remark that these policies should address the substantial investments needed for the market transition to large-scale advanced biofuels production.

Production

Spain is among the EU’s three largest producers of biodiesel (after Germany and France.) Biodiesel production is a function of the mandate-driven demand, import competition and regulatory signals. The fossil fuel consumption recovery since 2014, the growth mandates since 2016, and the duty protection that prevailed until September 2017 encouraged higher production levels. The surge in biodiesel imports from Argentina and Indonesia’s duties phase-out had little impact in domestic biodiesel production in 2018. Production data for 2019 show an eight percent production decline. This decline can be attributed to a smaller size biodiesel market due to the double counting enforcement. With the exception of 2015, Spanish HVO production has increased steadily since 2011(**Graph 4**).

In 2020, COVID-19 is anticipated to curb renewable fuel production in Spain. The extent of the decline will depend on the evolution of economic activity in Spain and EU export markets post-lockdown. Other determining factors will be import competition, as well as, consumer choices regarding modes of transportation.

Graph 4. Biodiesel and HVO Production in Spain (1,000 m³)



Source: CNMC data and FAS Madrid estimates.

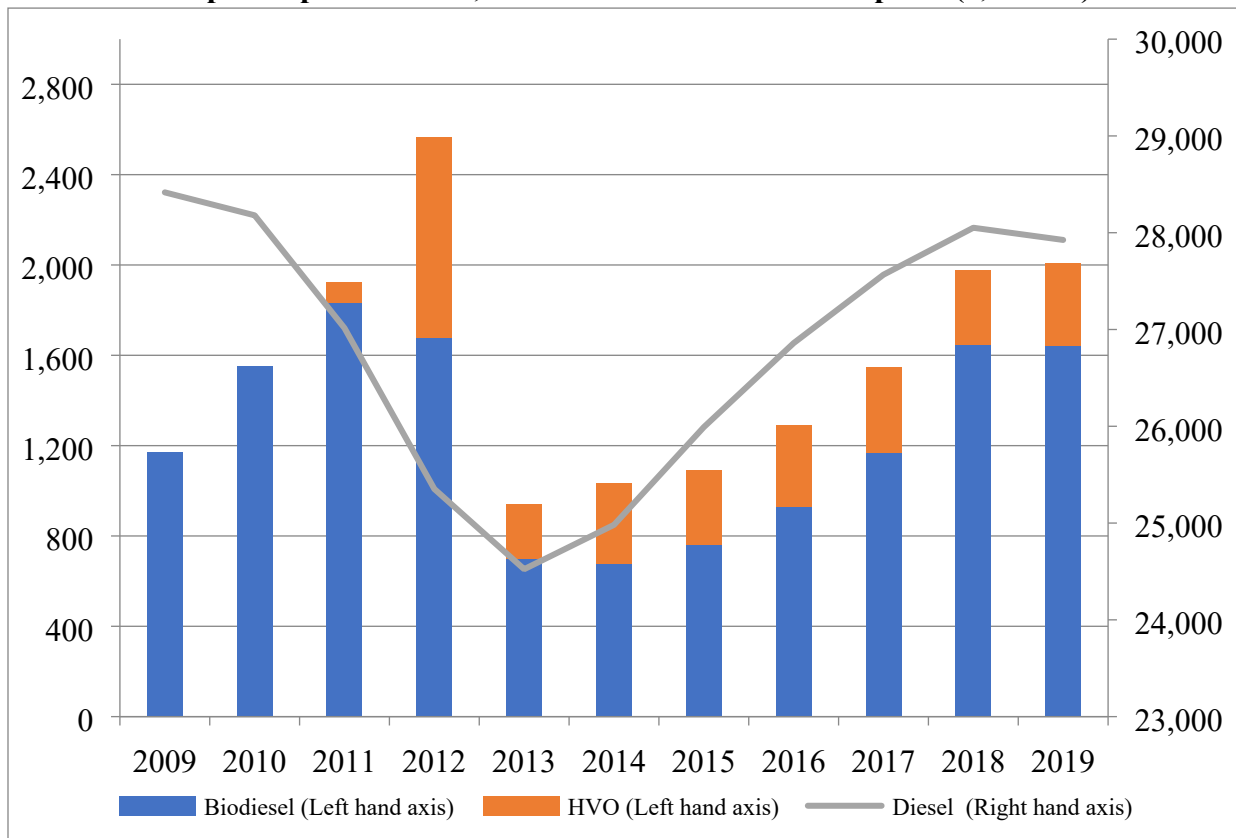
Consumption

Consumption mandates together with fuel pool demand define the size of the Spanish biofuels market. Biodiesel is by far the most important biofuel consumed in Spain and represents nearly 80 percent of the Spanish transport biofuels market on a straight volume basis. Most of the biodiesel is placed in the market in non-labeled blends below B7. B100 consumption is small and follows a shrinking trend. Fewer than 150 petrol stations sell labeled and pure biodiesel.

In 2019, biodiesel was the main biofuel consumed in Spain and representing 73 percent of the total liquid biofuels' consumption in transport. HVO and bioethanol accounted for 16 and 11 percent of the country's biofuel consumption, respectively (**Graph 5** and **Graph 12**).

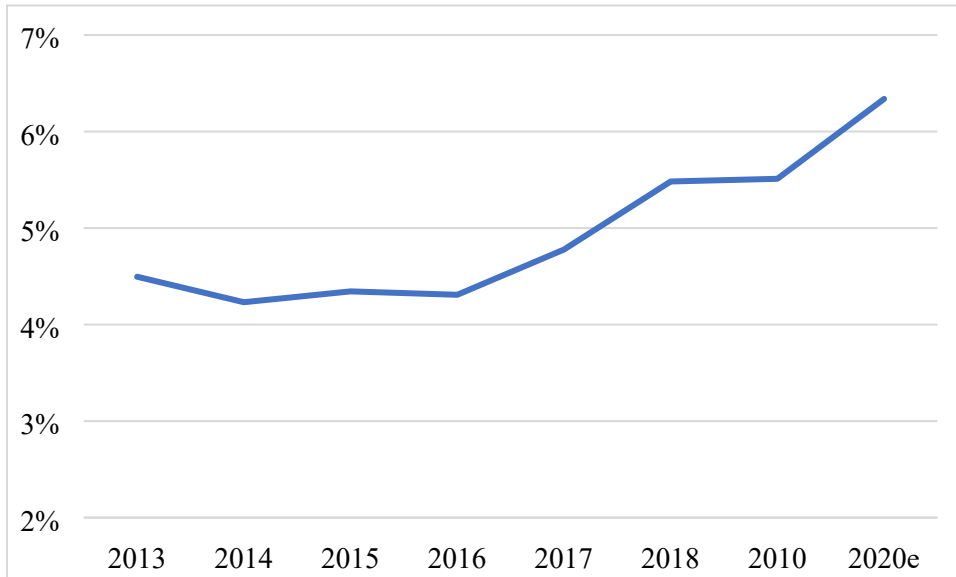
The combination of a growing diesel pool since 2014, and increasing mandates since 2016, has resulted in larger biodiesel consumption until 2019. During the last quarter of 2019, the implementation of double counting provoked a decline of biodiesel sales (**Graph 5**) and stabilized blending rates (**Graph 6**). Conversely, in 2019, HVO consumption maintained its rate of growth (See **Graph 5**). Industry sources agree that a reduction in domestic sales will take place in 2020.

Graph 5. Spain's Diesel, Biodiesel and HVO Consumption (1,000 m³)*



Source: FAS Madrid estimates based on CORES and CNMC data.

Graph 6. Biodiesel Blending Rate (Percentage)

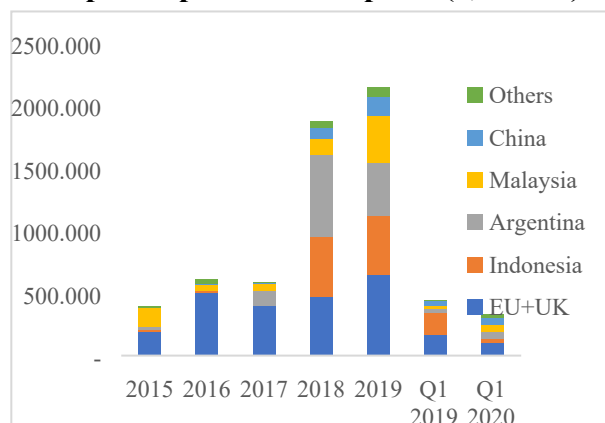


Source: FAS Madrid estimates based on CORES data.

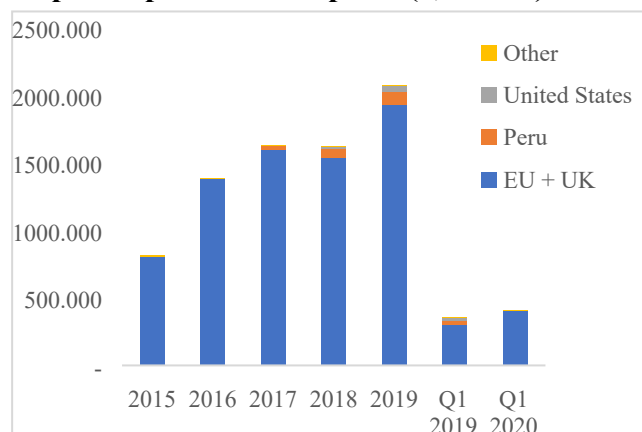
Trade

Since 2008, biodiesel imports represented a significant share of the mandate driven internal demand. In 2017, when duties phased-out, Argentina resumed biodiesel exports to the EU-28. In 2018 and 2019, Indonesia and Malaysia respectively followed suit (See **Graph 7**). Despite the increased third countries competition, in 2018, Spain managed to switch from being a net FAME importer to a net exporter to the EU (to countries such as Italy and France) but also with some occasional sales to non-EU countries such as Peru or the United States (**Graph 8**). Until 2019, in the absence of domestic enforcement of double counting, the large majority of double counting eligible biodiesel was exported to other EU Member States where double counting was fully in place. In 2019, both imports and exports of B100 continued expanding. The EU imposed countervailing duties on imports of biodiesel from Indonesia in December 2019 ([Implementing Regulation 2019/2092](#)). In 2020, the smaller biodiesel market along with the introduction of duties on Indonesian biodiesel is anticipated to reduce import volumes, increasing market opportunities for domestic biodiesel.

Graph 7. Spain B100 Imports (1,000 m³)



Graph 8. Spain B100 Exports (1,000 m³)



Source: Trade Data Monitor, LLC and FAS Madrid estimates based on HS Code 38260010.

In 2016 Spain became a net HVO exporter (**Table 5**). The increase in HVO production has allowed to meet Spain’s growing demand and expand its presence in export markets 2019.

Table 5. Spain’s HVO Trade (1,000 m³)

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019
Imports (1,000 m³)	103	808	52	8	72	0	0	0	0
Exports (1,000 m³)	0	2	2	0	24	57	73	100	175

Source: CNMC.

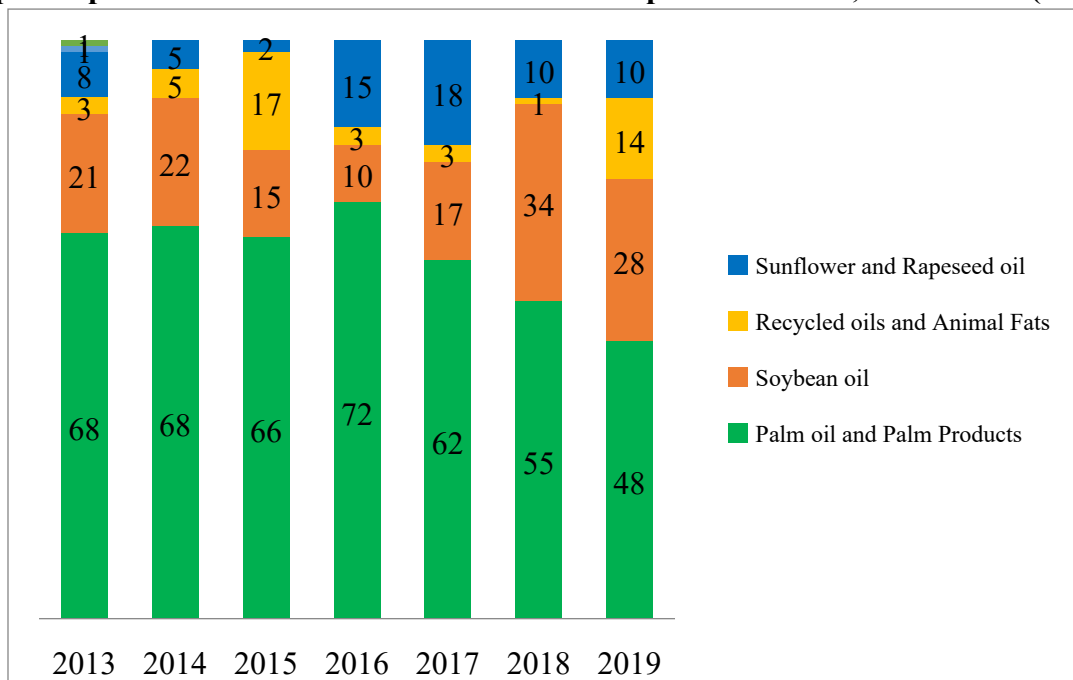
Feedstocks

The Spanish biodiesel and renewable diesel sector is heavily reliant on imported raw materials. Domestic oilseed production, essentially limited to olive oil and sunflower oil, is used almost exclusively in the food market. Other than this, the in-country supply for biodiesel production is limited to Animal Fats and UCOs. In 2020, with the slowdown in HRI activity, animal fats and UCOs became increasingly difficult to procure.

In the absence of official data on raw materials for biofuels produced in Spain, **Graph 9** shows information on biodiesel consumed in Spain. The surge in Argentinean biodiesel imports since the last four months of 2017 resulted in an increase of the in-country sales of soybean-based biodiesel (**Graph 9**). Resumption of Indonesian exports to Spain in 2018 resulted in an increase of palm oil-based biodiesel use. In addition, the implementation of double counting triggered Recycled Oils and Animal

Fat biodiesel consumption. The higher iodine number permitted⁷ in Spain allows for an intensive use of palm oil and soybean in biodiesel production for domestic consumption.

Graph 9. Spain’s Biodiesel and HVO Marketed in Spain Feedstock, 2012 - 2019 (Percent)



Source: FAS Madrid based on CNMC data.

Palm oil: Palm oil has traditionally been the dominant biodiesel feedstock in Spain, the raw material for virtually all HVO in-country production. Spain-based biodiesel plants can switch between processing refined or crude palm oil. In the case of HVO operations, they rely on refined palm oil for their processing. **Table 6** shows how total (refined or not depending on its price competitiveness) palm oil imports have registered a steady growth over the past 5 years in order to supply the industry’s demand.

Table 6. Spain’s Palm Oil Imports (1,000 MT)⁸

Type of Oil	2014	2015	2016	2017	2018	2019
Palm Oil	1,300	1,275	1,496	1,903	1,933	1,986

Source: Trade Data Monitor, LLC and FAS Madrid estimates on CY basis.

RED II sets 2019 usage level of High ILUC biofuels as the consumption limit until 2023 before phasing-out. This provision sent a signal to maximize High ILUC biofuels use in 2019 use in order to keep options open for 2023 when the cap becomes effective. Data show how palm oil imports did not grow, although they remained strong in 2019. The anticipated growth in palm oil use was negated by the

⁷ Iodine number for Spain is 140 g/mg, as defined in [Royal Decree 61/2006](#), Article 8.3 as opposed to the 120 g/mg established by EN14214.

enforcement of double counting, which triggered the use of double-counting eligible biofuels, including palm EFB (Empty Fruit Bunches).

Virgin oils overview: Soybean oil is the second largest feedstock used in biodiesel production in Spain. Soybean crushing capacity in Spain amounts to 3.5 million metric tons of beans and consists in four processing plants managed by two companies located in the ports of Barcelona (two plants), Bilbao and Cartagena. Crushers tend to use installed capacity at a high level in order to ensure assets optimization. Average annual domestic soybean oil extraction amounts to 550 thousand MT. The biodiesel sector’s demand for soybean oil contributes to reduce the exportable supply and improve crushers’ margins.

With virtually no other market than the biofuel outlet, most of the domestically extracted soybean oil is exported to third countries (**Table 7**). Except for 2018, when soybean oil exports grew, the decline in soybean oil exports over the past six years reflects greater opportunities for this type of oil in the biodiesel outlet. In 2019, availability of U.S. sustainable beans opened import opportunities in Spain for a few U.S. soybean vessels under SSAP-RED. U.S. industry’ efforts are now focused on documenting a specific pathway that proves their GHG reduction⁸ compliance with the 50 percent reduction requirement. Data available for the first four months of 2020 show a resumption of Spain’s soybean oil exports to other EU MS and North African countries. This reflects a lower domestic biodiesel production.

Table 7. Spain’s Soybean Oil Exports (1,000 MT)⁸

Type of Oil	2014	2015	2016	2017	2018	2019	2020e
Soybean Oil	475	412	324	298	361	306	365

Source: Trade Data Monitor, LLC and FAS Madrid estimates on CY basis.

UCOs overview: Spain biodiesel plants import UCO for their processes (**Table 8**). UCO imports grew significantly in 2019, coinciding with the country’s implementation of double counting.

Table 8. Spain’s UCOs Imports (1,000 MT)⁸

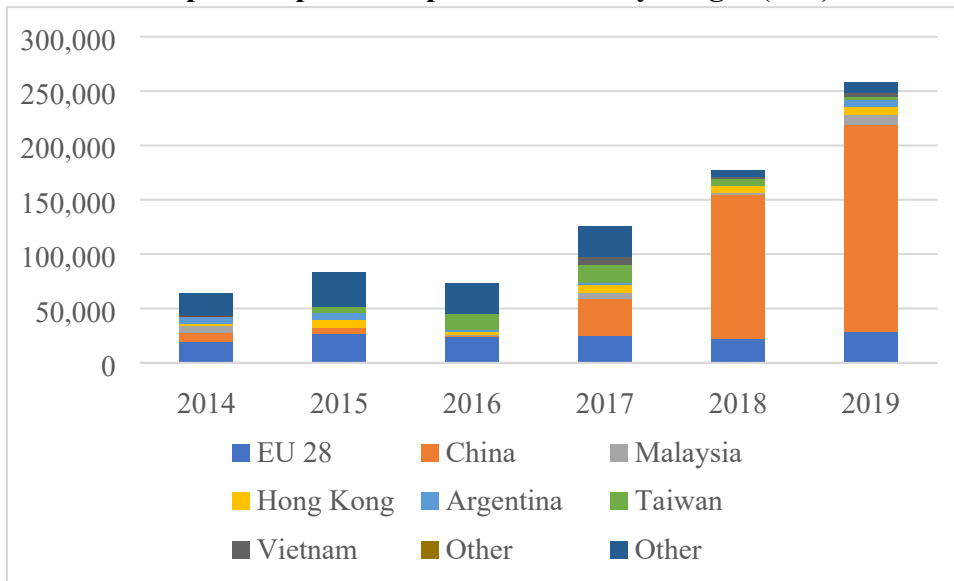
Type of Oil	2014	2015	2016	2017	2018	2019
UCO	64	83	73	125	177	258

Source: Trade Data Monitor, LLC and FAS Madrid estimates on CY basis.

China and Southeast Asian countries are the main non-EU suppliers of UCOs to Spain. Since 2017, most of the UCOs used in biodiesel consumed in Spain originated from China (**Graph 10**).

⁸ The default GHG emission saving for soybeans only accounts for 31 percent.

Graph 11. Spain's Imports of UCO by Origin (MT) ⁹



Source: FAS Madrid based on Trade Data Monitor, LLC data on CY basis.

Based on the profile of raw materials marketed for biofuels, the double counting enforcement helped the blenders in Spain to operate well below the 7 percent cap limit (energy basis) since 2019.

In 2020, the slowdown of HRI activity related to COVID-19 reduced the availability of UCOs, diminishing its contribution in the biodiesel mix, despite the double counting incentive. Looking ahead, the 1.7 percent cap in terms of energy introduced for the consumption of advanced biofuels out of waste fats and oils in 2030 (See **Regulatory Framework -Feedstock Related Provisions** Section) may lower the importance of UCOs in the Spanish biodiesel mix, if no exceptions is granted at the national level.

⁹ UCO trade data based on HS Code 15180095 (Inedible mixtures or preparations `yellow grease` of animal or of animal and vegetable fats and oils and their fractions). Hence it does not only include UCO, but also other products.

Bioethanol

Installed Capacity

The domestic installed bioethanol production capacity slightly exceeds domestic demand (**Table 9**).

Table 9. Spain's Bioethanol Plants

Plant	Location	Company	Bioethanol Prod. Capacity	DDG (MT)	Grain consumption (MT)	Start of Operation
			(MT)			
Ecocarburantes Españoles	Cartagena (Murcia)	Vertex	100,000	110,000	300,000	2000
Bioetanol Galicia	Texeiro (La Coruña)	Vertex	145,000	130,000	340,000	2002
Biocarburantes Castilla y León	Babilafuente (Salamanca)	Vertex	175,000	120,000	585,000	2006
				-	25,000 (Urban Solid Waste)	2013
Bioetanol de la Mancha	Alcazar de San Juan (Ciudad Real)	Altosa	35,000	-	None. Operates on wine alcohol	2006
Total			389,000	360,000	1,225,000	-

Source: FAS Madrid and Industry Sources.

**Not included in total capacity.*

The production of the inland plant (Babilafuente) is intended for direct blending, which is still a relatively small market in Spain, and consequently, a large share of production of this plant is exported to other European Member States. The plants in port locations supply fuel refineries (La Coruña, Cartagena) with ethanol intended to ETBE production for the domestic and/or export markets. Since 2012, bioethanol produced out of residues from winemaking (wine pomace and lees) is eligible for double counting in other European Member States, a large share of wine lees-based bioethanol output goes to other European countries such as Italy, the United Kingdom or Portugal where double counting is in place.

Advanced Biofuels

Advanced bioethanol production in Spain is limited. With the exception bioethanol produced out of residues from winemaking (wine pomace and lees), virtually all bioethanol in Spain is produced out of corn (See **Graph 14** in **Feedstock Section** below). The development of second-generation biofuels plants will be determined by the creation of a favorable regulatory framework. Media reports anticipate future investments in advanced biofuels production such as a multifunctional Biorefinery in Barcial del Barco (Zamora). This investment could produce 160,000 m³ of bioethanol along with 120,000 MT of animal feed out raw materials such as sugar beet and corn.

Production

As a result of tight margins, Spain's largest grain-based in-land bioethanol plant halted production from 2016 to August 2017. Since September 2017, all plants have been operative increasing national bioethanol production. Official estimates report a large use of production capacity in 2018, even exceeding nominal capacity. The extended use of capacity continued throughout 2019 (See **Table 10**).

• **Table 10. Spain's Bioethanol Production, Capacity and Capacity use**

Year	2015	2016	2017	2018	2019	2020e
Production (1,000 m³)	494	328	377	522	548	492
Production Capacity¹⁰ (1,000 m³)	594	492	492	492	492	492
Capacity Use (%)	83	66	77	106	111	100

Source: CNMC, Industry sources and FAS estimates.

In 2020, the reduced fossil fuel demand in the domestic and export markets, is forcing bioethanol production down. However, on a positive note, in delivering ethanol for sanitary purposes to the disinfectant industry, biofuel refineries have found a new market outlet that contributes to maintaining their assets utilization¹¹.

Consumption

In Spain, most of the bioethanol is marketed as Bio-ETBE. In 2019, according to the CNMC's Annual Statistical Release, Bio-ETBE represented 71 percent of the bioethanol sales, down from the 85 percent in 2018 as more bioethanol is being marketed under direct blending. Since January 1, 2020, the abolishment of the obligation to market so-called "protective petrol" opened up the possibility for petrol

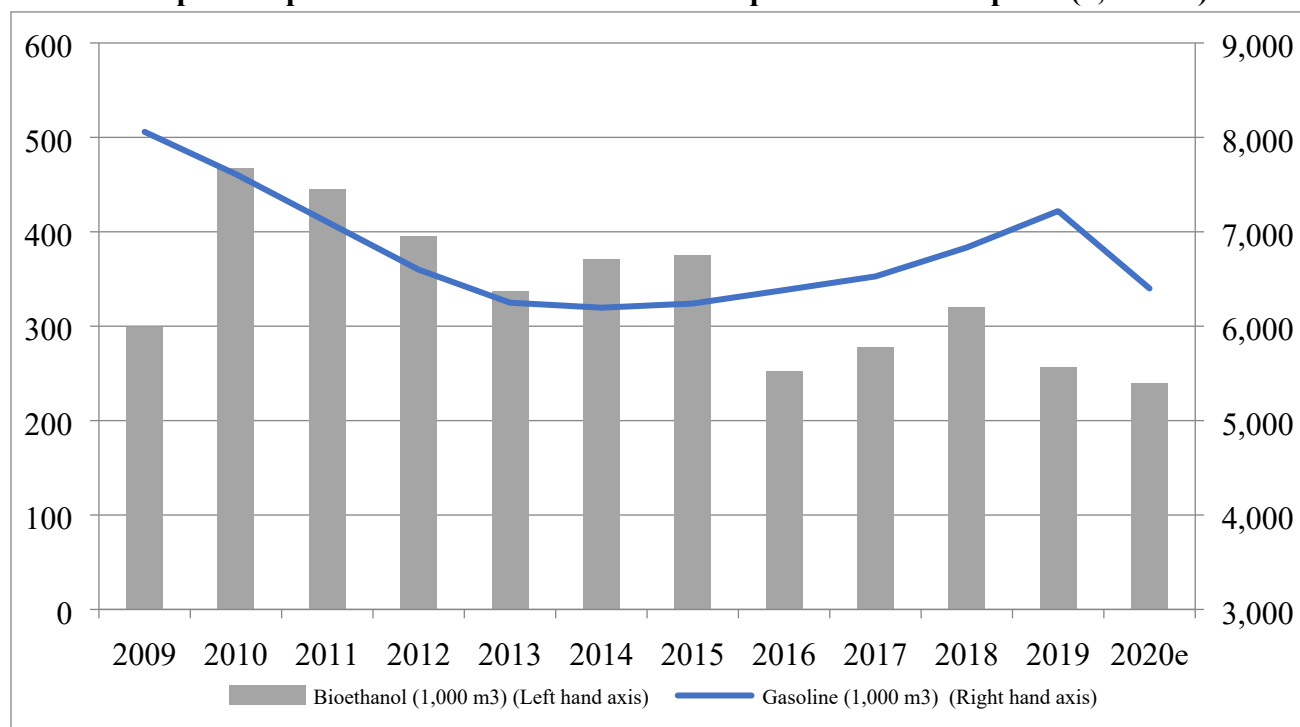
¹⁰ In 2017, production capacity of the grain-based plants was revised down, because of the decision to start the phasing-out of certain production lines in existing plants.

¹¹ The composition of the bioethanol intended for disinfectant was defined by the [Ministerial Order SND/321/2020](#).

stations to market non-labeled blends of up to 10 percent of bioethanol content, increasing opportunities for direct blending to increase its presence. Post anticipates that the share of Bio-ETBE in bioethanol will continue shrinking in 2020.

In terms of volume consumed (See **Graph 12**), the size of the bioethanol market is defined by gasoline demand and the overall consumption mandate. After declining during the 2007-2013 period, from 2014 to 2019, gasoline consumption recovered steadily. In 2020, the reduced mobility under the COVID-19 restrictions since March 15, lowered gasoline deliveries (See **Spain’s Gasoline and Road Diesel Consumption Section** above) and negatively impacted bioethanol demand in Spain. As previously stated, the extent of the production decline will depend on the evolution of economic activity post-crisis, as well as, consumers’ transport preferences.

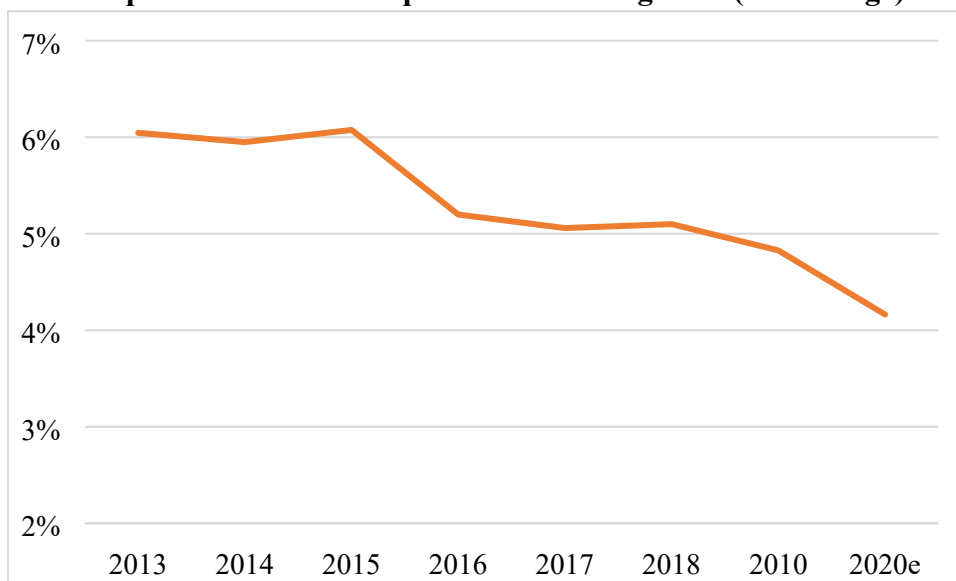
Graph 12. Spain’s Gasoline and Bioethanol Equivalent Consumption (1,000 m³)



Source: FAS Madrid based on CNMC and CORES data.

As diesel is the main transport fuel in Spain, in the absence of a bioethanol specific target since 2016, consumption of bioethanol depends on its price competitiveness and the need for petrol’s companies to observe volumetric blending limits. This explains the decline in blending rates since 2016 shown in **Graph 13**.

Graph 13. Bioethanol Equivalent Blending Rate (Percentage)



Source: FAS Madrid based on CNMC and CORES data.

Trade

Given the country’s excess of installed capacity compared with mandated consumption, most of the bioethanol consumed in Spain is produced domestically. Bioethanol and Bio-ETBE imports only represent a small part of the Spanish market. The bioethanol specific mandate phase-out in 2016 resulted in a decline of imported volumes since 2016 (Table 11).

Table 11. Bioethanol Trade (1,000 m³)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Imports (1,000 m³)	265	198	165	109	100	97	25	49	45	6
Exports (1,000 m³)	227	201	152	200	200	213	99	153	239	292

Source: CNMC data.

Spain imports consist primarily of ETBE originated in other EU Member States (Table 12). Since 2017, ETBE imports from Brazil were discontinued as trade actions imposed at the EU level continue to limit bioethanol imports from non-EU suppliers. In May 2019, the EU repealed the antidumping duties imposed on U.S. bioethanol in 2013. However, this is not anticipated to result in a surge of U.S. bioethanol exports to the country, due to sustainability requirements and competition from other EU suppliers.

Table 12. Spain's main ETBE suppliers (1,000 m³)

Year	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020e
EU-28	21	107	261	151	227	135	84	128	19	47	51	12	6
United States	0	0	189	153	49	0	0	0	0	0	0	0	0
Brazil	0	29	79	116	89	57	48	29	10	0	0	0	0
Others	0	32	0	7	5	0	0	0	0	0	0	0	0
Total	21	109	529	428	371	192	131	158	29	47	51	12	6

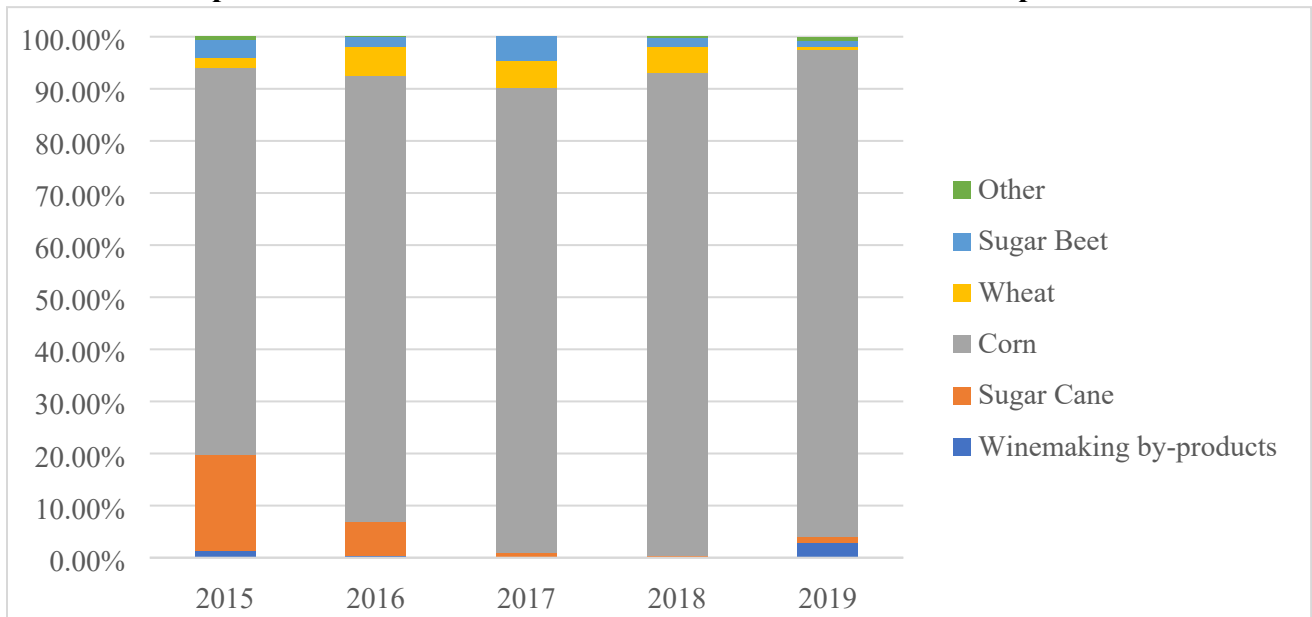
Source: Trade Data Monitor LLC and FAS Madrid estimates.

The production of the inland plant (Babilafuente) is intended for direct blending, which is still a relatively small market in Spain. Hence, a large share of production of this plant is exported to other European Member States. Bioethanol produced out of residues from winemaking is eligible for double counting and was normally exported to EU countries such as Italy, the United Kingdom or Portugal where double counting was in place. Lower fuel demand in main EU export markets since the second quarter of 2020, along with the implementation of double counting in Spain since late 2019, may slow the pace of exports in 2020.

Feedstocks

According to industry sources, virtually all bioethanol/Bio-ETBE consumed and produced in Spain is produced out of corn. Only about 1 percent of total domestic bioethanol production is produced out of wine alcohol obtained by domestic distilleries out of residues from winemaking (wine pomace and lees). As of the last quarter of 2019, this alcohol counts double for mandate compliance in the domestic market. In the absence of official data on raw materials for biofuels produced in Spain, **Graph 14** shows information on bioethanol consumed in Spain.

Graph 14. Raw Material used in the Bioethanol Consumed in Spain*



Source: FAS Madrid estimates and projections based on CNMC data.

Future Perspectives

Spain's biofuel sector is driven by regulatory developments and conventional fuels consumption demand. The COVID-19 outbreak in the region since the beginning of 2020 has reduced the predictability of these two drivers. On the one hand, the volume of conventional fuel consumed in 2020 will depend on a few factors such as the evolution of economic activity and consumer's transport preferences. As per regulatory drivers, prior to COVID-19, 2020 was already a key milestone for the future of the biofuel sector. RED II transposal to Spanish law will need to establish the consumption mandates from 2021 to 2030.

However, while RED II is yet to be transposed into Spanish law, some of its provisions have already impacted the biofuels market. For instance, Spain's HVO and biodiesel production, which relies heavily on palm oil as feedstock, will face the limits imposed to this type of raw material. This will prompt producers to explore the use of alternative feedstocks if low-risk ILUC-certified palm oil is not readily available.

As far as the bioethanol market is concerned, the introduction of E10 non-labelled blend since 2020 is yet another factor to increase mandate compliance through gasoline blends. Opportunities may also lie ahead for this type of fuel if the preference for gasoline-based individual modes of transport materializes.

Beyond 2020, according to the National Integrated Plan for Climate and Energy, biofuels will play a pivotal role in meeting the 28 percent target in transport established at the national level, along with electrification of transport, labelled blends, and the introduction of mandates in aviation. However, because of the progressive electrification and decarbonization of transport, the projected volumes of biofuel needed to fulfil the mandates may be lower than the current levels of consumption despite the growing mandates. The post-COVID-19 economic situation may dampen the anticipated switch from an internal combustion-based fleet into an electric fleet, as well as, the installation of charging stations.

Related Reports

Report Title	Date Released
EU-28 Biofuels Annual Report 2020	06/29/2020
Biofuels Mandates in the EU by Member State -2020	05/28/2020
EU-28 Biofuels Annual Report 2019	08/09/2019
Biofuels Mandates in the EU by Member State -2019	06/27/2019
EU Recognizes U.S. Soybean Industry Sustainability Scheme	02/13/2019

Attachments:

No Attachments.