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Report Highlights:

With the lifting of the pandemic lockdowns during 2021 and 2022, EU consumption of both bioethanol and biodiesel is picking up. Russia's invasion of Ukraine led to surges in prices of the transport fuel blends. The skyrocketing gasoline prices have increased the competitiveness of the bioethanol component, driving sales of both the lower and higher blends. In contrast, EU consumption of biodiesel, both fatty acid methyl ester (FAME) and hydrogenation-derived renewable diesel (HDRD), is forecast to stagnate in 2022 as greater use of biodiesels with higher greenhouse gas (GHG) reduction values means that less physical volumes are needed to fulfill the mandates. EU production of bioethanol is forecast to increase, with higher volumes of sugar beets being used. EU biodiesel production is forecast to stagnate, and palm oil will partly be replaced by used cooking oil (UCO) and rapeseed oil. EU and MS policy impacts all aspects of the market, and new HDRD production plants continue to come online to meet the demand.

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I. Summary

The 2021 EU Biofuels Annual Report contained a biomass chapter, which now is a standalone report *EU Wood Pellets Annual 2022* and is forthcoming. It will be available at: https://gain.fas.usda.gov/#/

Policy and Programs

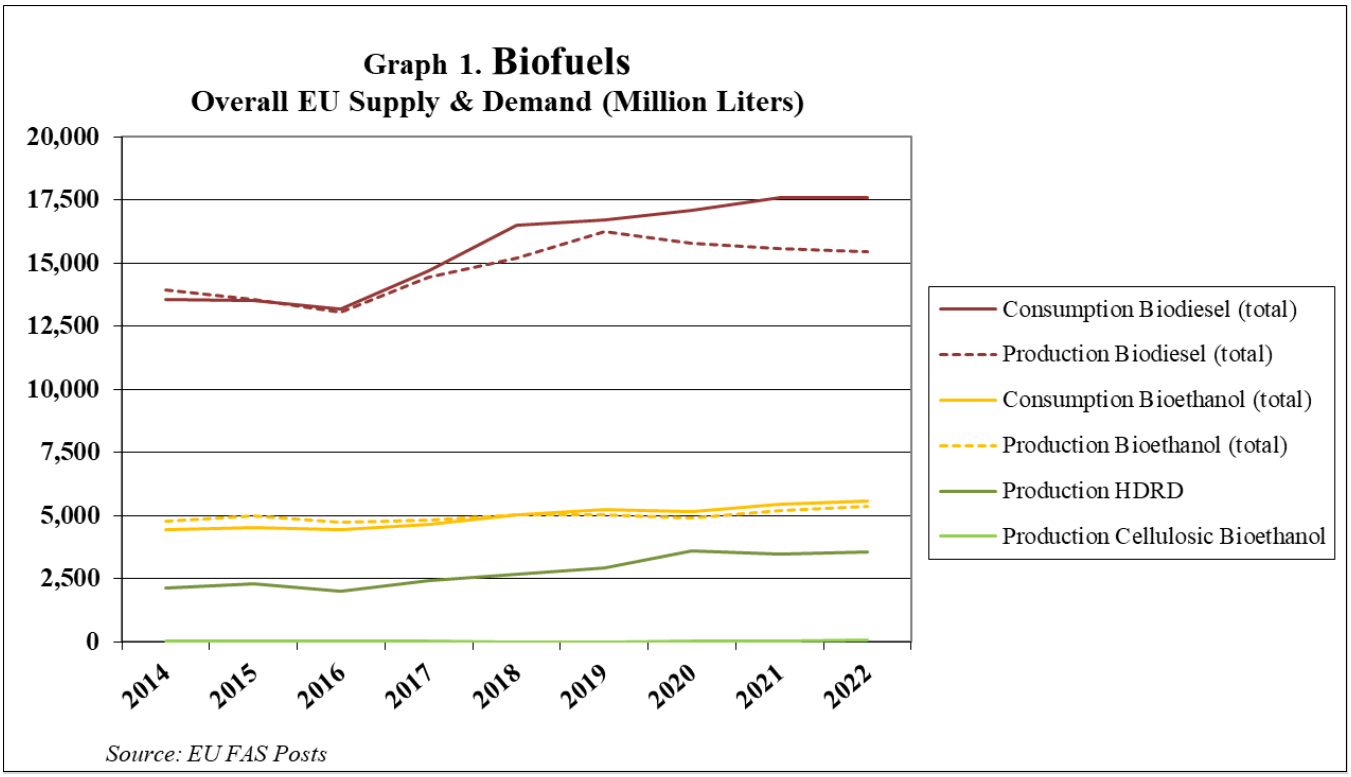
In 2018, the European Union (EU) adopted the Renewable Energy Directive II (REDII). Most of the provisions of the REDII entered into force on January 1, 2021, but EU Member States (MS) were required to transpose the REDII into national legislation by June 30, 2021. It set a new overall renewable energy target of 32 percent by 2030 and a 14 percent target for the transport sector. The EU capped the REDII share of conventional/crop-based biofuels to one percent above MS 2020 consumption levels, up to the overall cap of seven percent of final consumption of road and rail transport for each MS. In addition, the REDII also set ambitious binding targets for the use of advanced biofuels to 3.5 percent by 2030. In the REDII, the EU also expanded sustainability criteria for biofuels. The European Commission (EC) is still working on the secondary legislation (implementing and delegated acts) to implement the new rules.

In 2019, the EC presented its Communication on the European Green Deal which aims to make the EU carbon neutral by 2050. As part of the Green Deal, the EC published several legislative proposals that, if adopted, could affect the biofuels market in the EU, including a revision of the REDII, deforestation-free supply chain requirements, and biofuel blending mandates for aviation and maritime fuels.

Conventional and Advanced Biofuels

With the gradual lifting of the lockdowns, consumption of both bioethanol and biodiesel are estimated to have increased by 5.5 percent and 3.0 percent in 2021. For both biofuels, this level is not only above the pre-COVID level of 2019, but also a new record. Biofuel consumption was further reinforced by post-

2020 second Renewable Energy Directive (REDII) policy support measures. To achieve the REDII's goals, each Member State (MS) has implemented individual national trajectories and measures.



Russia's invasion of Ukraine resulted in increased fossil fuel and agricultural commodity prices as well as associated biofuel prices. While EU bioethanol consumption is forecast to increase 2.3 percent, biodiesel consumption is forecast to stagnate this year. The skyrocketing gasoline prices have increased the competitiveness of bioethanol, with sales of the lower blends (E10) as well as the higher blends (E85) increasing. Most of the market expansion is anticipated in the French market. It should be noted that the final consumption in all EU MS will highly depend on the effect of the government actions to relax biofuel blending obligations. Based on the recovering domestic consumption, as well as new capacity, EU bioethanol production is forecast to increase to a new record of 5.19 billion liters in 2021, topped by 5.35 billion liters in 2022. With the increased demand, also EU bioethanol imports are forecast to increase. The volume of sugar beets as feedstock for ethanol is anticipated to increase as cereals, in particular wheat, are being prioritized for use as food or feed.

In contrast to the expanding EU bioethanol consumption, EU biodiesel (fatty acid methyl esters (FAME) and hydrogenation derived renewable diesels (HDRD)) consumption is expected to stagnate in 2022. An increased use of biodiesels with higher greenhouse gas (GHG) reduction values reduces the physical volumes needed to fulfill the mandates. After a record biodiesel production level was reached in 2019, production fell in 2020 and 2021 and is forecast to be further cut in 2022. In 2021, the lower production was a result of lower EU exports. This year anticipated higher imports leave less room for domestic production. In 2022, high feedstock prices are expected to make it more difficult for domestically produced biodiesel to compete with competitively priced imports. However, this masks different developments for FAME and HDRD. HDRD production is expected to grow by two percent as it has an

advantage based on its higher GHG reduction values. In contrast, FAME production is forecast to further decline by 1.7 percent. In 2022, the use of palm oil for biodiesel production is anticipated to significantly drop and be replaced by used cooking oil (UCO) and to a lesser extent by rapeseed oil.

Based on the minimum blending rates for advanced biofuels produced with agricultural and forestry byproducts listed in *Part A* of Annex IX of the REDII, the consumption of these second-generation biofuels must increase significantly towards 2030. Currently, EU production is limited to roughly four percent of the biodiesels and eight percent of bioethanol. Most of these biofuels are renewable diesels produced from tall and pine oil from pulp mills, bioethanol produced from food waste streams, and to a lesser extent cellulosic ethanol. The most significant production expansion of advanced biofuels produced with feedstocks listed in Part A of the REDII is forecast to take place in Sweden and Finland, which is anticipated to be based on the refining of tall oil.

A larger portion of biofuels is produced using waste oils and fats listed in *Part B* of Annex IX of the REDII. Nearly thirty percent of the biodiesels (including HDRD) are produced from used cooking oil and animal fats. The REDII sets a consumption limit of 1.7 percent of all transport fuels for biofuels produced with these waste oils and fats, but MS can modify this limit, if justified, considering the limited availability of the feedstock. Sourcing feedstocks from third countries could support a production expansion to keep these renewable transport fuels competitive.

II. Policy and Programs

The EU's Renewable Energy Directive (RED)

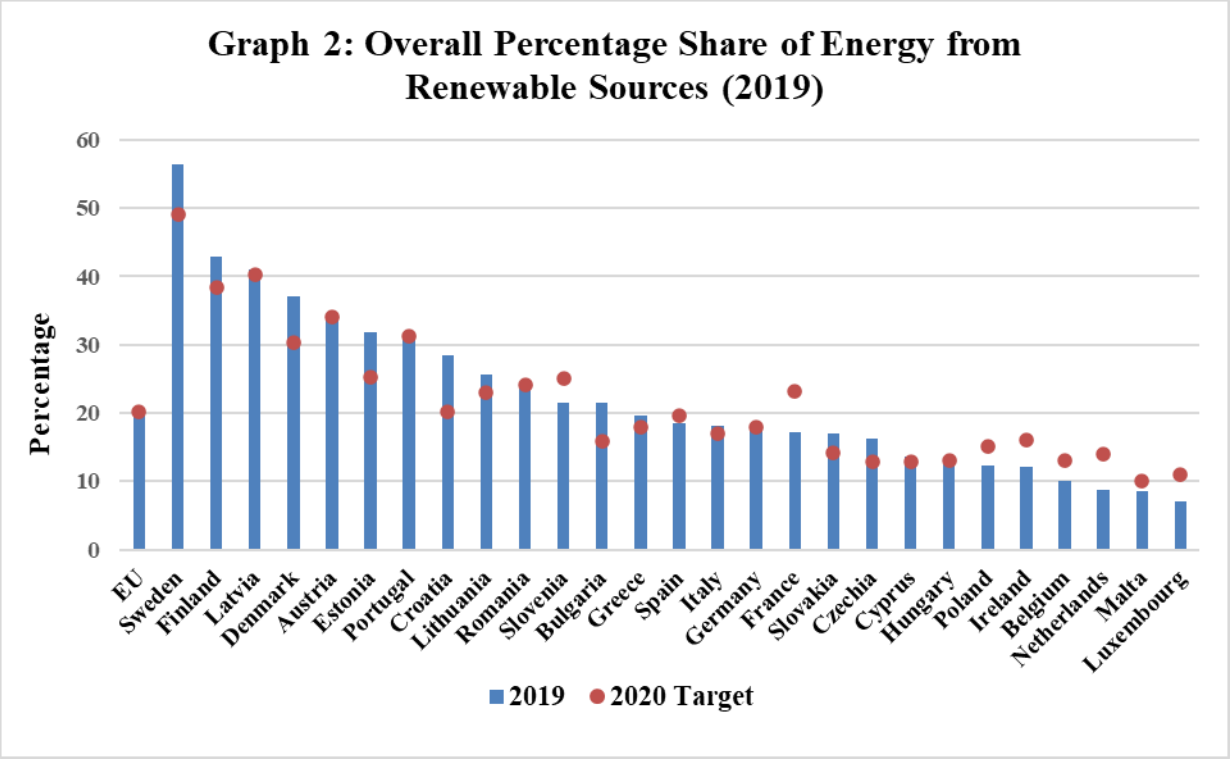
The EU Energy and Climate Change Package (CCP) ran from 2010 to 2020. The RED, which was part of the CCP package, entered into force on June 25, 2009 and expired on December 31, 2020. The CCP required the EU to achieve a binding target whereby 20 percent of its overall energy use would be powered from renewable sources by 2020. For more information about the RED, please see the Biofuels Annual Report of 2020.

The Renewable Energy Directive II (the REDII)

The RED was repealed on July 1, 2021, and the European Union (EU) adopted the new RED, called REDII, for the period 2021-2030 in 2018. Most of the provisions of Directive 018/2001 entered into force on January 1, 2021. The EU Member States (MS) were required to transpose the REDII by June 30, 2021, into national legislation.

Uptake of Renewables in the EU
In October 2021, the European Commission (EC) published a report on the State of the Energy Union 2021. The report concludes that, in 2020, for the first time, renewables overtook fossil fuels and nuclear energy as the EU's main power source. The share of renewable energy sources in the overall EU energy mix is expected to have reached at least 22 percent, ahead of the 20 percent target set by the RED. The latest available data for the year 2019 indicates that the EU, and the majority of MS, were on track to

achieve the targets, when taking into account a multiplying factor which is used for specific renewable energy categories.



Note: Graph represents a percent of gross final energy consumption, 2019
Source: Eurostat and European Commission.

The REDII Renewables Targets
The REDII sets an overall binding renewable energy target of at least 32 percent by 2030 with a 14 percent target for the transport sector, with a clause for a possible upwards revision by 2023. Within the 14 percent transport sector target, food-based biofuels are capped at up to one percent higher than MS 2020 levels, but with a maximum cap of seven percent for each MS. If the cap on first generation biofuels in a MS is less than seven percent, the country may reduce the transport target by the same amount (for example, a country with a food and feed crop cap of six percent could set a transport target at 13 percent). MS can also set a lower limit for conventional biofuels than prescribed in the REDII. For more information about the MS implementation of the REDII and the related market developments see the Ethanol and Biodiesel / Renewable Diesel chapters of this report.

Advanced Biofuels in the REDII
Under EU RED and now REDII policy, the term "advanced' is used in a unique manner and not fully based on commercialization "readiness' of the production technology platform, nor even the demonstrated degree by which a biofuel's carbon intensity (CI) score compared to its fossil fuel equivalent. Rather, due to Europeans' longstanding concerns about food versus fuel, this terminology is designed to isolate food- and feed-based biofuels placing them in the "non-advanced" conventional biofuels category, and even denying some "waste-stream" products from the RED double-counting advantage because they in fact do have alternative markets.

For advanced biofuels, the REDII introduces two different sets of targets for feedstock listed in Part A of Annex IX and feedstock listed in Part B. Feedstock listed in Part A must be supplied at a minimum of 0.2 percent of transport energy in 2022, one percent in 2025 and increasing to at least 3.5 percent by 2030. Biofuels produced from feedstock listed in Part B will be capped at 1.7 percent in 2030. Advanced biofuels can be double counted towards both the 3.5 percent target and towards the 14 percent target.

Table 1. Advanced Biofuel sources, Part A and Part B of Annex IX in the REDII

Part A	Part B
• Algae if cultivated on land in ponds or photobioreactors • Biomass fraction of mixed municipal waste • Biowaste from private households subject to separate collection • Biomass fraction of industrial waste not fit for use in the food or feed chain • Straw • Animal manure and sewage sludge • Palm oil mill effluent and empty palm fruit bunches • Crude glycerine • Bagasse • Grape marcs and wine lees • Nut shells • Husks • Cobs cleaned of kernels of corn • Biomass fraction of wastes and residues from forestry and forest-based industries • Other non-food cellulosic material • Other ligno-cellulosic material except saw logs and veneer logs	• Used cooking oil • Some categories of animal fats

The REDII Sustainability Criteria

To qualify for counting towards the REDII targets, biofuels, bioliquids, and biomass consumed in the EU must comply with strict sustainability criteria provided in Article 29 of the REDII. This article sets requirements on the minimum level of greenhouse gas (GHG) savings, safeguarding against the conversion of high-carbon content lands and protection of biodiversity.

The REDII introduces specific criteria for high-risk indirect land use change (ILUC) biofuels. One of the more heated debates of the REDII surrounded the use of biofuels produced from areas that underwent recent deforestation or conversion of grasslands to croplands. These areas are referred to indirect land use change (ILUC) areas. In May 2019, the EU published in the Official Journal Delegated Act 2019/807 determining high-risk ILUC biofuels. The EC defines high ILUC-risk feedstock as feedstock for which the share of expansion of the production into land with high carbon stock is higher than 10 percent since 2008 with an annual expansion of more than one percent. Given the calculations of the EC, only palm oil falls under this definition. The use of high-risk ILUC biofuels will be capped at the 2019 level until 2023 and then phased out by 2030. The Delegated Act also sets out criteria for certifying low-risk ILUC biofuels, which were already defined in Article 2 of the REDII. The delegated act gives producers the possibility to certify their feedstock as low-risk ILUC. Palm oil producers will be

able to certify their feedstock as low-risk and will need to comply with the general sustainability criteria of the REDII as well as be produced through additional "measures", such as cultivation on unused or abandoned land or cultivation by smallholders (less than two hectares).

The REDII GHG Savings
The REDII introduces new compliance measures for GHG emission criteria for biofuels used in transport and counted towards the overall 14 percent target. The EC is allowed to revise and update the default values of GHG emissions when technological developments make it necessary. Economic operators have the option to either use default GHG intensity values provided in the REDII or to calculate actual values for their pathway.

Table 2. Greenhouse Gas Savings Thresholds in the REDII

Plant operation start date	Transport biofuels	Transport renewable fuels of non-biological origin	Electricity, heating and cooling
Before October 2015	50%	-	-
After October 2015	60%	-	-
After January 2021	65%	70%	70%
After January 2026	65%	70%	80%

The sustainability criteria apply to plants with a total rated thermal input above 20 megawatts (MW) for installations producing power, heating, cooling, or fuels from solid biomass fuels and to plants with total rated thermal input capacity equal to or exceeding 2 MW for installations using gaseous biomass fuels.

Compliance with sustainability and GHG emission saving criteria - Voluntary schemes
Voluntary schemes and national certification schemes of EU MS help to ensure that biofuels, bioliquids and biomass fuels are sustainably produced by verifying that they comply with the EU sustainability criteria. Following the entry into force of the REDII, voluntary schemes recognized under RED must adjust the certification approaches to meet the new requirements. Those additional rules will be laid down in a specific implementing regulation, which will outline rules to ensure economic operators comply with the sustainability criteria and provide accurate data on GHG emission savings of the REDII. The regulation will also outline the rules to comply with the criteria for certification of low ILUC-risk biofuels as foreseen by Delegated Regulation 2019/807. The implementing regulation is expected to be published in the summer of 2022.

More information about the recognition process for the voluntary schemes can be found on the EC website. The updated assessment protocol has also been made public. Recognition by the EC is not a pre-requisite for certification. EU countries may accept evidence from voluntary schemes or national certification schemes not recognized by the EC if the competent authorities in those countries are confident about the quality of the certification services provided by these schemes.

Additional National Sustainability Requirements
The REDII allows MS to establish additional sustainability criteria for biomass fuels. Before December 31, 2026, the EC will assess the impact of such additional criteria on the internal market, accompanied, if necessary, by a proposal to ensure harmonization at EU-level.

The REDII also allows MS to set a limit lower than the seven percent allowed for biofuels, bioliquids and biomass fuels produced from food and feed crops. MS can also distinguish between different biofuels, bioliquids and biomass fuels produced from food and feed crops, considering the best available evidence on indirect land-use change impact. EU MS may, for example, set a lower limit for the share of biofuels, bioliquids and biomass fuels produced from oil crops.

The Fuel Quality Directive (FQD) and the REDII
As noted above, the REDII includes the issue of the decarbonization of transport fuels after 2020. This was previously addressed in the FQD which requires that all fuel suppliers must meet a six percent reduction (from 2010) in GHG emissions by 2020 across all fuel categories supplied to the market. In addition, the FQD limits ethanol blends to ten percent or less when ethanol is used as an oxygenate, and places limits on palm oil and soy oil content of biodiesel. In October 2021, the EC published a report on the quality of petrol and diesel fuel used for road transport in the EU. The report looks at data from 2019 in the EU28. It shows that the average GHG intensity of the fuels and energy supplied in the EU is 4.3 percent lower than the 2010 baseline.

The European Green Deal

On December 11, 2019, the EC presented its Communication on the European Green Deal. On July 9, 2021, Regulation 2021/1119, also known as the EU Climate Law, was published in the EU's Official Journal. The Climate Law enshrines a legally binding target of net zero greenhouse gas emissions by 2050. The EU institutions and MS are bound to take the necessary measures at EU and national levels to meet the target. The Climate Law includes measures to keep track of progress and adjust EU's actions accordingly. The text also includes a reduction of net GHG emissions by at least 55 percent compared to 1990 levels by 2030. The law also includes a process for setting a 2040 climate target.

The Fit for 55 Package
To achieve the European Green Deal objective of climate neutrality by 2050 and a 55 percent reduction of net GHG emissions compared to 1990 levels by 2030, the EC released its 'Fit for 55' legislative package. As part of this package, the EC proposes to amend the RED. The proposal foresees updating the 2030 targets with a new overall renewable energy target of 40 percent, a new GHG intensity reduction target for the transport sector of 13 percent. The cap for conventional/crop-based biofuels stays at one percent above MS 2020 consumption levels, up to an overall cap of seven percent of final consumption of road and rail transport for each MS.

The EC also proposes new targets for the use of advanced biofuels to 2.2 percent by 2030. It also proposes a sub-target for renewable fuels of non-biological origin (RFNBOs) of 2.6 percent, which shows EC's interest in promoting these renewable fuels, especially hydrogen, as part of the transition from fossil fuels. As part of the Fit for 55 package, the EC also proposed a 55 percent cut in CO_2 emissions from cars by 2030 versus 2021 levels and a 100 percent cut in CO_2 emissions by 2035. As a result, this would mean that all new cars registered in the EU as of 2035 will be zero-emission.

Table 3. Targets in the Proposed Revision of the REDII

Type of target	Current 2030 target (REDII)	Proposed 2030 target (REDIII)
Overall renewable energy target	32%	40%
Transport sector	14%	GHG intensity reduction of at least 13%
Crop-based biofuels in transport	7%	7%
Advanced biofuels in transport	3.5%	2.2%
Renewable fuels of non-biological origin (RFNBOs) in transport	N/A	2.6%

As part of the package, the EC also announced a revision of the Energy Tax Directive (ETD). The EC noted that biofuels are disadvantaged by the volume-based taxation (rates expressed per liter). The reason for it is that one liter of biofuel typically has a lower energy content than one liter of the competing fossil fuel, though the same tax rate applies to both. Therefore, the EC proposes to set different minimum levels of taxation applicable to motor fuels for light vehicles for fossil fuels and other types of fuels. This is accompanied by a transition period for food and feed crop biofuels and low-carbon fuels. Taxes are in €EUR/Gigajoule.

Table 4. Proposed Minimum Level of Taxation Applicable to Motor Fuels (in €/gigajoule)

	Start of transitional period (01/01/2023)	Final rate after completion of transitional period (01/01/2033)
Petrol	10.75	10.75
Gasoil	10.75	10.75
Sustainable food and feed crop biofuels	5.38	10.75
Sustainable biofuels	5.38	5.38
Low-carbon fuels	0.15	5.38
Advanced sustainable biofuels and biogas	0.15	0.15
Renewable fuels of non-biological origin	0.15	0.15

As part of the package, the EC also put forward a proposal for a regulation that would require aviation fuel suppliers to ensure all aviation fuel made available to aircraft operators at each EU airport contains a minimum share of sustainable aviation fuel (SAF), including a minimum share of synthetic aviation fuel in accordance with the values and dates of application set below:

Table 5. Targets in the Proposed SAF Regulation

Date of application	Minimum share of SAF	Minimum share of synthetic fuels
January 1, 2025	2%	N/A
January 1, 2030	5%	0.7%
January 1, 2035	20%	5%
January 1, 2040	32%	8%
January 1, 2045	38%	11%
January 1, 2050	63%	28%

The EC defines SAF as drop-in aviation fuels that are either synthetic aviation fuels or advanced biofuels as listed from feedstock listed in part A or B of Annex IX to the REDII, which comply with the sustainability and GHG emissions criteria. The EC also defines synthetic aviation fuels as RFNBOs, as defined in Article 2 of REDII used in aviation. The EC decided not to include first generation biofuels such as feed and food and crop-based biofuels because the EC stated they have limited scalability potential and raise sustainability concerns.

The different proposals that are part of the Fit for 55 package are going through the EU legislative process and can still be amended.

Deforestation-Free Supply Chain Initiative
In November 2021, as part of the European Green Deal, the EC published a proposal for legislation aimed at preventing products causing deforestation or forest degradation from entering the EU market. The proposal targets commodities identified by the EC as the main drivers of agricultural expansion leading to deforestation, including soy and palm oil. The proposal sets mandatory due diligence rules for companies wanting to place these commodities on the EU market. The proposed legislation also introduces a benchmarking system to assess countries and their level of risk of deforestation and forest degradation driven by the commodities in the scope of the regulation. The risk level assigned to each country through the benchmarking system (low, standard, or high) will determine the level of scrutiny applied to the relevant products it exports to the EU. For more information about the proposal, please see GAIN Report EU Commission Proposes Rules to Curb Deforestation Linked to Agricultural Production. This legislative proposal will impact imports of oilseeds in the EU and may impact global trade flows, especially for soy and palm, because EU importers will have to purchase products that comply with the new EU requirements. The proposal is currently going through the EU legislative process and can still be amended.

The EU Taxonomy for Sustainable Activities
In June 2020, in order to meet the EU's climate targets for 2030 and reach the objectives of the European Green Deal, the EC adopted the Taxonomy Regulation. This regulation establishes the framework for an EU taxonomy for sustainable activities by setting out four overarching conditions that an economic activity has to meet in order to qualify as 'environmentally sustainable'. The Taxonomy Regulation aims to act as a screening mechanism to define sustainable activities to steer private investment to activities the EC deems sustainable. It creates three different categories: sustainable activities, transitional activities, and enabling activities. The taxonomy includes bioenergy activities, and the EC classifies crop-based biofuels and forestry biomass as sustainable activities. More information can be found in GAIN Report: European Commission Adopts Taxonomy for Green Investments.

The EU Common Agricultural Policy (CAP)

The EC published its legislative proposal for the post-2020 CAP on June 1, 2018. On December 2020, the 2021-2027 Multiannual Financial Framework (MFF) was concluded, with a considerable delay due to the COVID-19 pandemic and Brexit. On June 25, 2021, the Parliament, Council of the EU, and EC reached a provisional political agreement on the new CAP, which will enter into force in 2023. The CAP legislative framework is delineated by the Common Market Organization, the Strategic Plan and the Horizontal Regulations. By these decisions, the future CAP starts on January 1, 2023. Major changes

from the previous CAP include a new "delivery model" that de-centralizes funding and a new requirement that EU MS develop National Strategic Plans (NSPs) in line with EC priorities, such as the EU Green Deal.

EU Policy Response to Food Security as a result of Russia's War Against Ukraine

On March 23, 2022, the EC published a Communication on 'Safeguarding food security and reinforcing the resilience of food systems'. This Communication outlines short-term and medium-term actions that the EU will take to enhance global food security and support EU farmers given rising commodity prices and costs for energy and fertilizer inputs, following Russia's invasion of Ukraine and the ongoing global impacts. First, €500 million will be distributed in national allocations to directly support EU farmers most affected by higher input costs. MS can supplement this support up to 200 percent using national funds. Additionally, the EC has granted an exceptional and temporary derogation from certain greening obligations. For example, MS may allow production of any food and feed crops on fallow lands that are part of Ecological Focus Areas (EFA) for the duration of 2022, while still providing the full level of greening payment that would be given if the land were kept fallow. This temporary flexibility aims to allow EU farmers to adjust and expand their cropping plans in response to the new market dynamics. On land use, the EC also supports MS reducing blending proportion requirements for biofuels. This would reduce the amount of EU agricultural land devoted to production of biofuel feedstock, thereby freeing up the supply of food and feed commodities.

On May 18, 2022, the EC published the RePowerEU Communication which is the EC's response to global energy market disruptions caused by Russia's war against Ukraine. The aim of the communication is to reduce the EU's dependency on Russian gas and oil while accelerating the transition to more renewable energy. To do so, the EC proposes a revision to the REDII to increase the target for the overall use of renewable energy to 45 percent by 2030, up from 40 percent in the July 2021 proposal. In the communication, the EC also notes that current estimates show a moderate but steady increase of biomass use in the EU until 2030. The EC wants to prioritize the use of non-recyclable biomass waste and agricultural and forest residues, which will ensure sustainable energy production and contribute to the new REPowerEU objectives.

Market Access

Import Duties
Regulation 2017/2321 lays down the EU's anti-dumping and anti-subsidy rules in 2018. Duty rates for fuels are listed below; for a historical discussion of how EU harmonized system (HS) customs codes have changed and influenced trade please see the EU Biofuels Annual of 2017.

Table 6. MFN Duty Rates for Biofuels

HS Code	Description	Duty Rate
3826.0010	FAME above 96.5 and up to 100% by volume	6.5%
3826.0090	FAME greater than 30% and up to 96.5% by volume	6.5%
2710.20	Petroleum oils containing FAME up to 30% by volume	3.5%
2207.10	Undenatured ethanol	€19.2/hectoliter
2207.20	Denatured ethanol	€10.2/hectoliter

Anti-Dumping Duties Against U.S. Bioethanol
In February 2018, the EC initiated a 15-month review of the current anti-dumping (AD) duties of 9.5 percent for U.S. bioethanol, which were set to expire that month. The EU had originally put in place these definitive measures in February 23, 2013 (Regulation 157/2013). The EU General Court ruled against the duties in 2016, which the EC appealed. For background information on this case development, see EU Biofuels Annual of 2017. On May 15, 2019, the EU concluded the 15-month review and repealed the AD duty on bioethanol imports from the United States (Regulation 2019/765).

AD and Countervailing (CV) Duties Against U.S. Biodiesel
In 2009, the EU initiated AD and CV duties of up to €409.2 (around $495) per MT on imports of U.S. biomass-based diesel (both biodiesel and renewable diesel) mainly targeting the U.S. federal blenders tax credit of $1/gallon (Council Regulation 598/2009 and Council Regulation 599/2009). On September 15, 2015, the EU extended the duties against U.S. biodiesel an additional five years to September of 2020 with Commission Regulation 2015/1519. On September 14, 2020, two days before the expiration of the duties, the EC launched an investigation to extend the anti-dumping measures against U.S. biodiesel. On August 3, 2021, the EU extended the anti-dumping and countervailing duties levied on imports of U.S. biodiesel for an additional five years. Implementing Regulation (EU) 2021/1266 imposes an anti-dumping duty rate of up to €198 per MT net on imports of biodiesel from the United States. For more information, please see GAIN Report: EU Extends Its Anti-Dumping Duty and Countervailing Duties on Imports of US Biodiesel.

Other Biodiesel Anti-Dumping and Countervailing Duty Actions
There have been several other recent developments related to AD duties. On September 19, 2017, the EC removed anti-dumping duties on Argentina's and Indonesia's biodiesel exports, after losing a five-year dispute with them in the WTO in October 2016. For more information about the history of the case please see EU Biofuels Annual of 2019. However, days after lifting the AD duties on biodiesel, in January 2018, the EC announced a notice of initiation of anti-subsidy proceedings for Argentina. In February 2019, the EU imposed CV duties on biodiesel from Argentina between 25.0 and 33.4 percent, depending on the company (Implementing Regulation 2019/244). Duties are linked to an undertaking offer by the Argentine industry which aims to prevent prices from falling below a certain floor price. Implementing Decision 2019/245 establishes price and volume limits – not disclosed publicly – for Argentinian biodiesel. It spares producers who agree to a minimum price from the imposition of CV duties and as long as volume limits are not exceeded. This is in line with Article 18 of the WTO Agreement on Subsidies and Countervailing Measures. Nevertheless, the EU biodiesel industry is concerned with this managed trade agreement and calls on the EC to be vigilant in monitoring prices. In December 2019, the EU imposed countervailing duty on imports of biodiesel from Indonesia with Implementing Regulation 2019/2092. The CV duty ranges from 8 to 18 percent depending on the company.

Brexit

The agreement on the withdrawal of the United Kingdom (UK) from the European Union (EU) entered into force on February 1, 2020. This agreement provided for a transition period, which ended on December 31, 2020. During the transition period, EU law was applicable to and in the UK. On

December 24, 2020, the EU and UK negotiators reached an agreement that sets out the rules on the new partnership between the EU and UK which started to apply from January 1, 2021. More information: https://ec.europa.eu/info/relations-united-kingdom/new-normal/consequences-brexit_en. The UK is a major importer of biofuels; please see upcoming GAIN report on the UK biofuels market by FAS London.

III. Ethanol

Bioethanol (ethyl alcohol), or simply ethanol, is produced by fermenting the carbohydrate components of plant materials. The most used feedstocks are grains (e.g., corn, other coarse grains, and wheat kernels) and sugarcane. 'Synthetic' ethanol made from petroleum fuels is restricted to a very small market and is not included in this report. Ethanol used as transport fuel is referred to as bioethanol in this report.

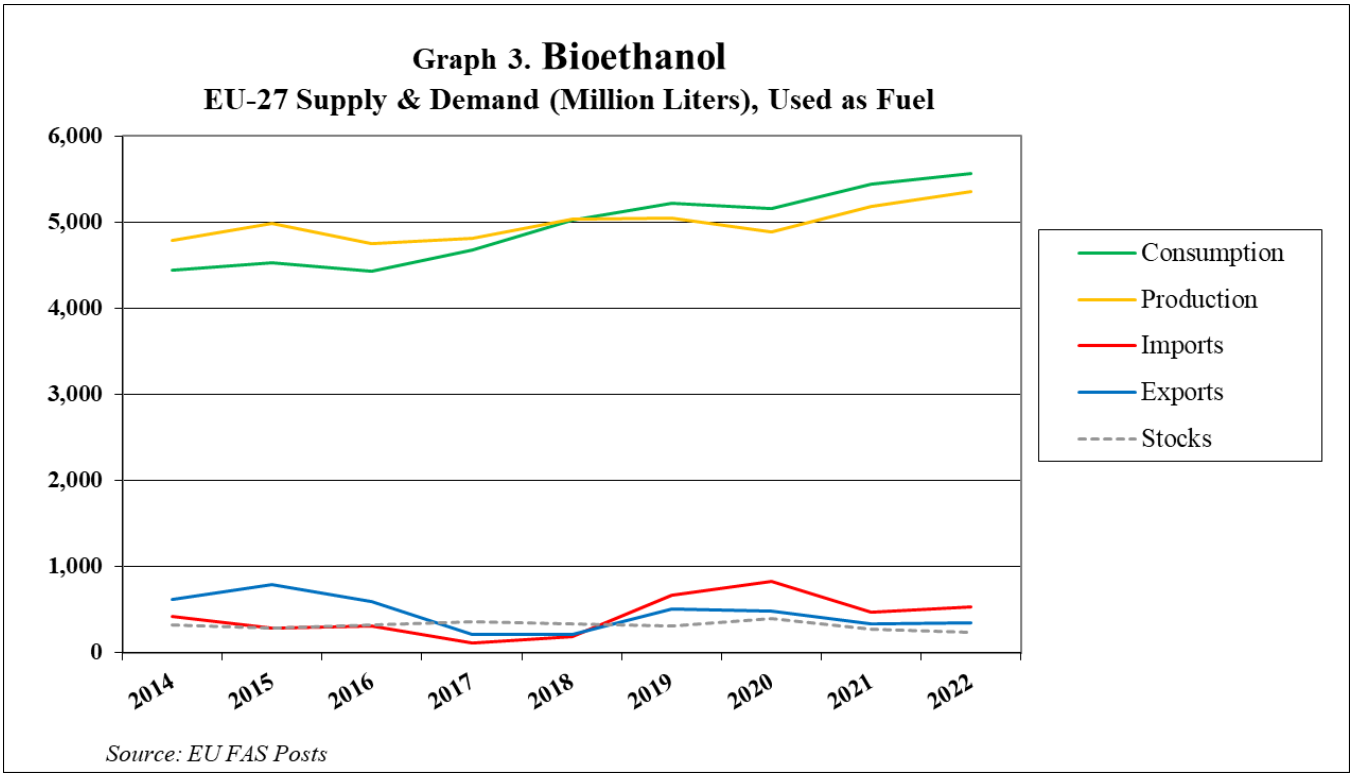
EU Production, Supply and Demand Table

Table 7. Ethanol Used as Fuel and Other Industrial Chemicals (Million Liters)

Calendar Year	2014	2015	2016	2017	2018	2019	2020	2021[e]	2022[f]
Beginning Stocks	355	361	329	357	386	362	338	439	310
Fuel Begin Stocks	187	326	285	324	356	335	310	393	275
Production	5,489	5,873	5,418	5,407	5,588	5,601	5,820	5,895	5,942
Fuel Production	4,789	4,989	4,748	4,813	5,035	5,047	4,891	5,190	5,354
>of which is cellulosic (a)	50	50	50	40	10	10	25	50	50
Imports	814	742	856	881	800	1,100	1,490	1,125	1,100
Fuel Imports	424	292	315	110	189	665	832	477	538
>of which is ETBE (b)	110	109	24	9	9	14	26	19	18
Exports	673	841	642	264	266	560	531	392	404
Fuel Exports	623	791	592	214	216	510	481	342	354
Consumption	5,625	5,805	5,603	5,995	6,145	6,165	6,677	6,757	6,675
Fuel Consumption	4,451	4,530	4,432	4,677	5,029	5,227	5,159	5,443	5,570
Ending Stocks	361	329	357	386	362	338	439	310	272
Fuel Ending Stocks	326	285	324	356	335	310	393	275	243
Refineries Producing First Generation Fuel Ethanol (Million Liters)									
Number of Refineries	64	57	53	55	54	53	54	55	55
Nameplate Capacity	6,390	6,280	6,020	5,860	5,750	5,750	5,890	6,360	6,420
Capacity Use	74%	79%	78%	81%	87%	88%	83%	81%	83%
Refineries Producing Cellulosic Fuel Ethanol (Million Liters)									
Number of Refineries	1	1	1	1	2	2	2	4	4

Nameplate Capacity	50	50	50	50	10	10	40	125	125
Capacity Use	80%	80%	80%	80%	50%	50%	50%	40%	52%
Co-product Production (1,000 MT)									
DDGs	3,122	3,326	3,215	3,307	3,533	3,418	3,574	3,794	3,724
Corn Oil	147	151	141	144	187	196	186	190	193
Feedstock Use for Fuel Ethanol (1,000 MT)									
Wheat kernels	3,011	3,523	3,585	3,949	3,133	2,788	3,024	3,259	2,950
Corn Kernels	5,084	5,202	4,849	4,976	6,445	6,745	6,426	6,535	6,640
Barley Kernels	414	445	395	390	487	356	447	516	521
Rye Kernels	805	765	665	517	488	226	427	567	487
Sugar Beets	10,478	9,718	8,406	7,765	7,040	8,021	5,019	5,558	8,092
Cellulosic Biomass	160	160	160	160	20	20	80	200	260
Market Penetration (Million Liters)									
Fuel Ethanol Use	4,451	4,530	4,432	4,677	5,029	5,227	5,159	5,443	5,570
Gasoline Pool 1/	91,145	89,790	90,186	91,127	96,138	98,269	85,713	92,946	93,443
Blend Rate	4.9%	5.0%	4.9%	5.1%	5.2%	5.3%	6.0%	5.9%	6.0%

Sources/Notes: r = revised / e = estimate / f = forecast of EU FAS Posts. Original data collected in MT, then converted to liters using a conversion rate of 1 MT = 1,267 liters for bioethanol. Ethanol production: Eurostat statistics, ePURE, and FAS Post projections. Production capacity as of December 31 of year stated. Ethanol use: Eurostat statistics and FAS Posts projections. Trade data: See Notes section. (a) For more information see section Advanced Biofuels. (b) ETBE in million liters of ethanol. HS code 29091910, ETBE contains 45 percent ethanol. (c) Calculated co-product production (theoretical maximum) based on estimated feedstock use in fuel ethanol production. (d) Includes biocomponents.



Consumption

Table 8. EU27 Fuel Ethanol Consumption Main Consumers (million liters)								
Calendar Year	**2015[r]**	**2016[r]**	**2017[r]**	**2018[r]**	**2019[e]**	**2020[e]**	**2021[e]**	**2022[f]**
Germany	1,485	1,485	1,465	1,491	1,435	1,378	1,453	1,456
France	833	885	989	1,084	1,231	1,062	1,115	1,225
Netherlands	278	237	253	335	366	430	480	500
Poland	323	329	329	299	372	359	361	361
Belgium/Luxembourg	63	63	208	228	228	215	234	241
Spain	375	253	277	319	328	190	205	213
Sweden	263	215	172	224	178	187	196	203
Hungary	123	129	133	138	189	167	180	194
Total	4,530	4,432	4,677	5,029	5,227	5,159	5,443	5,570

r = revised / e = estimate / f = forecast EU FAS Posts. Source: EU FAS Posts and Eurostat

With the absence of the United Kingdom, the EU27 (referred further as EU) was a net producer of bioethanol from 2014 to 2018. As from 2019, the EU became a net bioethanol importer as consumption continued to rise and production stagnated. This growth was a result of a gradual increase in blending targets towards the 2020 mandate, the improved competitiveness of bioethanol versus gasoline, and increasing imports, predominantly from the United States. For more information about the mandates see the FAS GAIN report: Biofuel Mandates in the EU by Member State – 2022, published July 5, 2022.

The Impact of the COVID-19 in 2020

According to the International Energy Agency (IEA), EU gasoline consumption declined 12.8 percent in 2020, recovered by 8.4 percent in 2021 and is forecast to increase slightly by 0.5 percent in 2022. However, the COVID-19 outbreak, and the resulting lockdowns and reduced transport had only a limited effect on the EU's bioethanol use. Bioethanol consumption did not decline equally with motor gas due to MS support measures to reach the national blending mandate of ten percent (for more information see the Policy and Programs chapter). Another factor which supported bioethanol consumption in some MS was that the blending rate achieved in 2020 will determine the maximum level for food-based biofuels blending until 2030. In 2020, EU bioethanol consumption declined only slightly by 1.3 percent to 5.16 billion liters. This volume is based on official Eurostat statistics. In absolute terms, the most significant reductions of bioethanol consumption were reported by Eurostat in France, Spain, and Germany.

The Estimate for 2021 - Lifting of the Lockdowns

With the gradual lifting of the COVID-19-related lockdowns in 2021, EU bioethanol consumption picked up with the increased gasoline consumption to well above the bioethanol consumption achieved in the pre-COVID-19 year of 2019. In addition to the increased transport fuel sales, consumption was reinforced by post-2020 policy support measures. To achieve REDII goals, each MS has implemented individual national trajectories and measures. For more information about the mandates see our FAS GAIN report: Biofuel Mandates in the EU by Member State – 2022, published July 5, 2022.

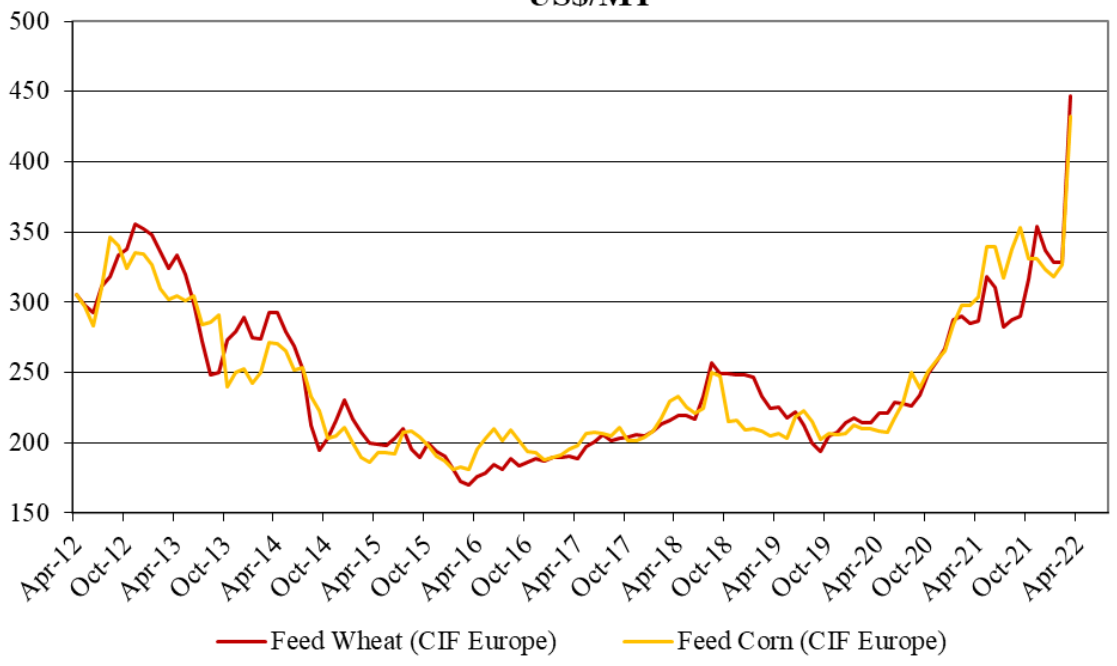
Based on the aggregation of the FAS posts' estimates for each individual EU MS, EU bioethanol consumption is anticipated to have increased by 5.5 percent to 5.44 billion liters in 2021. In absolute terms, the most significant increases are reported for Germany, France, the Netherlands, Belgium, Finland, Sweden, and Spain. Beside the higher gasoline use, the increasing mandates and the introduction and further market expansion of higher ethanol blends, mainly in Germany, France, and Sweden, played an important role in the recovery of bioethanol consumption for road vehicle transport.

The Forecast for 2022 –The Effect of Russia's War in Ukraine.

Since Russia's invasion of Ukraine, fossil fuel and feedstock prices as well as associated biofuel prices surged (see graphs below). Wheat and corn prices had already been rising since the spring of 2020 but spiked since February 2022. A similar trend is reported for crude oil, gasoline, and to a lesser extent, fuel ethanol. The biofuels market dynamics are usually based on government incentives, but the skyrocketing gasoline prices have increased the competitiveness of bioethanol. For instance, in France, on July 5, bioethanol cost only €0.89 per liter, compared to €2.13 on average for diesel and €2.04 for gasoline (unleaded 95). As a result, EU bioethanol consumption is forecast to increase by 2.3 percent to 5.57 billion liters in 2022. This growth is mainly driven by the introduction and/or higher sales of high blends such as E10 and E85.

Graph 4. Feedstock Prices in Europe

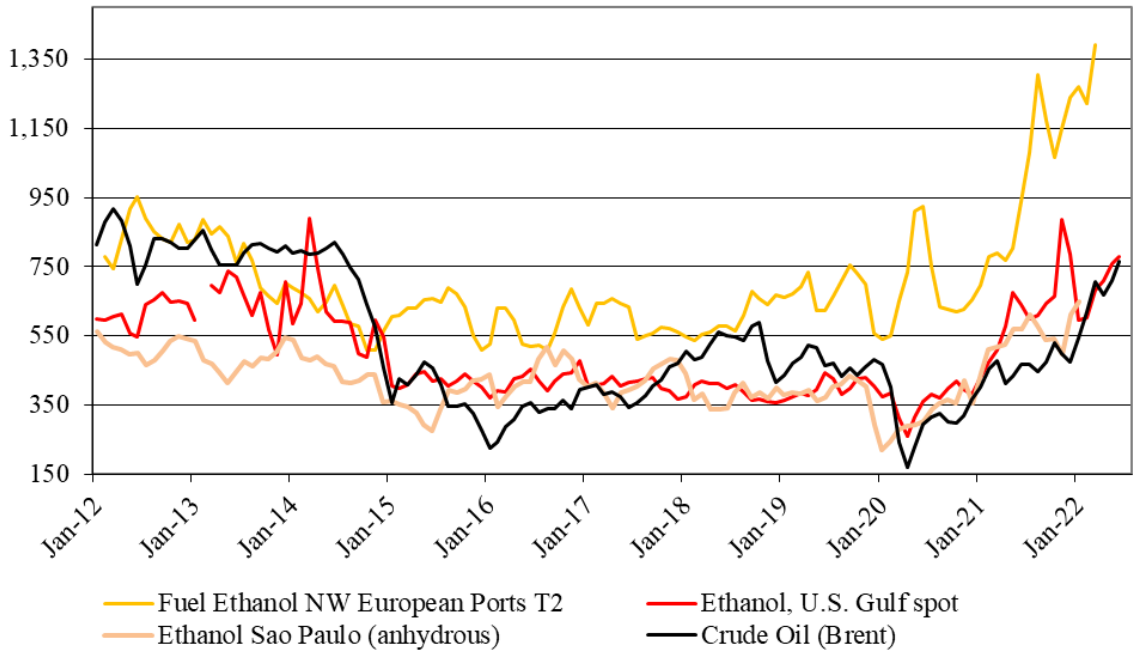
US$/MT



Based on statistics of Dutch Agricultural Research Institute

Graph 5. Comparison of Ethanol and Oil Prices

Ethanol US$/M³ / T2 NW Ports, U.S. Gulf & Brazil



Based on statistics of Licht (T2 and U.S. Gulf) and CEPEA (Brazil)

The majority of the market expansion is anticipated in the French market. In France, consumption of E85 is supported by an increase in the number of flex-fuel cars. In France since December 2017, it has been possible to turn any vehicle into a flex-fuel vehicle and use E85 by installing a "DriveCleanBox." In August 2021, E10 was introduced in Sweden, which is forecast to boost demand during 2022. Currently, E10 is available in the following fourteen EU MS: Belgium, Bulgaria, Denmark, Estonia, Finland, France, Germany, Hungary, Latvia, Lithuania, Luxembourg, the Netherlands, Romania, and Slovakia (source ePURE). In Austria, the introduction of E10 is incorporated in the current government program but has not yet been implemented. Poland is considering introducing E10 in 2022 or 2023.

Another MS where significant increased use is anticipated is Hungary, where the gasoline consumption was supported by a fuel price cap. Similar measures to mitigate the increases in transport fuel prices were enacted in Germany, the Netherlands, Poland, Romania, and Bulgaria. The European Commission (EC) allows MS to relax the blending mandates. In an attempt to alleviate the burden of price increases for consumers the German Government has approved a so called "Easter package" that includes a temporary three-months reduction of fuel energy tax from June 1 through August 31, 2022. It is doubtful that the fuel tax reduction will result in considerably increased fuel consumption since the fuel prices are still much higher than in the previous years.

It should be noted that the final consumption in all EU MS will highly depend on the effect of the government actions to relax biofuel blending obligations such in the Czech Republic (voluntary blending as of July 1, 2023), Croatia (removing penalties), Finland (reduction of blending mandates), Sweden (proposal to freeze mandates in 2023), Latvia (temporary blending waiver from July 1, 2022, until end-2023). In Germany, a working paper by the Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection proposes to lower the current 4.4 percent cap on crop-based biofuels to 2.3 percent, and phase them out completely by 2030. If Germany will limit the blending of crop-based biofuels this will significantly affect blending of bioethanol.

In the longer term, beyond 2022, a further expansion of bioethanol consumption is not expected because the cap on conventional biofuels and increasing minimum level of advanced biofuels, which is anticipated to favor the blending of renewable diesels. Another important factor is increasing e-mobility and the corresponding decline in gasoline consumption.

Production and Capacity

From 2014 to 2017, EU bioethanol production fluctuated between 4.75 and 5.0 billion liters. In 2018 and 2019, production exceeded 5.0 billion liters, but fell in 2020 as a result of the COVID-19 crisis. The lockdowns resulted in a lower ethanol demand as transport fuel use declined, and some producers opted to produce some sanitary ethanol instead. The European renewable ethanol producers' association (ePURE) identified fourteen plants in nine EU MS which made the partial switch. Generally, they allocated one to five percent of their capacity to the production of sanitary ethanol. Based on this information, the elevated production of technical ethanol, at the expense of bioethanol production, is estimated at a few hundred million liters on an annual basis.

Table 9. EU27 Fuel Ethanol Production Main Producers (million liters)								
Calendar Year	**2015[r]**	**2016[r]**	**2017[r]**	**2018[r]**	**2019[e]**	**2020[e]**	**2021[e]**	**2022[f]**
France	1,039	987	1,000	1,138	1,299	1,099	1,201	1,248
Germany	870	882	810	799	676	700	747	759
Hungary	591	633	633	646	689	695	704	722
Netherlands	519	443	519	519	519	481	519	519
Spain	494	328	377	522	547	487	487	481
Belgium	557	570	620	646	620	620	633	633
Poland	214	241	258	259	286	276	338	348
Austria	223	224	235	251	254	222	234	234
Total	4,989	4,748	4,813	5,035	5,047	4,891	5,190	5,354

r = revised / e = estimate / f = forecast EU FAS Posts. Source: EU FAS Posts and Eurostat

In 2021 and 2022, EU bioethanol production is forecast to recover to 5.19 and 5.35 billion liters, with the most significant increases expected in France, Germany, Poland, Hungary, Bulgaria, and Romania. The increase is mainly based on the recovering domestic consumption, as well as new capacity, such as has been reported in Bulgaria and Romania. Production in Poland and Hungary is not significantly affected by the scarcity of feedstock as they have sufficient domestic corn production. However, to what extent production will rebound alongside consumption will depend on the competition from third country imports. Though the high demand for ethanol in the supplying countries is forecast to limit the shipments to the EU market.

Total EU ethanol production capacity, for fuel, industrial, and food uses, is estimated at roughly 6.4 billion liters in 2022. Further expansion of first-generation bioethanol is expected to be limited. Expansion of cellulosic bioethanol production remains constrained due to high costs and a lack of certainty in the EU policy making process (see Policy and Programs and Advanced Biofuels Chapter).

Feedstock Use and Production of Co-products

Bioethanol is mainly produced from grains and sugar beet derivatives in the EU. Wheat is predominantly used in Belgium, Germany, and France. Additionally, an abundance of corn in Central Europe, particularly in Hungary and Poland, supports corn-based ethanol production in that region. Corn is also the preferred grain in the Netherlands and Spain, where most ethanol plants are located at seaports, and corn was predominantly sourced from Ukraine. With the limited exportable supply of corn from Ukraine, more corn is anticipated to be imported from other suppliers such as Brazil. Due to the widespread use of genetically engineered (GE) corn varieties in Argentina and the United States, these sources are not preferred. There is an incentive to use non-genetically engineered (non-GE) corn as ethanol producers in northwestern Europe prefer to market their distillers dried grains (DDG) as non-GE for the domestic feed market.

In France, Germany, the Czech Republic, Belgium, and Austria, sugar beets and their derivatives are also used to produce bioethanol. In France, sugar beets are only processed for bioethanol in sugar beet processing plants that have on-site ethanol distillation capacity. In some other MS, like Austria and Belgium, beet pulp or concentrated juice may serve as a feedstock for ethanol production.

After a large EU grain harvest in 2021, a smaller grain crop is forecast for 2022, specifically for wheat, corn, barley, as well as rye. As a result, the use of these grains as feedstock for bioethanol production is forecast to decline, with the exception of barley, which use is forecast to increase slightly. The use of wheat is forecast to be cut most significantly. Ethanol producers are reluctant to switch between grains, as this will change their process as well as the feed quality characteristics of the DDG.

Like the grain crop, the sugar beet crop is also expected to decline this year. However, the share as well as the volume of sugar beets as feedstock for ethanol is forecast to increase as access to corn and cereals for food and feed is anticipated to be prioritized. This trend is mainly reported in France. For more information see the FAS GAIN EU Grain and Feed Annual, published on April 26, 2022, the FAS GAIN Sugar Annual, published April 20, 2022, and the latest World Agricultural Supply and Demand Estimates (WASDE) reporting.

In the EU, to reach the estimated 2022 production of 5.35 billion liters of bioethanol, the required cereals volume that will be needed is estimated at 11.9 MMT, a reduction of about 0.2 MMT compared to 2021. This is roughly 4.2 percent of total EU cereal production. Co-products from the bioethanol production process are DDG, wheat gluten, and yeast concentrates. In 2022, the maximum theoretical production level (calculated, using the conversion factors listed at the end of this report) of co-products is forecast to reach 3.7 MMT, a reduction of roughly 70,000 MT from 2021. This accounts for 2.4 percent of total EU feed grain consumption. As stated above, the lower grain use is counterbalanced with a higher volume of sugar beet use to produce bioethanol, estimated at 5.6 MMT in 2021, and 8.1 MMT in 2022.

Trade

On February 23, 2013, the EC imposed an AD duty on ethanol imports from the United States. With the lifting of this duty on May 14, 2019, the remaining factors limiting the export of U.S. bioethanol to the EU are the Most Favored Nation (MFN) import tariffs (€102 per 1,000 liters for denatured ethanol, and €192 per 1,000 liters for undenatured ethanol) and the sustainability requirements when fuel ethanol is shipped — most importantly the required minimum 50 or 60 percent greenhouse gas (GHG) emission savings over fossil fuels (depending on when the plant was built). For more information see the Policy and Programs Chapter of this report and the EU Biofuels Annual of 2020.

In November 2020, the EU started a surveillance program for fuel ethanol after complaints by the industry that arrivals had been rising disproportionately. According to the EC trade data, EU bioethanol imports totaled 550 million liters during the last ten months of 2020 and totaled 377 million liters in 2021. Because the surge of imports in 2020 was reported during a plummeting demand for fuel ethanol, the EU ending stocks increased significantly, which reduced the need for imports during 2021.

In 2021, 249 million liters of U.S. non-beverage ethanol, classified under Chapter 22, was shipped to the EU, a reduction of 27 percent compared to 2020. In addition to the United States, Canada exported 94 million liters of fuel ethanol to the EU (75 million liters in 2020). EU imports of ethanol from Brazil declined from 216 million liters in 2020 to 82 million liters in 2021, of which an unknown share is destined for the transport fuel market. In addition, the EU imported an estimated 260 million liters of ethanol under a zero-duty regime, of which the majority is anticipated to have been used as fuel. In 2021, the EU imported roughly 19 million liters of bioethanol as ethyl-tert-butylether (ETBE), a

significant reduction compared with the 26 million liters in 2020. Note that any "light oils" that may contain ethanol are not included in the balance or trade estimates, but volumes arriving in Europe in this form already blended with gasoline are expected to be small (and would not appreciably affect the balance).

During the first quarter of 2022, EU ethanol (total imports of both undenatured and denatured ethanol) imports recovered to the elevated level reported in 2020. EU imports are driven by the increasing demand, mainly in France. In 2022, EU imports from the United States are forecast to stagnate due to the tight corn supplies in the United States. Moreover, imports from Brazil are forecast to drop due to elevated domestic demand in Brazil. Increased volumes will possibly be sourced from countries exporting under the zero-duty regime.

IV. Biodiesel / Renewable Diesel

Due to the increasing importance of hydrogenation-derived renewable diesel or HDRD, previously known as hydrotreated or hydrogenated vegetable oil or HVO, we distinguish between HDRD and traditional fatty acid methyl ester (FAME) biodiesel. This is a change from previous reports, where previously FAME and HDRD were combined and referred to as "biodiesel" unless otherwise mentioned.

The EU is home to the world's largest FAME/HDRD market and combining the markets of all 27 countries makes the EU the world's largest FAME/HDRD producer. It is also an early adopter of HDRD, having pioneered the modern commercialization (2010-14) of this drop-in, fully replaceable alternative to fossil diesel. FAME plus HDRD represent, on a volume basis, roughly three-quarters of the total transport biofuels market. FAME was the first biofuel developed and used in the EU, adopted by the transportation sector in the 1990s. At the time, rapid expansion was driven by increasing crude oil prices, the *Blair House Agreement*, resulting provisions on the production of oilseeds under Common Agricultural Policy (CAP) set-aside programs, and generous tax incentives, mainly in Germany and France. EU biofuels goals set out in former Renewable Energy Directive (RED) Directive 2003/30/EC (indicative goals) and in the REDII 2009/28/EC (mandatory goals) further pushed the use of FAME and later commercialization of HDRD.

COVID-19 Impact

In 2020, COVID-19 related lockdown measures and increased teleworking resulted in reduced personal vehicle transport and consequently temporarily reduced demand for diesel and FAME/HDRD. The overall diesel pool (diesel plus all biocomponents), both transport use and total use, was also adversely impacted, according to OECD's International Energy Agency (IEA), but less so than the light fuels market because commercial transport was less impacted. Total annual combined FAME/HDRD consumption actually increased in 2020 and 2021. This was because of higher blending mandates across several EU Member States (MS) combined with the fact that - unlike in other years - excess mandate fulfilment certificates from the previous year were not counted against mandates in 2020. In addition, as just noted, fuel use declines in heavy-duty commercial vehicles were less severe, offsetting declines in light-duty passenger use of diesel and providing relative stability to the distillate market as compared to the light-duty fuels market which was fully impacted by lockdown measures.

In 2021, FAME/HDRD demand further increased. Higher vaccination rates and falling infection rates resulted in road transport picking up significantly in the second half of the year, which more than compensated for reductions in the first half of 2021, when the second and third waves of COVID-19 infections prompted MS to re-install lockdowns, albeit at varying degrees in terms of length and severity of restrictions.

In early 2022, remaining physical distancing measures and masking requirements were lifted, which resulted in a further increase in road transport as teleworking further declined and people resumed social activities, such as eating out and visiting cultural events. The impact of the public's return to restaurants is more important for the collection of used cooking oil (UCO) from the HRI sector than for diesel use. This is because a significant share of diesel is used in the commercial sector, which already rebounded in 2021.

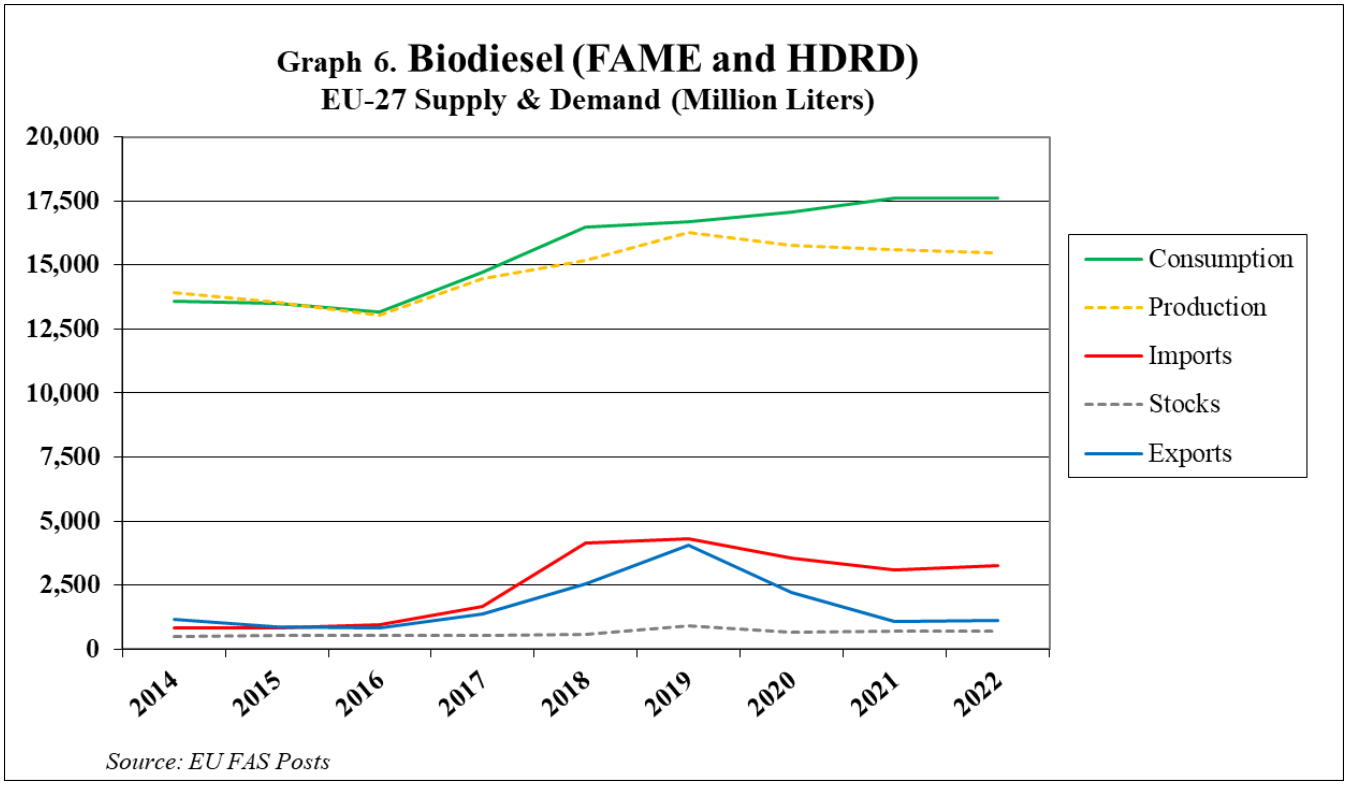
EU Production, Supply and Demand Table

Table 10. Biodiesel (FAME) & Renewable Diesel (HDRD) (Million Liters)

Calendar Year	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022f**
Beginning Stocks	500	550	540	530	590	900	670	680	700
Production	13,944	13,555	13,058	14,464	15,200	16,260	15,784	15,590	15,460
>HDRD Production	2,151	2,310	2,029	2,421	2,705	2,921	3,604	3,490	3,560
Imports	820	817	958	1,669	4,150	4,289	3,545	3,100	3,250
Exports	1,139	863	841	1,364	2,545	4,067	2,229	1,059	1,100
Consumption	13,575	13,519	13,185	14,709	16,495	16,712	17,090	17,611	17,610
Ending Stocks	550	540	530	590	900	670	680	700	700
Production Capacity, Biodiesel (FAME) (Million Liters)									
Number of Biorefineries	212	193	186	179	178	172	173	170	170
Nameplate Capacity	21,861	21,156	20,704	20,050	20,299	19,513	19,302	19,522	19,340
Capacity Use	53.9%	53.2%	53.3%	60.1%	61.6%	68.4%	63.1%	62.0%	61.5%
Production Capacity, Renewable Diesel (HDRD) (Million Liters)									
Number of Biorefineries	10	11	11	13	14	15	15	16	16
Nameplate Capacity	2,831	3,395	3,395	3,606	3,609	5,262	5,399	5,287	5,488
Capacity Use	76.0%	68.0%	59.8%	67.1%	74.9%	55.5%	66.8%	66.0%	64.9%
Feedstock Use for Biodiesel (FAME) + Renewable Diesel (HDRD) (1,000 MT)									
Rapeseed oil	6,300	6,300	5,850	6,300	6,000	6,200	5,600	5,900	6,000
UCO	1,570	1,950	2,200	2,400	2,600	2,980	3,330	3,230	3,700
Palm oil	2,060	2,000	2,020	2,425	2,330	2,250	2,620	2,550	1,800
Soybean oil	860	500	550	700	1,200	1,290	1,160	930	750
Animal fats	950	1,200	1,000	940	1,050	1,130	1,060	1,150	1,150
Sunflower oil	320	210	250	240	240	260	240	210	180
Other (pine oil, tall oil, free fatty acids)	310	415	304	429	607	768	602	645	714

Biodiesel (FAME) + Renewable Diesel (HDRD) Use Compared to Fuel Pool Demand 1/ (Million Liters)									
FAME + HDRD, on-road	12,858	12,787	12,536	13,462	15,054	15,604	15,817	16,400	16,400
FAME + HDRD, total	13,575	13,519	13,185	14,709	16,495	16,712	17,090	17,611	17,610
Diesel Pool, on/off-road /2	210,821	215,140	220,258	226,247	233,450	234,183	209,998	224,651	222,988
Diesel Pool, total 3/	290,776	301,829	305,869	311,054	309,507	311,747	289,205	298,916	298,495
Jet Fuels/Other Kerosene 4/	49,866	51,434	53,846	57,378	60,195	61,349	27,871	33,114	47,520

Sources/Notes: r = revised / e = estimate / f = forecast EU FAS Posts. 1/ Fuel pools are defined as fossil fuels plus all "bio-components" (biofuels). 2/ All on/off-road transport incl. construction & agriculture; excludes rail, heavy marine diesels & stationary power. Source: IEA. 3/ Covers all on/off-road uses as defined above plus rail & heavy marine diesels and stationary power. Source: IEA. 4/ Covers all private-commercial-military kerosene-type jet fuels (fossil and bio-based, both Jet A-1 and naphtha-kerosene blend Jet B) + other fuel applications. Source: IEA. Other notes: Original biodiesel/HDRD data collected in MT, then converted to liters using a conversion rate of 1 MT = 1,136 liters for biodiesel; 1,282 liters for HDRD. Production capacity as of December 31 of year stated. Production and consumption data source: 2013-2020: Eurostat, 2021+2022: FAS Post; Trade data: Trade Data Monitor (TDM, LLC); HDRD trade is assumed to be happening under a variety of customs code as no separate trade code for HDRD exists and may be underreported. Feedstock use: Data is not available. The figures above represent estimates by EU FAS posts. The category “other” includes but is not limited to pine oil, tall oil, tall oil pitch, palm fatty acids, and free fatty acids. Beginning/ending stocks: In the absence of reliable data and except for 2017 and 2018, data for stocks assumes that average stocks amount to the equivalent of two weeks’ supply of consumption.



Consumption

FAME and HDRD consumption[1] is driven almost exclusively by EU and MS mandates and, to a lesser extent, by tax incentives. In 2020, a six percent GHG reduction mandate became applicable for all fuel suppliers in the EU (see Policy and Programs chapter). This favors the use of FAME with high GHG reduction values and HDRD, especially in those countries that are already close to the seven percent volumetric blending limit for FAME (stipulated in the FQD[2]). This, and the use of double counting feedstocks/biofuels, limits the effect of increasing mandates on physical blending volumes as less biofuel is needed to fulfill the mandate. As a result, actual physical blend rates remain quite a bit lower than the nominal mandates stipulated in EU and MS legislation.

In 2022, higher mandates compared to 2021 are applicable in Belgium, the Czech Republic, Germany, Hungary, Poland, Slovakia, Slovenia, and Spain. In all other countries the mandates remain the same as in 2021. However, the EU has granted MS some flexibility in temporarily reducing biofuel mandated in response to the impacts from Russia's invasion of Ukraine. The extent to which MS will make use of this option may evolve throughout the year. At the time of writing, the following MS have announced measures that would affect 2022 consumption: Croatia, Finland, and Latvia. For more information about the mandates see our FAS GAIN report: Biofuel Mandates in the EU by Member State – 2022, published July 5, 2022.

In 2022, EU biodiesel consumption is expected to stagnate as positive effects from increased blending mandates and waning influence of COVID-19 are countered by high fuel prices resulting from global and regional supply/demand imbalance and Russia's war against Ukraine. Effects vary by country. Increased biodiesel consumption is expected in Belgium, the Netherlands, Sweden, Hungary, Spain, Austria, Denmark, Poland, Slovenia, Slovakia, Croatia, Greece, Bulgaria, Italy, and Portugal (in decreasing order of magnitude). However, double counting of certain feedstocks limits the increase that higher mandates could otherwise generate. For example, this is the case in Spain.

Table 11. EU27 FAME/HDRD Consumption Main Consumers (million Liters)

Calendar Year	2014	2015[r]	2016[r]	2017[r]	2018[r]	2019[r]	2020[e]	2021[r]	2022[f]
France	2,931	3,254	3,267	3,276	3,208	3,173	3,097	3,494	3,420
Germany	2,752	2,483	2,498	2,522	2,669	2,621	3,583	3,072	2,900
Spain	1,036	1,091	1,293	1,546	1,979	2,275	1,900	1,920	1,940
Sweden	568	720	1,468	1,756	2,248	1,744	1,596	1,691	1,730
Italy	1,340	1,709	1,362	1,388	1,322	1,257	1,366	1,374	1,380

[1] For some MS (e.g. Bulgaria, Germany, Romania) the consumption number given in this report refers strictly to on-road transport while for other MS (e.g. Austria, Belgium, Italy) it includes on/off-road transport (including rail/agriculture/aviation.)

[2] Annex II of the FQD limits the volumetric FAME content in diesel fuel to seven percent. Higher percentages are possible but only if the resulting fuel is labelled accordingly.

Poland	730	641	367	551	951	1,025	1,076	1,091	1,100
Belgium	375	436	452	568	625	625	454	625	740
Netherlands	317	229	175	261	426	534	387	505	560
Austria	708	710	641	572	529	578	444	452	470
Romania	172	190	268	278	254	386	384	431	420
Portugal	391	404	337	358	387	385	369	413	415
Others	2,255	1,652	1,057	1,632	1,897	2,110	2,434	2,544	2,535
Total	**13,575**	**13,519**	**13,185**	**14,709**	**16,495**	**16,712**	**17,090**	**17,611**	**17,610**

r = revised / e = estimate / f = forecast EU FAS Posts. Source: FAS EU Posts based on information collected in MT, then converted to liters using a conversion rate of 1 MT = 1,136 liters for biodiesel and 1,282 liters for HDRD.

In contrast, consumption is forecast to decline in Germany, France, Finland, Romania, and the Czech Republic. In Germany, the decline is a combination of the re-instated option to use excess GHG reduction certificates from the previous year and the increased use of FAME/HDRD with higher GHG reduction values. The latter reduces the physical volumes of biofuel needed to fulfill the mandate. In Finland, the decline is result of a temporary reduction in the blending obligations. In France and Romania, the decline is attributed to higher fuel prices.

In 2021, EU biodiesel consumption is estimated to have increased by three percent because of economic recovery after COVID-19 and the lifting of movement restrictions, and/or higher mandates. The top six consumers of biodiesel in the EU in 2021 were France, Germany, Spain, Sweden, Italy, and Poland. Together they accounted for 72 percent of the total EU FAME/HDRD consumption (see table below). For consumption developments prior to 2020 please consult page 27 of our FAS GAIN Biofuels Annual of 2019.

Production and Production Capacity

Preliminary data for 2021 suggests that EU combined FAME/HDRD production declined by 1.2 percent compared to 2020, largely due to lower domestic consumption in some MS and lower demand from the world market. Projected production decreases in France, Spain, Italy, Greece, Czech Republic, Portugal, and Belgium were too high to be fully compensated by small increases in Poland, Germany, Sweden, Finland, Hungary, the Netherlands, Slovak Republic, Bulgaria, Austria, and Romania. The decrease affected both FAME and HDRD. The latter is due to the beginning phase-out of palm oil as feedstock in France and to a standstill at Venice biorefinery in Italy.

For 2022, FAME/HDRD production is forecast to decrease by 0.8 percent as high feedstock prices aggravated by the effects of Russia's invasion of Ukraine are expected to make it more difficult for domestically produced biodiesel to compete with competitively priced imports. However, this masks different developments for FAME and HDRD. HDRD production is expected to grow by two percent as it has an advantage based on its higher GHG reduction values. In contrast, FAME production is forecast to further decline by 1.7 percent, most notably in Spain, France, Germany, and Greece. Increases of FAME production in Poland, Hungary, Sweden, and Slovakia are too small to compensate the decline

elsewhere. Depending on price developments for feedstocks and imported biodiesel, it could be possible that imports increase more than forecast to compensate for declining domestic EU biodiesel production.

Table 12. EU27 FAME Main Producers (Million Liters)									
Calendar Year	**2014[r]**	**2015[r]**	**2016[r]**	**2017[r]**	**2018[r]**	**2019[r]**	**2020[r]**	**2021[e]**	**2022[f]**
Germany	3,808	3,505	3,543	3,644	3,799	4,070	3,875	3,919	3,860
France	2,386	2,866	3,152	3,135	2,806	2,556	2,241	2,152	2,060
Spain	1,017	1,103	1,319	1,721	2,008	1,835	1,550	1,450	1,350
Poland	786	861	985	1,019	1,001	1,091	1,081	1,138	1,160
Netherlands	1,056	795	638	1,112	1,010	1,081	1,124	1,136	1,140
Italy	531	558	386	353	508	616	618	620	620
Belgium	568	535	521	511	511	568	568	568	570
Other	1,641	1,022	484	547	853	1,522	1,123	1,117	1,140
Total	**11,793**	**11,245**	**11,029**	**12,043**	**12,495**	**13,339**	**12,180**	**12,100**	**11,900**

Ranked by production in 2022, r = revised / e = estimate / f = forecast. Source: FAS EU Posts based on information in MT and converted to liters using a conversion rate of 1 MT = 1136 liters.

Table 13. EU27 HDRD Production (Million Liters)									
Calendar Year	**2014**	**2015**	**2016**	**2017[r]**	**2018[r]**	**2019[r]**	**2020[r]**	**2021[e]**	**2022[f]**
Netherlands	1,013	1,192	1,154	1,218	1,218	1,218	1,218	1,218	1,220
Italy	323	323	323	323	323	328	797	750	800
Spain	377	262	418	465	482	549	480	460	460
Finland	438	533	135	383	354	424	381	397	410
France	-	-	-	-	128	150	476	385	370
Sweden	-	-	-	-	160	205	205	231	255
Portugal	-	-	-	32	37	44	45	45	45
Czech Republic	-	-	-	-	3	3	3	3	4
Total	**2,151**	**2,310**	**2,029**	**2,421**	**2,705**	**2,921**	**3,604**	**3,490**	**3,560**

Ranked by production in 2022; e = estimate / f = forecast. Source: FAS EU Posts based on information in MT, converted to liters (conversion rate of 1 MT = 1282 liters).

The structure of the EU biodiesel sector is quite diverse. Plant sizes range from an annual capacity of 2.3 million liters owned by a group of farmers to 680 million liters owned by a large multi-national company. FAME production facilities exist in every EU MS, except for Finland, Luxembourg, Croatia, and Malta. In contrast, HDRD production is concentrated in only eight countries (see table above). The majority of HDRD capacity consists of dedicated HDRD plants, of which the main producers are Finland's Neste, Eni of Italy, and Total Energies of France. Repsol and Cepsa in Spain and Portugal co-process HDRD with conventional fuel at their oil refineries.

EU FAME production capacity remained flat in 2021 as a reduction in France was compensated by expansion in Poland. In 2022, a new plant in Hungary and a small capacity increase in a plant in Austria

together push up EU FAME production capacity by 0.4 percent. However, numerous plants throughout the EU are operating below capacity or are temporarily shut down due to negative market conditions, already present before the COVID-19 crisis. EU HDRD production capacity marginally increased by 0.5 percent in 2021, and is projected to increase by 1.2 percent in 2022, both due to an expansion of the plant in Sweden.

Feedstock Use and Co-products Production

In most MS, official data on biodiesel/HDRD feedstock use is not available. The figures and analysis presented below are based on FAS EU Post estimates. Russia's invasion of Ukraine has further increased prices for vegetable oils that had already become increasingly challenging for biodiesel producers in recent years. This is partly because of high fuel and energy costs and partly because Ukraine historically is a major supplier of rapeseed, soybeans, and sunflower seeds and oils. For details on the vegetable oil market, please see the latest FAS GAIN EU Oilseeds and Products Annual.

The war's effect on global food security re-ignited the food-versus-fuel-debate, especially in Europe. In Germany, a Ministry of the Environment working paper proposes to lower the current 4.4 percent cap on the use of crop-based biofuels to 2.3 percent in 2023, and phase them out completely by 2030. If implemented, this would favor waste-based feedstocks such as UCO, animal fats, free fatty acids, pine oil, tall oil, as well as non-biomass-based feedstocks (e.g., municipal solid waste) and eFuels, such as green hydrogen, which are not covered in this report.

Rapeseed oil is still the dominant biodiesel feedstock in the EU, accounting for 40 percent of total FAME/HDRD feedstock use in 2021. This represents a partial rebound from the severe dip in 2020 that resulted from low domestic rapeseed harvest and high rapeseed oil prices. For 2022, a further small increase of two percent is anticipated because of higher availability due to the higher EU rapeseed harvest in 2021. The popularity of rapeseed oil is grounded in its domestic availability, as well as in the higher winter stability of the resulting rapeseed methyl ester (RME) compared to other feedstocks. This is more important in the northern MS than for those situated in Mediterranean region with warmer winters. However, rapeseed oil's share in the feedstock mix has continuously decreased since its peak in 2008, when it accounted for 72 percent. This is partly due to a higher use of recycled vegetable oil, such as used cooking oil (UCO), animal fats, and in past years of palm oil.

Used Cooking Oil was the second most important feedstock in 2021, accounting for 22 percent of the total feedstock. The increased use of this feedstock is driven by double counting eligibility for UCO-Methyl Ester (UCOME) in the majority of MS, and the fact that its fatty acid composition is better suited for HDRD production than that of rapeseed oil. In 2020 and 2021, a growing share of UCO had to be imported due to restaurant closures during COVID-19. During the lockdowns, many MS ordered restaurants to temporarily close down or restrict their services to take-away and delivery, which impacted the availability and collection of the used cooking oil. While this phenomenon also occurred in other parts of the world, it did so at different times of the year, which made imports possible during times of low domestic supply. For 2022, domestic EU UCO collection is expected to rebound as restaurant dining and public events with high potential for UCO collection (e.g., festivals, soccer games) pick up after the last COVID-19 physical distancing were lifted.

According to TDM, LLC, the EU imported 1.6 MMT of UCO in 2021, roughly the same amount as in 2020 but 26 percent more than in 2019 (1.3 MMT); with China, Malaysia, United Kingdom, Indonesia, and Russia being the largest suppliers, together accounting for 72 percent of EU UCO imports. In 2021, the largest EU producers of UCOME were the Netherlands, Germany, Spain, Italy, Portugal, Austria, and France. Together they accounted for 91 percent of this feedstock use. Smaller amounts of UCOME were produced in France, Poland, the Czech Republic, Ireland, Slovakia, Bulgaria, and Hungary. In 2022, the use of UCO is forecast to increase by another four percent. The additional volumes are forecast to consist partly of higher volumes of domestically collected UCO and partly of higher imports, especially from China and the United Kingdom.

Palm oil was third in terms of feedstock use in 2021, accounting for 17 percent. However, its use declined by three percent compared to 2020, mostly due to the phaseout of this feedstock in France. Exceptionally high palm oil prices resulted in lower use in Spain. Palm oil was mainly used in Spain, Italy, the Netherlands, and Belgium, and to a much lesser extent in Finland, Germany, and Portugal. Negligible amounts are also used in Romania, and Greece. In 2022, palm oil use is forecast to further decline by as much as 29 percent, as more MS are starting to phase-out of biofuels deriving from high-risk ILUC crops (see the Policy and Programs chapter of this report). Several MS have announced earlier phase-outs. France spearheaded this movement and excluded palm oil-based biofuels effectively since January 2020. Austria followed effective July 2021. Germany will ban palm oil starting in January 2023 but introduced a 0.9 percent cap on high-ILUC feedstocks for the year of 2022. However, the bans only affect the eligibility for counting against mandates (i.e., consumption) and not production. Therefore, palm oil based HDRD/PME can still be produced in MS with a ban but will have to be exported either to another MS market or outside the EU. As a result, the effect on the EU feedstock mix will only be felt when more countries apply such bans.

Animal fats accounted for eight percent of total FAME/HDRD feedstocks. It benefitted less from double-counting than UCO, as fewer MS allow double-counting for use of tallow methyl ester (TME) (Denmark, Finland, France, the Netherlands, and the United Kingdom) than for UCOME. In addition, in Germany, TME use does not count against the biofuel mandate and its production is exported to other MS. Increased animal fat use is the result of new plants (or capacity increases at existing plants) rather than a function of feedstock prices, as using animal fat requires changes to the technical equipment. In 2021, Italy is estimated to have been by far the largest user of animal fat for FAME/HDRD production, followed by the Netherlands and France. Finland, Germany, the Czech Republic, Denmark, Spain, Austria, Hungary, Ireland, and Poland also used animal fats but to a much lesser extent.

The use of **soybean oil** and palm oil in FAME is limited by the EU biodiesel standard DIN EN 14214 and colder weather conditions. However, the standard can be met by using a feedstock mix of rapeseed oil, soybean oil, and palm oil. On its own, SME does not comply with the iodine value prescribed by this standard (the iodine value functions as a measure for oxidation stability). Additionally, PME has a higher cloud point than RME and SME and thus does not provide enough winter stability in northern Europe. However, the incentive persists to maximize the use of SME and PME due to their lower cost. Most of the soybean oil is used in Spain, followed by Germany, the Netherlands, and France. Smaller amounts are being used in Portugal, Bulgaria, Romania, Belgium, Austria, Greece, and Poland.

Sunflower oil accounted for only 1.4 percent of the total biodiesel feedstock, and is mainly used in Greece, France, Bulgaria, and Hungary - collectively accounting for 59 percent of EU sunflower oil-

based biodiesel production. Small amounts of sunflower oil are also being used in Romania, Lithuania, and Poland. For 2022, the use of sunflower oil for biodiesel production is forecast to decline by 14 percent due to the high prices and limited supply of this feedstock as Ukraine was a major supplier of sunflower oil to the EU.

The category "**other**" includes pine oil and wood (Sweden), free fatty acids (Germany and Finland), tall oil (Finland), palm fatty acids (Finland), and cottonseed oil (Greece.)

Origin of feedstocks and byproducts generated

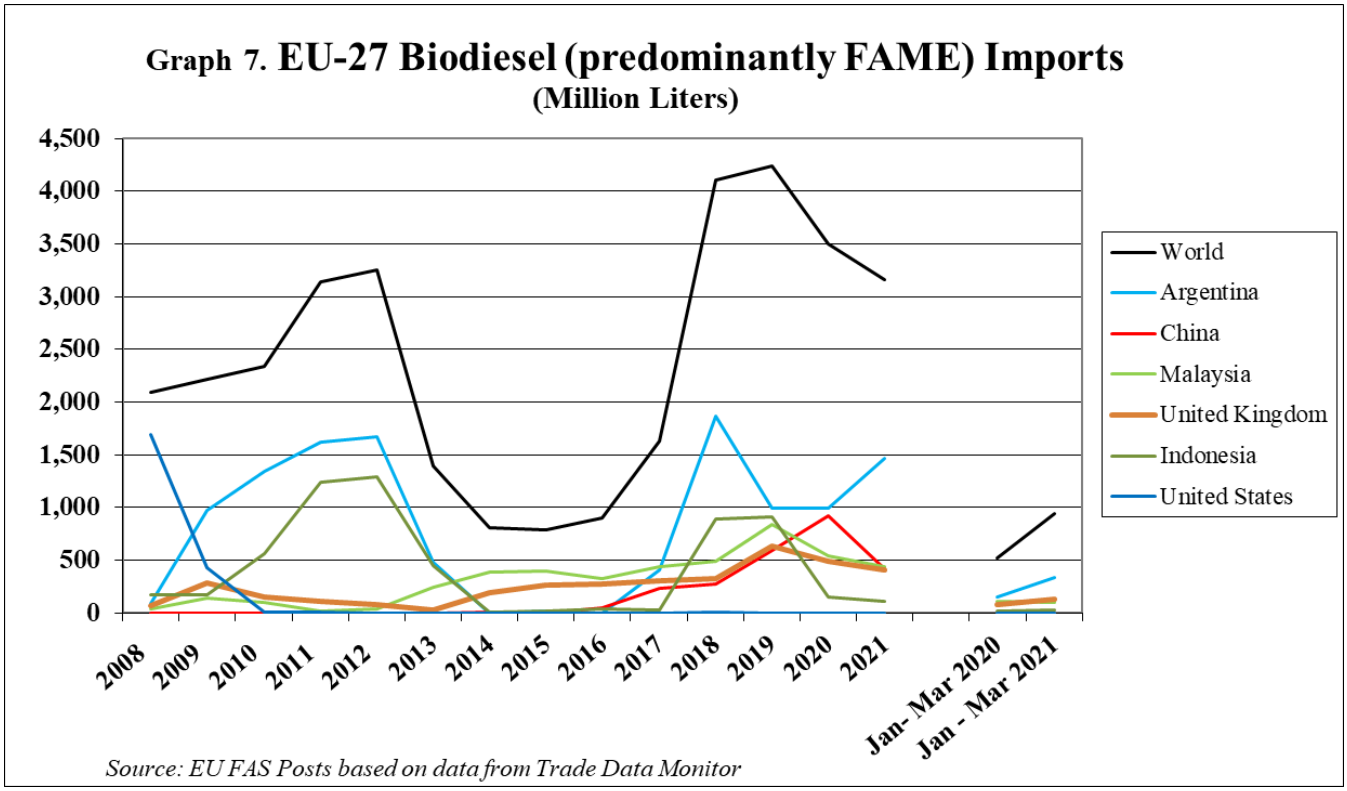
A large share of EU soybean oil is crushed from imported soybeans. In contrast, most of the rapeseed oil is of domestic origin. The 2022 projection of 6 MMT of rapeseed oil used in RME is equivalent to about 15 MMT of rapeseed. This also generates roughly 9 MMT of rapeseed meal as a byproduct, most of which is used for animal feed. Similarly, 3.75 MMT of soybeans will have to be crushed to generate the 750,000 MT of soybean oil with about 3 MMT soybean meal as a byproduct (see also the latest FAS GAIN EU Oilseeds and Products Annual).

Trade

Currently, EU Customs combines HDRD with other products under a single 10-digit code, and therefore exact HDRD trade (import and export) volumes remain difficult to determine. It is reported by the trade that HDRD is traded under CN 27.10.19, but it is not clear which 10-digit code is used. China's HDRD industry, mainly using UCO feedstock apparently, reportedly first shipped product to the EU in 2017 and continues to ship, albeit not consistently. Although targeting mostly North American markets, Neste's Singapore's HDRD plant, now undergoing expansion to include sustainable aviation fuel (SAF) production, has reportedly also shipped limited HDRD to Europe. The trade flow discussed below is limited to biodiesel codes 38.26.00 and 27.10.20 converted to a B100 equivalent and should not include HDRD when classified elsewhere.

In 2021, EU imports of biodiesel (predominantly FAME) decreased by 9.4 percent compared to 2020. Despite the EU imposed countervailing (CV) duties on biodiesel from Argentina in February 2019, Argentina was able to defend its place as the largest supplier of biodiesel to the EU. This was possible as Argentina offered an undertaking (an offer to prevent prices from falling below a certain floor price, see also Policy and Programs chapter), which provided planning certainty for Argentine exporters and EU importers. Comparing import data from China for biodiesel and UCO, suggests that China exported more UCO and less UCOME than in previous years. However, IHS Markit data[3] suggests that China increased its HDRD production, which might be exported under a different HS code. Consequently, EU biodiesel imports from China may be underestimated.

[3] World Ethanol & Biofuels report, Vol. 20, No 17, page 8



In 2021, the dominant suppliers of biodiesel to the EU were Argentina, Malaysia, China, the United Kingdom, South Korea, and Indonesia, accounting for 46, 14, 13, 13, four and four percent of EU biodiesel imports, respectively. Imports from Argentina increased by 48 percent in 2021 (compared to 2020) at the expense of shipments from China, Malaysia, the United Kingdom, and Indonesia.

In 2022, EU biodiesel imports are forecast to increase by about six percent. Depending on price developments for feedstocks and imported biodiesel, it could be possible that imports increase more than forecast at the expense of domestic EU biodiesel production. Trade data for the first three months of 2022 show a higher increase in imports, especially from Argentina and Norway.

In addition, price increases for fuels and feedstock worldwide resulting from several factors including the market impacts from Russia's war against Ukraine, Argentina's "temporary" biodiesel blending increase from B5 to B12.5 to address fuel scarcity, and phase-out of palm oil-based biofuels in some MS creates uncertainty in the 2022 import forecast currently. EU biodiesel exports to destinations outside the bloc remain marginal and normally amount to less than five percent of production, and are thus not discussed in this report.

Stocks

In the absence of reliable data, the data for stocks is based on the assumption that average stocks are equivalent of two weeks' supply of consumption. However, after the lifting of anti-dumping (AD) duties on biodiesel from Argentina, and in anticipation of the outcome of EU anti-subsidy proceedings against Argentina, European traders and petroleum companies accumulated large stocks at the end of

2018. These are assumed to have been reduced throughout 2019 and, by the end of the year, returned to the assumed average level.

V. Advanced Biofuels

The EU's Renewable Energy Directive (RED), extended under REDII, establishes an overall policy for the production and promotion of energy using "advanced" biofuels in the EU. As lower carbon emission biofuels replace higher carbon emission fossil fuels (based on full life-cycle analysis) in the transportation sector, EU policy is structured to limit further expansion of "conventional" biofuels and incentivize expanding use of "advanced" biofuels. This is because advanced biofuels (as defined) are less likely to result in land use change and may use waste-stream feedstocks or feedstocks that don't require any land use. Please refer to the Policy and Programs chapter of this report for more information.

Hydrogenation-derived renewable diesel (HDRD, also known originally as hydrogenated vegetable oil (HVO)), is a drop-in fuel that can fully replace fossil diesel, and, with some modification, can be used as sustainable aviation fuel (SAF). It is therefore treated as an advanced biofuel in this report but would only be considered advanced under EU policy when made with qualifying waste-stream feedstocks.

Implementation of the REDII and Advanced Biofuels

Some EU MS plan to achieve higher blending rates of advanced biofuels than required by the REDII. In February 2019, Finnish Parliament approved a law that mandates an advanced biofuel share of two percent in 2023, increasing to ten percent in 2030. The Netherlands imposed a mandate of 3.5 percent blending of advanced biofuels in 2025 and seven percent in 2030. In the two main fuel markets in the EU (Germany and France), the mandates for advanced biofuels are more conservative. In Germany, the advanced biofuels target is 0.7 percent in 2025 and gradually increasing to 2.6 percent in 2030. But it should be noted that in Germany HDRD and waste-based biodiesel enjoy competitive advantages based only on their higher greenhouse gas (GHG) reduction characteristics compared to first generation biofuels. In France, the blending objective of advanced biofuels is 3.8 percent in gasoline and 2.8 percent diesel by 2028 (including double counting). For more information about the mandates see our FAS GAIN report: Biofuel Mandates in the EU by Member State – 2022, published July 5, 2022.

Research on the Application of Advanced Biofuels

The bioeconomy is one of the key research areas of the EU. The Bioeconomy Strategy and the Bioeconomy Action Plan, both published in October 2018, contribute to the European Green Deal. For more information see the Bioeconomy research and innovation website of the European Commission (EC), and the EU Biorefinery Outlook to 2030, which presents scenarios on how demand and supply for bio-based chemicals and materials could grow to 2030.

In July 2014, the Bio-Based Industries Joint Undertaking (BBI-JU) was launched. The goal of the program was to convert biomass into common consumer products through innovative technologies by biorefineries. Examples of projects funded by the BBI-JU include the LIGNOFLAG and the OPTISOCHEM project. The LIGNOFLAG project aims to build and operate a commercial flagship

production plant for biochemical lignocellulose conversion to cellulosic ethanol with a yearly production capacity of up to 75 million liters. With the OPTISOCHEM project two companies cooperate to produce cellulosic bio-isobutene from straw. The bio-isobutene can be used as renewable feedstock to produce a wide range of chemicals such as biofuels, adhesives, and flavors.

On February 23, 2021, the EC has agreed on the successor of BBI JU: the Circular Bio-based Europe Joint Undertaking (CBE JU). The CBE JU is a €2 billion partnership between the EU and the Bio-based Industries Consortium (BIC) that funds projects advancing competitive circular bio-based industries under Horizon Europe. The objective of the initiative is to produce major contributions to the climate targets by 2030 and pave the way for climate neutrality by 2050. It aims to develop and expand the sustainable sourcing and conversion of biomass into bio-based products focusing on multiscale biorefinery processing. CBE JU expects to launch its first call for proposals in the second or third quarter of 2022.

Commercial Production of Advanced Biofuels

Since 2010, the production of HDRD has taken off in the EU. Most HDRD is produced from lipids (plant oils and animals fats, both virgin and waste stream products) and can be fully substituted for diesel and other transport fuels, such as for aviation. In 2021, HDRD production declined slightly to 3.49 billion liters from 3.60 billion liters in 2020. In 2022, HDRD production is forecast to recover to roughly 3.56 billion liters based on production expansion in France and new capacity in Sweden. HDRD consumption in road transport was not hit by the COVID-19 crisis but increased because of the waste-based double-counting content of HDRD fuels and the superior technological properties which permit 100 percent replacement with fossil distillates. During 2020-2022, HDRD production expansion has been limited, but by 2025 capacity is forecast to double. This will cause an increase in the demand of feedstocks, in particular the feedstocks listen in Part A and B of Annex IX of the RED. In Finland and Sweden, biorefineries are operational which refine crude tall and pine oil into intermediate feedstocks for the HDRD plants. The current annual capacity is estimated at about 150 million liters.

The commercialization of cellulosic biofuels (almost entirely ethanol) is lagging behind the development of HDRD by a wide margin. The main factors that prevent operators from investing in cellulosic biofuels are high research and production costs and regulatory uncertainty. The EU capacity for cellulosic ethanol production is estimated at about 125 million liters in 2022. It should be noted that several ethanol plants reprocess byproducts, in many cases from their own process, such as sludge, which can be counted as advanced biofuels. Production of advanced ethanol from non-cellulosic waste materials listed in Part A of Annex IX of the REDII, such as food waste, is estimated at 240 million liters in 2019 and 440 million liters in 2020 by ePURE. The table below outlines the operational or close to operational advanced biofuel plants, at a commercial scale, in the EU.

Table 14. Advanced Biofuels Plants in the EU

Country	Biofuel	Feedstock	*Capacity* (million liters per year)	Year of opening
Finland	HDRD	Oils and fats	430 (2 lines)	2007
The Netherlands	Methanol	Biogas	75	2010

Spain	HDRD	Palm oil	945 (7 plants)	2011
The Netherlands	HDRD	Oils and fats	1,280	2011
Italy	HDRD	Vegetable oils, animal fats, UCO, and algae extracts	465 (720 in 2024)	2014
Finland	HDRD	Tall oil	115	2015
Sweden	HDRD	Tall oil	220	2015
Portugal	HDRD	Palm oil	50	2017
Finland	Ethanol	Saw dust	10	2018
Germany	Bio-CNG	Straw	-	2018
France	HDRD	Oils and fats (50 percent palm oil)	640	2019
Italy	HDRD	Vegetable oils, animal fats, UCO, and algae extracts	965	2019
Sweden	Methanol	Pulp mill side-streams	6	2020
Italy	Ethanol	Biomass	32[S]	2020
Austria	Ethanol	Wood sugar	30	2020
Romania	Ethanol	Wheat Straw	65	2021
Sweden (Preem)	HDRD	Pyrolysis Oil	65 (950[1])	2021

Table 14 Source: EU FAS Posts HDRD = hydrogenation derived renewable diesel (also known originally as hydrotreated or hydrogenated vegetable oil or HVO, a unknown portion is Sustainable Aviation Fuel), S=including for sanitary use. 1. Capacity will be increased to 950 million liters in 2024.

Hydrogenation Derived Renewable Diesel and Pyrolysis Oil

Finland and the Netherlands: In Finland, Neste operates one plant with two lines of roughly 215 million liters each. In 2011, Neste opened a renewable diesel plant with an annual capacity of 910 million liters in Rotterdam. In addition to drop-in biofuels, the Neste plants produce renewable naphtha, propane, and alkanes. Current annual production capacity at the plant in Rotterdam is a maximum of 1.28 billion liters. In 2021, roughly 92 percent (85 percent in 2020) of the feedstock used by Neste to produce HDRD consisted of waste fats and oils. The waste and residues consist of UCO, palm fatty acid distillate (PFAD), bleaching earth oil, technical corn oil, and animal fats. Neste's goal is to reach a 100 percent waste and residues share by 2025. Neste is planning to build another plant in the port of Rotterdam with a capacity of roughly 2 billion liters. In addition to Neste, also UPM and Shell are planning to build a renewable diesel plant in Rotterdam of about 640 million liters and one billion liters, respectively. The three prospective plants will partly produce sustainable aviation fuel (SAF) with plans to be fully operational in 2025 or later.

Finland: In 2015, UPM opened a HDRD plant in Lappeenranta. The capacity of the plant is roughly 115 million liters of advanced biofuels per year, and the plant is using tall oil, a residue of pulp production, as a feedstock. Biocrude oil as feedstock for HDRD production is produced by two refineries in Finland. Green Fuel Nordic Oy partnered with a Dutch company, BTG, to produce 25 million liters of pyrolysis oil at its plant in Lieksa. Fintoil is building a crude tall oil refinery with a capacity of 200,000 MT (as feedstock for roughly 100 million liters of renewable diesel), which is planned to become operational in the summer of 2022.

Spain: The Spanish HDRD production is mainly from co-processing by petroleum refineries (co-fed with bio-components). Both CEPSA (since July 2011) and REPSOL (since 2013) are producing HDRD. For more information see GAIN Report – Spain's Biodiesel and Renewable Diesel Overview.

Italy: In 2014, a HDRD plant was opened by Eni in Venice, Italy. Since then, the plant has produced approximately 325 million liters per year. Production is forecast to increase to 540 million liters in 2024 with additional upgrades. The feedstock will include an increasing proportion of used oils, animal fats, and byproducts from palm oil production. Following the model adopted for Venice, Eni converted their petroleum refinery in Gela, Sicily, into a renewable diesel production facility to produce 770 million liters per year. In 2020, the plant produced about 585 million liters. In 2021, Eni reduced the use of palm oil by a third. By 2023, Eni plans to phase out the palm oil as feedstock for the plants in Venice and Gela. Eni plans to increase its total HDRD annual capacity to 2 MMT by 2025. To ensure feedstock supply, Eni reportedly developed a network of agri-hubs in Africa.

Sweden: In Gothenburg, Preem produces nearly 160 million liters of HDRD per year from tall oil. The company recently expanded its production capacity to 220 million liters. Preem sources a variety of raw materials, including raw tall oil diesel from SunPine, and food waste including UCO. The company is reportedly planning to further expand to 1.3 billion liters in 2023, and 5 million liters in 2030. To achieve this, a plant of 950 million liters is expected to become operational in 2024 in Lysekil. The company is currently investigating the use and sourcing of other raw materials.

The Finnish company, St1 plans to produce up to 250 million liters of HDRD and SAF in Gothenburg (Sweden) beginning in 2023. The feedstocks will likely be UCO and tall oil. St1 is also investigating the construction of another plant with a capacity of 500 million liters of biofuels per year, beginning operations in roughly five years.

One of the raw materials which will be used by Preem and St1 for their expanded production is biocrude oil made from tall oil. To increase the supply of biocrude oil, SunPine increased its capacity from about 100 million liters to 150 million liters in 2021. Pyrocell, owned by Preem and Setra, constructed a plant to produce nearly 30 million liters of biocrude oil. In September 2021, production of the non-fossil oil started.

France: Total Energies' HDRD plant located in La Mede (Southern France) began producing HDRD in July 2019. This plant has a maximum capacity of 640 million liters per year. In 2021, production is estimated at 385 million liters. Feedstocks were expected to be 60 to 75 percent vegetable oils, and 25 to 40 percent waste oil such as UCO and animal fats. On February 24, 2021, the French Council of State confirmed the ban on the use of palm oil in biofuels. The ban on palm oil has led to a diversification of the raw materials Total Energies will use. Used edible oils, animal fats and rapeseed were the most used raw materials (80 percent of the volumes incorporated), coming mainly from European countries. Another project in France is the BioTFuel project, a cooperation of Avril, Axens, CEA, IFPEN, ThyssenKrupp, and Total Energies. This project aims to produce 230 million liters of advanced biodiesel and SAF per year from one MMT of biomass. The demonstration-scale plant is located at Total Energies' former Flandres petroleum refinery in Dunkerque.

Portugal: Portuguese HDRD production is mainly produced through co-processing of vegetable oils by petroleum refineries. Since 2017, GALP has been producing HDRD in their facilities in Sines. Production capacity is estimated at 35 million liters per year. Galp is considering the installation of a second HDRD unit in Sines which could have an annual production capacity of over 345 million liters. If this project finally materializes, it will be operational in 2025. Since Portugal's production is palm oil based, it will face limits imposed on this type of feedstock. Palm oil producers may certify their feedstock as low-risk ILUC to keep their presence in the EU market beyond 2023.

Czech Republic: Unipetrol RPA produces HDRD at an experimental scale of roughly 3.2 million liters per year.

Cellulosic Ethanol

Italy: On February 16, 2022, Versalis, Eni's chemical subsidiary, restarted the production of bioethanol from lignocellulosic biomass at Crescentino – at the former Beta Renewables plant that had shut down in 2017. The plant is capable of processing 200,000 MT of biomass per year, with a maximum production capacity of approximately 32 million liters of bioethanol per year. Following an initial test production, the plant is now fine-tuning its processes and scaling up production. Since July 2020, Crescentino also produces sanitary ethanol in response to the COVID-19 crisis.

Finland: St1 has three concepts for advanced bioethanol production. The Cellunolix® biorefining concept processes sawmill side products, such as sawdust and chips from soft wood. The pilot plant in Kajaani has an annual production capacity of 10 million liters and started production in 2017. St1 reportedly plans to build three similar plants, each with a capacity of 50 million liters in Kajaani (Finland), Pietarsaari (Finland) and Follum (Norway). St1's Etanolix® concept refines waste and residues rich in starch and sugar into advanced ethanol. An Etanolix® plant can be set up as stand-alone plant or it can be integrated at a food processing plant such as a bakery or brewery. There are three Etanolix® biorefineries in production in Finland (in Lahti, Vantaa and Hamina). The annual production capacity varies between 1 to 9 million liters. The Bionolix® biorefining concept makes it possible to produce advanced ethanol from municipal and commercial biowaste. The Bionolix® technology is being tested and operated since 2010 in Karanoja waste treatment area in Hämeenlinna, which has annual production capacity of 1 million liters. Other companies which are planning to erect advanced bioethanol plants in Finland are Nordfuel and BioEnergo. Nordfuel is planning to build a biorefinery producing annually 80 million liters ethanol from wood. BioEnergo is planning to build a similar plant with an annual capacity of approximately 60 million liters.

Austria: The company Austrocel, a cellulose producer, started building an advanced bioethanol plant at the beginning of 2020. The feedstock comes from the remainders of its cellulose production. The plant went into operation by the end of 2020 and delivered its first advanced biofuels shipment of 1.3 million liters in January 2021. The Austrocel plant has a capacity of 30 million liters per year. The plant closed in June 2021 due to safety issues. In March 2022, the plant re-opened and biofuels has production resumed. The Austrian sugar, starch, and ethanol producer Agrana, uses residuals of its own starch production as feedstock. In 2020, about 30 percent of the feedstock for the production of about 222 million liters of bioethanol was starch sludge.

Romania and Bulgaria: In the fall of 2021, Clariant opened an advanced ethanol plant with a capacity of 65 million liters in Romania. Wheat straw is the major feedstock. There is a plan for an advanced bioethanol plant with the same feedstock developed by OMV Petrom. The projected capacity is 65 million liters, and the company plans to open the plant in 2023. Clariant also plans to open an advanced ethanol plant in Bulgaria, with an annual capacity of 65 million liters using about 250,000 MT of wheat straw. In Bulgaria, another ethanol plant was opened at the end of 2021 with a capacity of 60 million liters. The plant has technical ability to produce conventional, advanced, and industrial chemical bioethanol making use of byproducts from starch production.

Poland: On March 1, 2022, the Polish oil company, ORLEN Group, announced that they will build an installation to produce advanced bioethanol from non-food products, mainly straw. Its planned annual capacity is 32 million liters. Plant completion is expected in the fourth quarter of 2024. The bioethanol plant will be built together with a biomass (mainly lignin as a byproduct of the ethanol production) fueled combined heat and power (CHP) plant. In the next stage of the project, a biogas plant will be built. It will process stillage, also a byproduct of bioethanol production.

Biomethanol

Biomethanol can be used as a platform chemical to produce other chemicals such as lactic acid and formaldehyde. It can also be used as a transport fuel and blended with biofuels, diesel, and gasoline, or used to produce bio-methyl tertiary butyl ether (bio-MTBE) or bio-dimethyl ether (bio-DME).

The Netherlands: The advanced biofuel plant BioMCN produces biomethanol from biogas. BioMCN produces about 75 million liters of biomethanol annually. Additionally, a consortium of Enerkem, Shell, Air Liquide, Nouryon and the Port of Rotterdam is planning to build a waste-to-biomethanol plant in Rotterdam. The facility will convert 360,000 MT of waste into 270 million liters of biomethanol.

Sweden: In 2020, Södra began production of biomethanol at a pulp mill in southeastern Sweden. The plant has an annual capacity of 6 million liters which is extracted from pulp mill side-streams. Biomethanol can be used as an energy source for the mill, a renewable transport fuel, or as platform chemical. As planned, the first deliveries will be shipped to Denmark and used to produce biodiesel.

Biomethane

Germany: Verbio is producing biomethane from straw at its plant at the Schwedt/Oder site. The plant has capacity to produce approximately 140 GWh of biomethane per year. This is equivalent to 14 million liters of diesel on an energy basis– using approximately 40,000 MT of straw. The biomethane is destined for use in the transport sector as bio-CNG/LNG and will qualify to count against the mandate for advanced biofuels under the national implementation of the REDII in Germany.

Other: A wide range of plants are producing biogas and bio-LNG as transport biofuel across much of Europe. Most of these plants use organic household and industry waste as feedstock. An example is the bio-LNG plant of Renewi in the Netherlands. In 2020, about a quarter of the gas used in transport was renewable in the EU.

Sustainable Aviation Fuel (SAF) and Marine Biofuels

In 2011, the EC, Airbus, and aviation and biofuel producers' industries, launched the European Advanced Biofuels Flightpath. This action was scheduled to achieve two million MT, (about 2.5 billion liters) of SAF by 2020. In 2018, the organization determined that the progress was insufficient to achieve this target. The conclusion was that one of the main barriers for the introduction of SAF is the investment needed to expand production on a commercial scale. Other complications were the lack of harmonization of EU MS policies and the evolving political developments regarding the sustainability requirements for biofuels.

A part of the SAF supplied at European airports such as the Rome Fiumicino Airport, Copenhagen Airport, Schiphol Airport (Amsterdam), and Frankfurt Airport is currently covered by imports from the United States. In 2020, the EU production of SAF totaled 56 million liters (source: Eurostat), with Finland as the sole producer. By comparison, 2020 commercial airline procurements of commercial SAF in the United States were 17 million liters, nearly all of which were used at California airports. The current SAF production capacity of Finland's Neste is about 125 million liters, but most of this capacity is reportedly located in Singapore. Neste plans to increase its worldwide SAF production capacity to 1.9 billion liters in 2023, which includes its capacity at its Rotterdam plant. The Swedish company, Preem, also expressed its intention to begin producing of up to 300 million liters of SAF in 2022.

Through 2022, Eni will supply the Rome Fiumicino Airport with about four million liters of jet fuel blended with renewable raw material components. The jet fuel is produced through a co-feeding process at the refinery in Taranto with 0.5 percent made up of UCO. The production of SAF is expected to ramp-up with approximately 12 million liters per year through co-feeding the petroleum refineries with UCO. As from 2024, the Gela/Sicily biorefinery will produce an additional 190 million liters of SAF per year, entirely produced from biomass.

SkyNRG is planning to produce SAF for Schiphol Airport in Delfzijl, a seaport in the Northern part of the Netherlands. With the technical expertise of Shell Aviation, the plant will convert waste fats and oils with a SAF production capacity of nearly 125 million liters. The company reportedly has an offtake agreement to deliver the SAF to KLM for ten years and production is scheduled to begin in 2025.

Another potential for biofuels is the marine fuel market. The Dutch biofuel distributor, GoodFuels, has partnered with several ship owners to supply marine biofuels to ships in the Port of Rotterdam and other European ports.

VIII. Notes on Statistical Data

Brexit

Following Brexit, the historic EU27 statistics in this report don't fully match statistics of the EU28 which included the United Kingdom, as the source of data has changed from EU MS statistics to predominantly Eurostat data.

Bioethanol

Historical fuel ethanol production capacity, production and consumption figures are based on statistics of Eurostat and the European Renewable Ethanol Association (ePURE). Production of fuel ethanol: Eurostat statistics of indigenous "bioethanol" production (ethanol produced from biomass and/or the biodegradable fraction of waste, to be used as biofuel). MS production figures are estimated by FAS Posts. Consumption of fuel ethanol: Eurostat statistics of final consumption (energy use by transport sector) of blended "biogasoline," which includes biomethanol and ETBE.

Individual MS statistics and EU current and out year forecast are FAS Post estimates. FAS Posts based their estimates on intel from national industry organizations and government sources. Ethyl tert-butyl ether (ETBE) is not included in ethanol production but is included in the consumption and trade figures. ETBE is predominantly consumed in France, Spain, the Netherlands, and Poland.

Fuel ethanol import figures are based on Trade Data Monitor (TDM) data (sourced from Eurostat) and the U.S. Bureau of Census. As the EU has no Harmonized System (HS) code for ethanol used as fuel, trade numbers are difficult to assess. From 2014 to 2019, the estimation of the EU fuel ethanol import figures is based on EU imports through preferential trade under HS 2207 (Bolivia, Costa Rica, Guatemala, and Peru), and the imports from the United States. The monthly shipments larger than one million liters plus a unit value of more than one $ per liter are counted as fuel ethanol, the remained is treated as non-beverage, non-fuel ethanol. HS code 29091910 covers ETBE which contains 45 percent ethanol by volume. Starting in 2020, EU fuel ethanol import figures are based on the surveillance program for fuel ethanol of the European Commission (EC).

Feedstock and co-product figures for fuel ethanol: Official data for feedstock use is scarce and generally unavailable from industry and government sources. The figures in this report represent FAS Posts estimates supported by staff assessments of grain markets which are published. Feedstock and co-product figures are cross-checked with fuel ethanol production figures as published in the ethanol balance table using known feedstock/biodiesel yield rates (listed in the Appendix) to ensure accuracy.

Biodiesel/HDRD

Production and consumption figures are based on statistics of Eurostat and MS official statistics and adjusted by EU FAS Posts using additional information obtained from national industry organizations and government sources.

Trade figures are based on Trade Data Monitor (TDM) data (sourced from Eurostat) and the U.S. Bureau of Census and adjusted for U.S. exports of biodiesel blends. A specific customs code for pure biodiesel (B100) and biodiesel blends down to B96.5 (HS 3824.90.91) was first introduced in the EU in January 2008. In January 2012, the code was changed to HS 3826.00.10 for blends containing at least 96.5 percent biodiesel, HS code 3826.00.90 (containing between 30 and 96 percent of biodiesel), and HS 2710.20.11 for blends containing at most 30 percent biodiesel. In this report it is assumed that these codes represent a blend of 99, 95, and 5 percent, respectively. In January 2012, the U.S. Bureau of the Census introduced the export code HTS 3826.00.0000 exclusively for biodiesel blends greater than 30% by volume and up to and including B100, and export code HTS 2710.20.0000 exclusively for petroleum oils containing biodiesel up to 30% by volume. There have been no changes since.

Feedstock and co-product figures for biodiesel and HDRD: Official data for feedstock use is scarce and generally unavailable from industry and government sources. The figures in this report represent FAS Posts estimates supported by staff assessments of oilseed markets which are published. Feedstock and co-product figures are cross-checked with biodiesel/HDRD production figures as published in the biodiesel/HDRD balance table using known feedstock: biodiesel yield rates (listed in the Appendix) to ensure accuracy.

Appendix I - Abbreviations

Biodiesel = Fatty acid methyl ester produced from agricultural feedstock (vegetable oils, animal fat, recycled cooking oils) used as transport fuel to substitute for petroleum diesel
Bioethanol = Ethanol produced from agricultural feedstock used as transport fuel
BtL = Biomass to Liquid
Bxxx = Blend of mineral diesel and biodiesel with the number indicating the percentage of biodiesel in the blend, e.g. B100 equals 100% biodiesel, while B5 equals 5% biodiesel and 95% conventional diesel.
CEN = European Committee for Standardization (Comité Européen de Normalisation)
DDG = distillers dried grains
EBB = European Biodiesel Board
EC = European Commission
EU = European Union. "EU" in this report refers to EU27.
Exxx = Blend of mineral gasoline and bioethanol with the number indicating the percentage of bioethanol in the blend, e.g. E10 equals 10% bioethanol and 90% conventional gasoline.
FAME = fatty acid methyl ester
GHG = greenhouse gas
GJ = Gigajoule = 1,000,000,000 Joule or 1 million KJ
Ha = Hectares, 1 hectare = 2.471 acres
HDRD = hydrogenation derived renewable diesel (also known originally as hydrotreated or hydrogenated vegetable oil or HVO
HS = Harmonized System of tariff codes
KTOE = 1000 MT of oil equivalent = 41,868 GJ = 11.63 GWh
MJ = Megajoule
MMT = Million metric tons
MS = Member State(s) of the EU
MT = Metric ton (1,000 kg)
Mtoe = Million tons of oil equivalent
MW = Mega Watt = 1,000 Kilo Watt (KW)
MWh = Mega Watt hours= 1,000 Kilo Watt hours (KWh)
MY = Marketing Year
Nordics = Denmark, Sweden, Finland, Norway and Iceland
PME = palm oil based methyl ester biodiesel
PVO = Pure vegetable oil used as transport fuel
RED = EU Renewable Energy Directive 2009/28
RME = Rapeseed Methyl Ester
SME = Soybean Methyl Ester
TME = Tallow Methyl Ester, biodiesel made from animal fat
Toe = Tons of oil equivalent = 41,868 MJ = 11.63 MWh
UCO = Used cooking oil/recycled vegetable oil
UCOME = UCO-based methyl ester biodiesel
US$ = U.S. Dollar

Appendix II - Energy Content and Conversion Rates

1 MT Gasoline = 1,342 Liters = 1.03 toe
1 MT BtL = 1,316 Liters = 0.80 toe
1 MT of HDRD = 1,282 Liters = 1.00 toe
1 MT Ethanol = 1,267 Liters = 0.64 toe
1 MT Diesel = 1,195 Liters = 1.02 toe
1 MT Biodiesel = 1,136 Liters = 0.90 toe
1 MT Pure veg Oil = 1,087 Liters = 0.83 toe

Feedstock: Ethanol Conversion Rates
Corn kernels: 1 MT = 402 to 417 liters (has risen since 2006)
Wheat kernels: 1 MT = 393 liters
Rye/Barley kernels: 1 MT = 241 liters
Sugar beets: 1 MT = 95 liters

Feedstock: Biodiesel Conversion Rates
Soybean oil, crude: 1 MT = 1,113 liters
Soybean oil, 1x refined: 1 MT = 1,128 liters
Crude palm oil (CPO): 1 MT = 1,087 liters
Animal fats/grease: 1 MT = 1,043 liters
Used cooking oil (UCO): 1 MT = 1,043 liters

Ethanol: Co-product Yield Rates (maximum theoretical yield)
Corn kernels: 1 MT = 313 kg of DDG + up to 29 kg of corn oil
Other grain kernels: 1 MT = 313 kg of DDG (negligible vegetable oil)

Appendix III - Related Reports from USEU and MS Posts

Country	Title	Date
EU	Wood Pellet Annual 2022	forthcoming
EU	Biofuel Mandates in the EU by Member State – 2022	07/05/22
Netherlands	Dutch Government Lays Out New Biomass Policy	04/29/22
EU	Grain and Feed Annual	04/26/22
EU	Oilseeds and Products Annual	04/21/22
EU	Sugar Annual	04/20/22
Germany	Fuel of the Future Congress Concludes Biofuels are Indispensable for Reaching EU Climate Goals	03/02/22
Netherlands	Sustainable Marine and Aviation Fuels in Northern Europe	12/13/21
EU	EU Extends Its Anti-Dumping Duty and Countervailing Duties on Imports of US Biodiesel	08/23/21
EU+UK	Biofuels Annual 2021	06/22/21
EU+UK	Biofuel Mandates in the EU by Member State and UK - 2021	06/08/21
EU	EC Adopts its EU Taxonomy for Green Investments	05/14/21
Netherlands	Dutch Wood Pellet Imports Reach New High	04/26/21
EU	Sugar Annual 2021	04/22/21
EU	Grain and Feed Annual 2021	04/16/21
EU	Oilseeds and Products Annual 2021	04/15/21
Belgium	Belgium To Ban Palm and Soya Oil for Use in Biofuels from 2022	04/08/21
Germany	Call for Technology Neutrality Dominates Fuel of the Future Congress	02/01/21
EU	EU Launches Public Consultation on the Review of the RED	11/20/20
EU	EU Launches Expiry Review of CV Duties Against US Biodiesel	09/16/20
EU	EC Launches Public Consultation on Possible Revision of REDII	08/22/20
Spain	Spain Biofuels Policy and Market	07/29/20
Netherlands	Dutch Government Advised to Cascade Biomass	07/14/20

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Disclaimer:

This report presents the situation and outlook for biofuels in the EU. 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. This report is based on analytical assessments, not official data.

Attachments:

No Attachments