USDA Foreign Agricultural Service
GAIN Report
Global Agricultural Information Network

Required Report - public distribution

Date: 8/13/2013
GAIN Report Number: NL3034

EU-27

Biofuels Annual

EU Biofuels Annual 2013

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Report Highlights:
EU Member States are mandated to reach a minimum of 10 percent for renewable energy consumed in transport in 2020. To count against the 10 percent goal, biofuels must meet sustainability requirements laid down in the Renewable Energy Directive (RED). During 2007 – 2012, about a fifth of the domestic use of transport biofuels was imported from outside the EU, but a series of trade actions have been imposed to stymie this trade of bioethanol and biodiesel. The EC expects that solid biomass for heat and power generation will play an important role in meeting the 20 percent target for renewable energy use by 2020.

Post:
The Hague

Commodities:
Bioethanol, biodiesel, corn, wheat, soybean oil, rapeseed oil, palm oil and wood pellets

Executive Summary

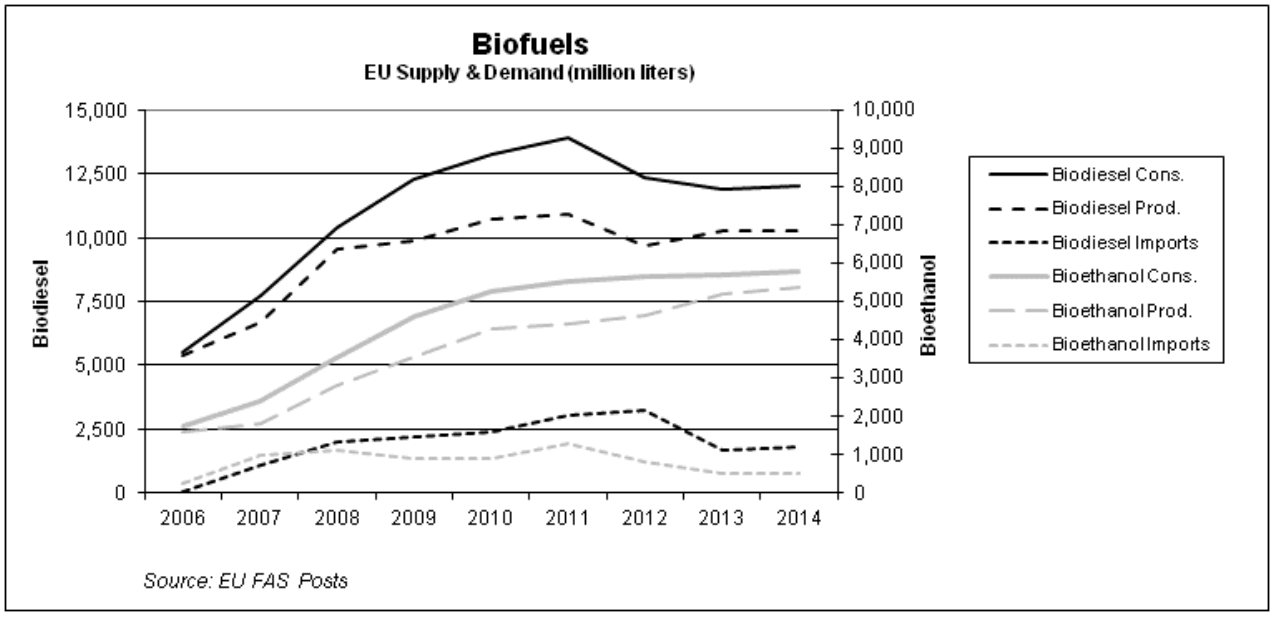
Policy and Programs

Regulations influencing the EU biofuels market are the Biofuels Directive (2003/30), the EU Climate and Energy Package (2009/147) and the Fuel Quality Directive (2009/30). The Package includes the "20/20/20" mandatory goals for 2020, one of which is a 20 percent share for renewable energy in the EU total energy mix. Part of this 20 percent share is a 10 percent minimum target for renewable energy consumed in transport to be achieved by all Member States.

Biofuels have to meet certain criteria to count against the 10 percent goal. In the Renewable Energy Directive (RED), specific sustainability requirements are laid out. These include minimum GHG (greenhouse gas) emissions reductions, land use and environmental criteria as well as economic and social criteria, and adherence to International Labor Organization conventions.

In October 2012, the European Commission (EC) published a proposal on Indirect Land Use Change (ILUC). The proposal aims at starting the transition from conventional biofuels to biofuels made from non-food feedstock. This would be done by setting a cap on, and phasing out of public support for first generation biofuels after 2020, set a GHG saving requirement of at least 60 percent for new installations, and to set new ILUC emission values. The EC hopes the proposal will be adopted before the end of their mandate in 2014.

Conventional and Advanced Biofuels



Biodiesel is the main biofuel for transport used in the EU and accounted for about 70 percent of the biofuels market on volume basis in 2012. Bioethanol had a 28 percent market share. The EU Member States' mandates for blending spurred an increase in the domestic use of biofuels, creating a demand for imports. These competitive imports pressed domestic production of both biodiesel and bioethanol. Production of biodiesel is also limited by the production of HVO (hydrotreated vegetable oils) and the double counting of biodiesel produced from waste materials.

During 2009 – 2012, the major part of the bioethanol shipped to the EU was imported as E90, subject to a lower import tariff. On from April 3, 2012, the EU closed this popular loophole in the tariff regime. On February 23, 2013, the EC also imposed an anti-dumping duty on bioethanol imports from the United States. Despite these trade barriers, the EU is

expected continue to attract bioethanol from foreign markets. About 350 million liters of ethanol is expected to be supplied through preferential trade measures, mainly used by Guatemala, Peru and Pakistan. The other likely source is Brazil. EU imports from the United States are unlikely due to anti dumping duties.

Since the enforcement of countervailing and anti-dumping duties on imports of biodiesel from the United States in March 2009, U.S. supplied-biodiesel has been largely replaced by biodiesel from Argentina and Indonesia. In an attempt to curb imports from these origins, the EC enforced anti dumping duties starting May 29, 2013. The enforced duties could open up opportunities for biodiesel from other origins. Imports are likely to increase from Malaysia.

Feedstock for the anticipated biofuels production in 2013 is estimated at about 10.6 MMT of cereals, about 9.5 MMT of sugar beets, and about 9.3 MMT of vegetable oils and animal fats. In 2012, the production of byproducts from bioethanol and biodiesel production is forecast to reach 3.3 MMT of DDG and about 9.6 MMT of oil meals, respectively.

Biomass for heat and power

The EC expects heat and power production from biomass to play an important role in meeting the 20 percent target for renewable energy use by 2020 and in the future reduction of CO_2 emissions in Europe. A major part of the biomass used is forecast to be forestry products. The forest sector is also expected to supply large quantities of biomass for conversion to biogas.

Wood Pellets

The EU is the world's largest wood pellet market, consuming about 14 MMT of pellets in 2012. Some experts are expecting the market to increase to as much as 80 MMT in 2020. Since 2008, the demand for pellets has significantly outpaced domestic production in Europe. This has resulted in increased imports from the United States. In 2012, U.S. wood pellets exports to the EU rose with 70 percent to nearly 1.8 MMT, valued at US$ 331 million. If trade flows remain consistent with current patterns, the United States has the potential to supply approximately US$ 650 million of wood pellets in 2014.

Biogas

The biogas sector is very diverse across Europe. Depending on national priorities, countries have structured their financial incentives to favor different feedstocks. According to Eurostat data, Germany and the UK are the two largest biogas producers in the EU. Germany generates 90 percent of its biogas from agricultural crops while the UK relies almost entirely on landfill and sewage sludge gas.

Introduction

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.

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Policy and Programs

The Renewable Energy Directive

The EU Energy and Climate Change Package (CCP) was adopted by the European Council on April 6, 2009. The Renewable Energy Directive (RED), which is part of this package, entered into force on June 25, 2009, and had to be transposed into national legislation in the Member States (MS) by December 5, 2010. MS were also required to submit National Renewable Energy Action Plans (NREAP) by June 30, 2010. The adoption and requirement for the implementation of the Directive did not give enough time for either the Member States or the Commission to prepare for the implementation. These tight deadlines created many difficulties for everyone involved.

The EU Energy and Climate Change Package include the "20/20/20" goals for 2020:

- A 20 percent reduction in green house gas (GHG) emissions compared to 1990.
- A 20 percent improvement in energy efficiency compared to forecasts for 2020.
- A 20 percent share for renewable energy in the EU total energy mix. Part of this 20 percent share is a 10 percent minimum target for renewable energy consumed in transport to be achieved by all MS.

The goal for 20 percent renewable energy in total energy consumption is an overall EU goal. The RED sets different targets for different MS within this overall target, based on each MS' capacity. Therefore, some MS will have to reach much higher targets than the 20 percent renewable energy by 2020, whereas other MS will have much lower targets. Sweden, for example, will have to reach 49 percent, while the target for Malta is only 10 percent. The targets for the four largest economies of Europe: Germany, France, UK, and Italy, are 18, 23, 15, and 17 percent respectively. These targets were set by the European Commission depending on the current situation and potential for growth in different MS.

In contrast, the 10 percent target for renewable energy in transport is obligatory for all MS. The Commission hopes that a 10 percent target in transport for all MS will alleviate concerns referred to in the European Climate Change Program (CCP) that this sector is projected to account for most of the growth in energy consumption and thus requires more discipline. The latest official number for the use of biofuel was 4.7 percent (volume basis) in 2010.

Biofuels have to meet certain sustainability criteria to be taken into account for the 10 percent goal:

- They must meet the sustainability criteria outlined below, including reducing GHG emissions by at least 35 percent compared to fossil fuels. From 2017, the reduction has to be 50 percent, and at least 60 percent for new installations.

- Second-generation biofuels will receive double credit. This means that biofuels made out of ligno-cellulosic, non-food

cellulosic, waste and residue materials will count double towards the goal. Calculations are made on an energy basis.

Renewable electricity consumed by cars will be counted by a factor of 2.5 and will therefore help countries achieve targets faster.

The Fuel Quality Directive (FQD) is a Directive that complements the RED and mirrors some of the RED's content such as the sustainability criteria. A key requirement of the FQD is that all fuel suppliers (oil companies) must meet a 6 percent cut in GHG emissions by 2020 across all fuel categories supplied to the market. This is designed to be consistent with the 10 percent use of biofuels and will tend to move demand toward biofuels with higher GHG savings. In addition, the FQD limited ethanol blends to 10 percent or less when ethanol is used as an oxygenate. Thus a blend wall is created which risks future growth in ethanol use in certain countries beginning at some future date. Fuel specifications for biodiesel place limits on the palm oil and soy oil content of biodiesel.

Transposition of the RED

By May 2013, all EU MS apart from Poland had transposed the RED into national legislation. Most MS are also implementing the sustainability criteria. There are, however, five MS that are not currently implementing the RED: Spain, Portugal, Poland Slovenia and Finland. Finland is expected to start implementing within a couple of months.

The Commission is assessing whether MS' that have notified full transposition have done so correctly, and has started the procedure for legal actions against MS that are not in conformity with the requirements of the RED.

Sustainability Criteria

Biofuels must comply with the sustainability criteria provided in Article 17 of the RED to be eligible for financial support and to count towards the target. These sustainability criteria have to be met by all biofuels whether produced within the EU or imported. The sustainability criteria include reaching a minimum GHG emission saving; not being produced from feedstock grown on land with high biodiversity value such as primary forests and highly biodiverse grasslands; not being produced on land with high carbon stocks such as wetlands or continuously forested areas; and, not being produced on peat land.

The RED specifies a 35 percent requirement for GHG emissions-saving threshold as a starting point. It increases to 50 and 60 percent in 2017, with the higher requirements for the new facilities. Environmental sustainability criteria covering bio-diverse and high-carbon-stock lands are also laid out in the RED. Other sustainability criteria are mentioned and reporting requirements are established. These cover other environmental criteria for soil, water, and air quality, as well as social criteria, which focus on food price impact, and adherence to International Labor Organization conventions.

The biodiversity criteria apply on land that would have been classified as highly biodiverse in January 2008. Biofuels may not be made from raw material obtained from land with high biodiversity value such as primary forest and other wooded land, areas designated by law or by the relevant competent authority for nature protection purposes, highly biodiverse grassland or highly biodiverse non-grassland. The Commission is also developing the criteria for biodiverse grasslands based on an open consultation conducted early in 2010. Biofuels shall also not be made from raw materials produced on land with high carbon stock such as wetlands, peatlands, or continuously forested areas.

The agricultural raw materials produced within the EU must be produced in accordance with the minimum requirements for good agricultural and environmental conditions that are established in the common rules for direct support schemes under the common agricultural policy (CAP) (Cross compliance Article 17 § 6 of the RED).

MS competent authorities are responsible for ensuring that biofuel counted towards targets, mandates, and tax credits fulfill sustainability criteria. MS are not allowed to have higher or lower sustainability criteria than those set by the Commission, and must accept all certification systems recognized by the Commission. However, with each MS having different checklists, there will be 27 different national certification schemes that must be registered and recognized by the European Commission – applying to biofuel produced in the EU member states as well as third countries.

GHG Emissions

To count toward the 10 percent target, biofuels must currently have a GHG emissions saving of at least 35 percent. GHG emission savings are calculated using lifecycle analysis and following methodologies described in RED annexes.

The European Commission's Joint Research Center (JRC) defines the GHG emissions savings for different raw materials and selected production and supply pathways. The results of these are presented in the RED annex. JRC calculated GHG emissions for cultivation, processing, transport, and distribution for different raw materials and used this to determine GHG emissions savings. Net carbon emissions from indirect land-use change (ILUC) are not included. Under the RED, it is possible to use actual numbers using proper documentation and Life Cycle Analysis procedures to achieve GHG emission saving values which are higher than the defaults. It is always possible to claim the default value without any supporting documentation. However, the biofuel always has to be certified by one of the means provided by the Commission.

	Typical GHG[1] savings	**Default GHG[2] savings**
Rape seed biodiesel	45%	38%
Soy bean biodiesel	40%	31%
Sun flower biodiesel	58%	51%
Palm oil biodiesel (Process not specified)	36%	19%
Palm oil biodiesel (process with methane capture at oil mill)	62%	56%
Corn ethanol, Community produced (natural gas as process fuel in CHP plant)	56%	49%
Sugar beet ethanol	61%	52%
Sugar cane ethanol	71%	71%
Waste vegetable or animal oil biodiesel	88%	83%

Source: European Commission, RED (Indirect land use is not included)

(1) Typical implies an estimate of the representative greenhouse gas emission saving for a particular biofuel production pathway.
(2) Default implies a value derived from a typical value by the application of pre-determined factors and that may, in circumstances specified in this Directive, be used in place of an actual value.

When the default values are calculated the Commission applied a "discount factor" from the typical value, to ensure that the biofuel pathway was not inflated. If the typical value is used for biodiesel made from soybeans, it would have a GHG saving value of 40 percent and be above the 35 percent threshold.

According to the RED, biodiesel made from soy oil currently does not automatically comply with the GHG emission criteria. The RED's GHG emissions saving default reference value for soy diesel is 31 percent, which is below the minimum GHG threshold. On closer examination, this value was calculated using a pathway where soybeans are first shipped from Brazil, then transformed into soy oil and biodiesel in the EU. Using lifecycle analysis, the value for soy-based biodiesel produced in and shipped from the United States, by nature of having a different pathway, would be different.

With no international standard in place for the calculation of GHG savings, there are some concerns that protectionists could use GHG thresholds to hamper trade. Commission officials have stated they do not wish to have GHG saving numbers for different geographical areas, but prefer to base these GHG numbers on specific pathways, such as no-till farming, to allow for easier updates.

The Commission is currently working on updating the default values on GHG emissions in the RED. According to the RED, this should be done every second year. But it has not been done since the RED was published in 2009. Reportedly in this update of the Annex V there will be two different numbers for soybeans depending on the tilling practices used. The GHG value for biodiesel is expected to be higher in the updated version of Annex V. It is said that corn will have a separate number from other cereals. The reason for this is yet unclear but reportedly the GHG saving number for corn is anticipated to be lower than the one for other cereals.

Certification Systems

Some of the MS have developed national voluntary systems while some rely on the voluntary schemes adopted by the European Commission for showing compliance with sustainability criteria. One of the ways to ensure that the biofuel used is meeting the requirements of the RED is to have it certified by one of the voluntary certification systems.

The Commission has currently approved 13 voluntary schemes that can certify biofuels for all MS. MS must accept these certification schemes and cannot demand anything more than they cover. The thirteen schemes are:

1. ISCC (International Sustainability and Carbon Certification)
2. Bonsucro EU
3. RTRS EU RED (Round Table on Responsible Soy EU RED)
4. RSB EU RED (Roundtable of Sustainable Biofuels EU RED)
5. 2BSvs (Biomass Biofuels voluntary scheme)
6. RBSA (Abengoa RED Bioenergy Sustainability Assurance)
7. Greenergy (Greenergy Brazilian Bioethanol verification programme)
8. Ensus voluntary scheme under RED for Ensus bioethanol production
9. Red Tractor (Red Tractor Farm Assurance Combinable Crops & Sugar Beet Scheme)
10. SQC (Scottish Quality Farm Assured Combinable Crops (SQC) scheme)
11. Red Cert
12. NTA 8080
13. RSPO RED (Roundtable on Sustainable Palm Oil RED)

The Commission is currently working on approving and publishing more certification scheme. The Commission considers voluntary certification schemes its preferred mean of obtaining certification.

Double Counting

The sometimes vague definition of what can and cannot be double-counted is causing concern. The definition of used cooking oil makes it possible to mix unused oil with only a small portion of used cooking oil to qualify for double-counting. Critics against double-counting in general say it reduces the actual portion of renewable energy in transportation to a level below the 10 percent target set for 2020.

On January 16, 2013, the European Biodiesel Board (EBB) organized a meeting with the aim of creating a consortium that would work on the issue with biodiesel eligible for double counting. Extra certification for double counted materials would decrease the possibilities for fraud. The consortium is called Register of Biofuels Originating (RBO) Biofuels that can count

double, or more, are referred to as Extra Incentivized Biofuel (EIB)

One of the problems with double-counting is that it is up to each MS to decide what can be double counted. Without any cross-border cooperation the possibility for fraud in this area is a big concern. Reportedly the two main problems with EIB are: 1) Fraud as untrustworthy declarations on the nature of the product, and, 2) Untrustworthy multiple declarations of the same product in different MS. This has led to batches of EIB being declared under many different schemes and the market is flooded with those certificates, which is not good for the market.

Proposal on ILUC

In October 2012 the Commission published its long awaited proposal on Indirect Land Use Change (ILUC). ILUC is an issue related to the calculation of GHG calculations. The proposal, which will amend both the RED and the FQD was accompanied by an impact assessment. The proposal aims at starting the transition from conventional biofuels to biofuels made from non-food feedstock. The RED calls for ILUC to be taken into consideration when calculating GHG emissions savings values for most first generation biofuels.

Over the last several years, discussions concerning food versus fuel made political support for biofuel riskier and reaching an economically viable proposal on ILUC more difficult for the Commission, and in particular, DG Energy. Political pressure against biofuels from NGOs, DG Environment, and Members of Parliament stems from the fear that agricultural or pasture land, previously used for food and feed production, could be diverted to the production of biofuel; that non-agricultural land could be brought into production; and that forests and other high carbon stock areas could be converted to agriculture production, leading to further GHG emissions.

From the time the Commission published its ILUC proposal, it has been intensely debated by industry, the Parliament and others concerned.

Specifically, the Commission proposal on ILUC would amend the RED and the FQD by:

- Increasing the minimum GHG saving threshold for new installations to 60 percent as of July 1, 2014.
- Including ILUC factors in the reporting by fuel suppliers and Member States.
- Limiting the amount of food crop-based biofuels and bioliquids that can count towards the EU 10 percent target for renewable energy in the transport sector by 2020 to the current consumption level of 5 percent.
- Providing market incentives for biofuels with no or low indirect land use change emissions, and in particular the second and third generation biofuels produced from feedstock that does not create an additional demand for land. This includes algae, straw, and various types of waste, as they will contribute more towards the 10 percent renewable energy in transport target of the RED.

The ILUC proposal applies only to biofuels and bioliquids which are defined as:

- Biofuels - liquid or gaseous fuel for transport produced from biomass.
- Bioliquids - liquid fuel for energy purposes other than for transport, including electricity and heating and cooling, produced from biomass.

The proposal adds these weighting factors to second and third generation biofuel:

- Biofuel from used cooking oil, animal fats (category I and II), non-food cellulosic material, ligno-cellulosic material except saw logs and veneer logs will count twice towards the targets.
- Biofuel from algae, biomass fraction of mixed municipal and industrial waste, straw, manure and sewage sludge, palm oil mill effluent and empty palm fruit bunched, tall oil pitch, crude glycerin, bagasse, grape marcs and wine lees, nut shells, husks, cobs, bark, branches, leaves, saw dust and cutter shavings will count four times towards the

targets.

Residues not mentioned above, including industrial residues such as molasses and animal fats (category III) would not be given an added weighting factor.

The proposal would limit the use of first generation biofuels to 5 percent after 2020. After 2020, financial support would only apply to biofuel that is not produced from crops that could be used for food and feed.

Reactions to the Proposal

Finding a politically acceptable solution in some areas resulted in a watered down proposal. The proposal requires fuel suppliers to include an ILUC factor in reporting but not in accounting for GHG savings on biofuel. MS will have to account for ILUC in GHG savings when reporting to the Commission, though. The Commission proposal seeks to foster second-generation biofuel by capping the portion of first-generation biofuel that can count towards targets.

The approach has been subject to criticism from both sides. Proponents of an ILUC factor are disappointed it will not apply to the industry. The industry and farmers are concerned because of the potential economic impact on a developing sector.

Industry sees the Commission changing its direction from 2009 with this proposal since the investment in and production of biofuel was encouraged by the adoption of the RED in that year. The EU industry believes this proposal will increase uncertainties and even threatens its viability by discouraging investment. Industry also states that that more scientific research on ILUC is still needed, making this proposal premature. Industry also believes that the 5 percent cap in 2020 will destroy related sectors such as crushing and sugar facilities. EU farmers are protesting the proposal and the 5 percent cap, claiming it will cut them off from an important market for their products if they are not permitted to sell to the bioenergy industry.

The proposal amends the FQD and RED and so is subject to Parliament and Council approval. After the first reading by both bodies, it will be clearer how far apart the two institutions are and whether a compromise can be reached.

Given the overwhelming response to the 5 percent cap, which more or less represents the current consumption in the EU, it is likely that decision makers will increase the limit to at least 8 percent to give the industry the possibility to recoup costs. This limit is seen by some as a compromise that also meets the demands from NGOs concerned about the impact of first-generation biofuel feedstock production on food production, and the demands for an ILUC requirement in the RED.

On June 20, 2013, the European Parliament ITRE committee voted on the ILUC proposal. In July the ENVI committee will vote, and the plenary vote could take place in September; however, it is more likely that the plenary vote will not happen until March 2014, which is the last plenary meeting before the Parliament election take place.

The ITRE committees voted in favor of recommending to the Commission to raise the 5 percent cap on conventional biofuels to 6.5 percent, introduce a 7.5 percent specific target for bioethanol, add a 2.5 percent sub target for advanced biofuels for 2020, and remove multiple counting for advanced biofuels.

The ENVI committee approved the report and suggests the cap is set at 5.5 percent and extended to include land-based energy crops. The committee also suggests allowing MS to derogate from the 10 percent target in transport, provided they achieved their overall target for renewable energy.

The Parliament will vote on the ILUC proposal at a plenary session on September 10, 2013. The report from the Parliament

will then be used in trilogue negotiations between the Council, the Commission and the Parliament starting later in 2013.

If the proposal is approved in its current state, it would likely benefit the use of biodiesel over bioethanol. There are no blending restrictions under either the RED or the FQD for the use of biodiesel. The blending wall for bioethanol doesn't allow the EU to reach its targets even if all ethanol used in the EU was blended with bioethanol.

National Renewable Energy Action Plans

The RED required MS to submit National Renewable Energy Action Plans (NREAPs) by June 30, 2010. Most MS did not submit those plans on time; however, they have now all been submitted and the Commission is currently evaluating them. These plans provide detailed roadmaps of how each MS expects to reach its legally binding 2020 target. Some of the MS are asked for further information and clarifications and at least one has been asked to resubmit its report.

The information in the NREAPs predicts that the overall share of renewables in 2020 will be 20.7 percent, slightly exceeding the target. Many MS say they will increase the use of biomass for the production of renewable energy. However, they do not specify from where the biomass would come. Increased imports from third countries such as the U.S. could cover the increased need.

Trade Policy

There are no specific codes for bioethanol in international trade nomenclature. Until recently, individual trade codes used by the EU and the United States include biofuels as well as other products so trade volumes and values were estimated. The codes in the EU system referred to the product regardless of its final use; however, the Commission changed the HS code as of January 2012, so that ethanol used for fuel would be imported under HS code 2207. Currently for ethanol the two main codes are 220710 for undenatured ethanol and 220720 for denatured ethanol. Blends with petrol may also appear under other codes depending on the proportion of the mix. For biodiesel, a code that covers fatty-acid mono-alkyl esters (FAMAE) was introduced in January 2008, and changed in January 2012. However, other forms of biodiesel could still enter under other codes depending on the chemical composition. Diesel with a biodiesel component of less than 30 percent can enter the EU under chapter 271020 at a tariff rate of 3.5 percent.

HS Code	Description	Duty Rate
3826001	FAMAE 96.5-100 percent	6.5% (plus AD and Cv duties for US and most Canadian companies)
38260090	FAMAE below 96.5 percent	6.5% (plus AD and Cv duties for US and most Canadian companies)
271020	B30 and below	3,5%
220710	Undenatured ethanol	€19.2/hl
220720	Denatured ethanol	€10.2/hl

On October 12, 2011, the EU Customs Code Committee approved a proposal by the Commission to classify ethanol and gasoline blends with an ethanol content of 70 percent or more as denatured ethanol under code 2207 20 00. Therefore exporters of E90 to the EU will be charged the import tariff of € 10.20 per hectoliter normally charged for denatured ethanol. Previously, ethanol was imported under code 3824(Chemicals), at an import duty of 6.5 percent. This equates to approximately €102/m^3 compared to the current import duty of €32/m^3, leading to less exports to the EU.

Biodiesel

On March 12, 2009, the Commission published Regulation 193/2009 and Regulation 194/2009, containing provisional anti-dumping and countervailing duty measures on imports of biodiesel from the United States containing 20 percent or more of biofuels. The Regulations and duties entered into force on March 13, 2009 and applied for 6 months, after which they were made definitive for a 5-year period.

On May 5, 2011, the European Commission published a decision to extend the definitive countervailing and anti-dumping duties imposed on all biodiesel originating in the United States. The countervailing and anti-dumping duties were thus extended on biodiesel blends of 20 percent or less originating from the United States. The measures adopted by the Commission were retroactive and extended to August 13, 2012. They consist of countervailing duties on all imports of biodiesel originating in the United States containing blends of 20 percent or less. For U.S. companies that were investigated in 2009, the combined duties will apply, € 213.8 - € 409.2/ton. Other U.S. companies will be subject to the highest combined duty of € 409.2/ton, based on the biodiesel content in the blend. The Council decision can be found at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:122:0001:0011:EN:PDF
The different duties have drastically reduced the exports of biodiesel from the U.S. and the primary export countries to the EU are currently Argentina and Indonesia. For more information see the trade chapter of this report.

E90
Imports of E90 to the EU increased to such degree since the beginning of 2010 that EU industry considered it as dumping. The EU industry claims that it was suffering because the United States has the ability to export ethanol at lower prices than the EU can supply domestically. The European ethanol industry requested that the Commission investigate and take legal action against the United States to protect the EU industry.

On November 25, 2011, the Commission notified in the Official Journal that they would be initiating an anti-subsidy and anti-dumping investigation on bioethanol originating in the United States.
On February 22, 2013, the Commission published Council Regulation (157/2013) imposing a definitive anti-dumping duty on import of bioethanol originating in the United States. The rate of the anti-dumping duty is set at €63.3 per ton, and is applicable in proportion by weight of the total content of pure ethyl alcohol produced from agricultural products. Ethanol for other uses than for fuel is exempted from the ant-dumping duty. The regulation entered into force on February 23, 2013. The duties for EU imports of ethanol from the U.S. are expected to cut off U.S. exports of bioethanol to the EU market. For more information see the section on trade.

Biomass sustainability
The RED required the Commission to look into whether sustainability criteria for solid and gaseous biomass were needed. On February 25, 2010, the Commission adopted a sustainability report for biomass other than biofuels and bioliquids. The report makes recommendations on sustainability criteria for individual MS to use as guidance; however, no obligatory sustainability criteria were set.

The report also stated that the Commission planned to consider the need for sustainability criteria on biomass again by December 2011; however, as of June 2012, no report had been published. The Commission held a public consultation on this issue and received 160 comments. The responses to the public consultation can be found here. The expected increase in use of biomass has increased the interest for sustainability criteria, and the Commission was expected to publish a proposal accompanied by an assessment report during the first half of 2013. Many MS have already introduced, or plan to introduce sustainability criteria on biomass. The Commission is currently assessing whether there is a need for specific sustainability criteria for biomass or whether the existing international, EU and MS national legislations would be sufficient to address possible sustainability issues.

The Commission is currently working on the EU Forest strategy, which is expected to be published in 2014. The EU Forest strategy, the EU Timber Regulation and the Land Use and Land Use Change and Forestry (LULUCF), that covers the issue of GHG emissions, are the most important ones.

Review of the RED
The RED stipulates that by December 31, 2014, the Commission shall present a report on some of the details in the RED. These include:

- A review of the minimum GHG emission saving thresholds;
- The cost efficiency of the measures implemented to reach the 10 percent target;
- The impact of biofuel production on the availability of foodstuffs at affordable prices; and,
- An assessment of the feasibility of reaching the 10 percent target while ensuring the sustainability of biofuels production in the Community and in third countries.

On the basis of this report the Commission will propose to modify the RED to address such aspects as the minimum GHG savings if it considers appropriate.

Conventional Bioethanol

EU Production, Supply and Demand Table

Ethanol Used as Fuel and Other Industrial Chemicals (Million Liters)									
Calendar Year	**2006**	**2007**	**2008**	**2009**	**2010**	**2011[e]**	**2012[e]**	**2013[f]**	**2014[f]**
Beginning Stocks	126	154	526	872	621	440	512	240	148
Fuel Begin Stocks	63	121	493	839	588	407	479	207	115
Production	2,258	2,453	3,466	4,203	4,918	5,042	5,270	5,840	6,030
Fuel Production	1,608	1,803	2,816	3,553	4,268	4,392	4,620	5,190	5,380
Imports	548	1,350	1,451	1,249	1,230	1,635	1,177	850	850
Fuel Imports	228	1,000	1,101	899	880	1,285	827	500	500
Exports	103	106	112	150	126	149	136	132	125
Fuel Exports	53	56	62	100	76	99	86	82	75
Consumption	2,675	3,325	4,459	5,553	6,203	6,456	6,583	6,650	6,710
Fuel Consumption	1,725	2,375	3,509	4,603	5,253	5,506	5,633	5,700	5,760
Ending Stocks	154	526	872	621	440	512	240	148	193
Fuel Ending Stocks	121	493	839	588	407	479	207	115	160
Bioethanol Production Capacity									
Number of Refineries	36	51	60	66	68	68	69	71	71
Capacity	2,066	3,458	5,138	6,234	7,570	7,759	8,468	8,481	8,481
Capacity Use (%)	78%	52%	55%	57%	56%	57%	55%	61%	63%
Co-product Production, max theoretical (1,000 MT)									
DDGS	1,239	1,106	1,380	2,119	2,659	2,817	2,895	3,330	3,515
Corn Oil	11	15	37	70	75	89	122	144	146
Fuel Ethanol Feedstock Use (1,000 MT)									
Wheat	1,358	1,360	1,782	2,736	4,111	4,368	4,195	4,640	5,080
Corn	377	506	1,278	2,414	2,589	3,073	4,215	4,970	5,030
Barley	1,204	1,002	577	661	658	875	387	540	615
Rye	1,019	664	773	959	1,138	685	453	480	500
Sugar Beat	2,928	5,280	10,198	9,209	9,915	8,927	9,206	9,470	9,000
Market Penetration (Million Liters)									
Fuel Ethanol	1,725	2,375	3,509	4,603	5,253	5,506	5,633	5,700	5,760
Gasoline	140,244	135,195	128,130	123,231	115,881	115,649	115,420	115,190	114,960
Blend Rate (%)	1.2%	1.8%	2.7%	3.7%	4.5%	4.8%	4.9%	4.9%	5.0%

e = estimate / f = forecast EU FAS Posts.

Production Capacity

Bioethanol production capacity is forecast to increase from about 2,100 million liters in 2006 to about 8,500 million liters in 2014. The majority of the production capacity has been installed in the Benelux countries, Germany, France, Spain, and the UK. During the period 2007 - 2012, only fifty to sixty percent of the available capacity was utilized. This is partly due to the fact that the EU is building its sector and new plants need a start up phase to be fully operational. During the seasons

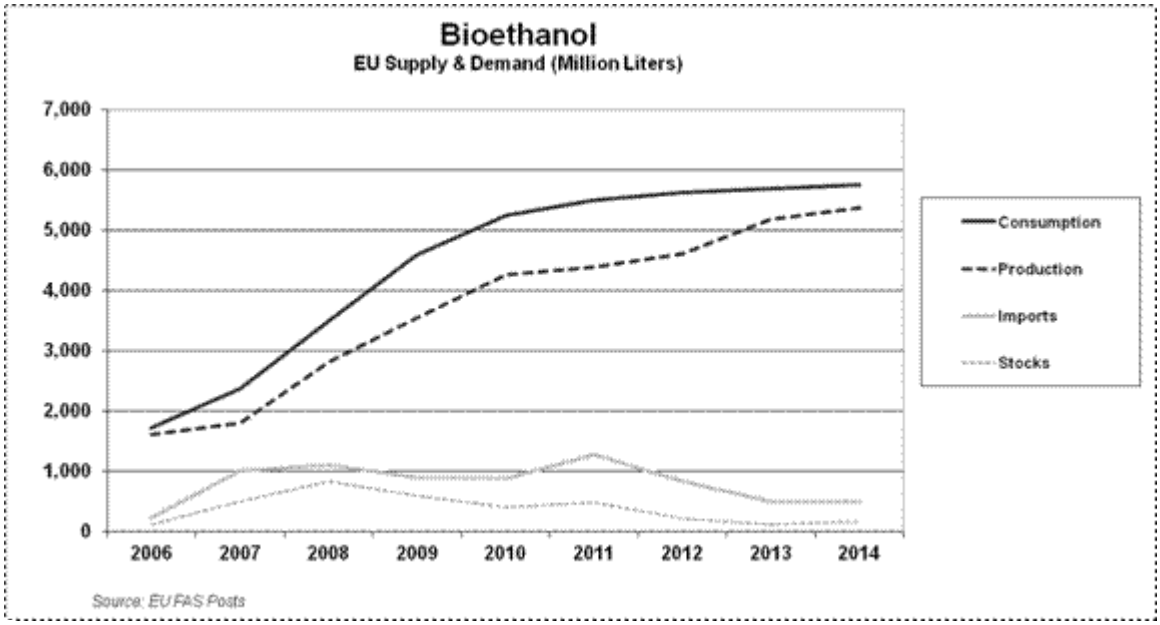
2007/2008 and 2010/2011, utilization was also low due to high grain prices. Another reason for the underutilization was competitive bioethanol imports from Brazil during 2007 - 2009, and from the United States during 2010 and 2012. Recent restrictive measures on bioethanol imports (see trade section) created an opportunity for domestic producers to expand their production and make use of their capacity. New investments in first generation bioethanol production capacity are not likely due to uncertainty regarding future bioethanol policy (see the Policy Chapter).

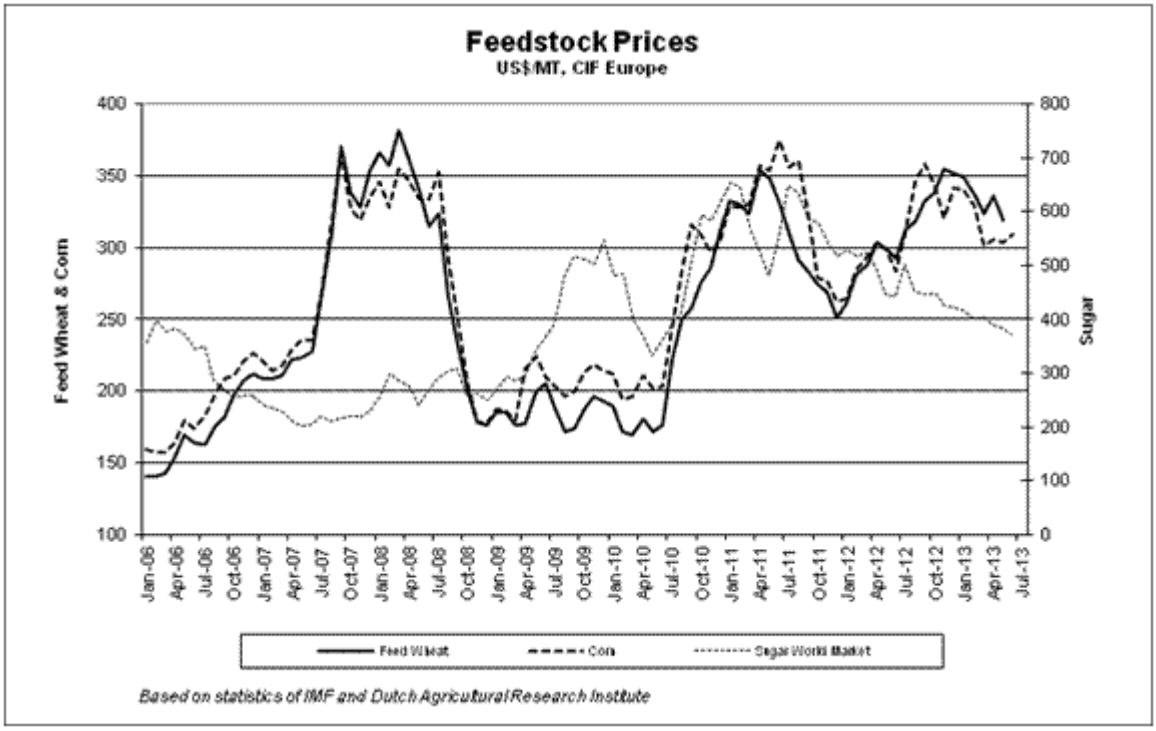
Fuel Ethanol Production – Main Producers (million liters)								
Calendar Year	**2007[r]**	**2008[r]**	**2009[r]**	**2010[r]**	**2011[e]**	**2012[f]**	**2013[f]**	**2014[f]**
Benelux	33	73	220	415	675	873	1,089	1,114
Germany	397	580	752	765	730	776	823	823
France	539	746	906	942	846	759	759	759
Spain	359	346	465	471	462	381	450	462
United Kingdom	44	70	70	278	427	253	280	443
Austria	15	89	175	199	216	228	230	230
Poland	120	114	165	194	167	211	215	228
Other	296	798	800	1,004	869	1,139	1,296	1,321
Total	**1,803**	**2,816**	**3,553**	**4,268**	**4,392**	**4,620**	**5,190**	**5,380**

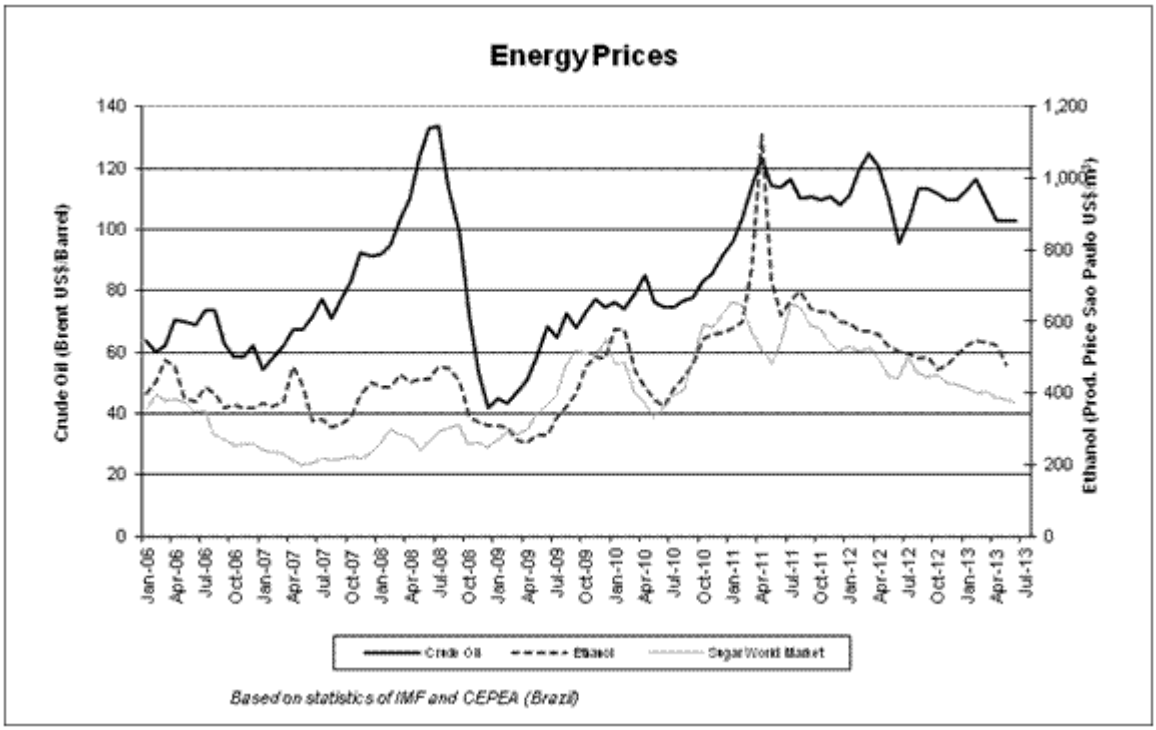
r = revised / e = estimate / f = forecast EU FAS Posts. Source: EU FAS Posts

Production

The growth of EU bioethanol production flattened somewhat from an annual increase of about 700 - 1,000 million liters in 2008, 2009 and 2010 to only around 100 - 250 million liters in 2011 and 2012 (see graph below). EU bioethanol production in 2012 is estimated at 4.6 billion liters. On an energy basis, this is equivalent to 29 million barrels of crude oil. Since the first quarter of 2010, producer margins deteriorated due to plummeting domestic ethanol prices (see trade section) and elevated feedstock prices (see graph below). Some producers were only able to make a profit due to the returns on selling distillers dried grains (DDG). Furthermore, bioethanol demand has been falling due to adjusted mandates and reduced fuel consumption (see consumption section). For this reason, the domestic production estimate for 2011 and 2012 is lower than anticipated in the previous Annual Biofuels Report, and is adjusted downwards by 230 and 380 million liters, respectively.







During 2013, EU bioethanol production is expected to recover. In MY2013/2014, the availability of feedstock supplies is anticipated to improve (see FAS EU Grain and Feed Annual). Furthermore, competitive imports from Brazil and the United States have been cutoff. The European commission (EC) reclassified E90 to a higher import tariff and imposed an anti-dumping duty of 9.5 percent on ethanol imports from the United States (see trade section). These improved market conditions are forecast to support domestic production in both 2013 and 2014.

Production increases are forecast in mainly the Benelux countries, the UK, Spain, and in lesser extent Germany. Production in France and Poland is forecast to remain stagnant. The ports in the Benelux region provide easy access to feedstock and serve as a hub for fossil fuel logistics, which makes it a strategic location for biofuels blending and further distribution. In the UK, all plants are located on the east coast of England in close proximity to deep water ports. UK bioethanol production has not yet reached maximum capacity due to technical start up problems, poor domestic wheat crops and depressed domestic bioethanol prices. During 2013 and 2014, however, production is expected to increase. Production in Spain should return to normal after a lower output in 2012 due to maintenance operations. This year German bioethanol production is anticipated to recover after the dip in 2011 and 2012, which the German industry attributed to extensive E90 and ETBE imports from the United States.

In France, bioethanol production is forecast to stabilize after significant reduction in 2011 and 2012. For the past two years, first generation biofuels have been under pressure due to reduction in national incentives. Production in Central and Southeastern Europe is expected to stagnate with the exception of Hungary where a new bioethanol plant opened in the spring of 2012 and is expected to scale up production in 2013. The ethanol plant will produce annually 200 million liter and will mainly produce for exports during the first couple of years.

Feedstock Use

While plants in the United States and Brazil are predominantly located in the feedstock production regions, and focused on a single feedstock, plants in the EU are often located close to the end-market and designed as multi-feed stock plants. In the EU, bioethanol is mainly produced from wheat, corn, barley, rye, and sugar beet derivatives. Wheat is mainly used in northwestern Europe, while corn is predominantly used in Central Europe and Spain. When the EU domestic wheat supply is tight, producers in northwestern Europe commonly switch to imported corn. Rye is used for bioethanol production in Poland, the Baltic Region and Germany, while barley is mainly used in Germany and Spain. In Italy, about thirty percent of the bioethanol is produced from wine byproducts and about ten percent directly from wine.

In northwestern Europe and in the Czech Republic sugar beets are used. During seasons of high grain prices, sugar beet derivatives, mainly sugar syrup, are a favorable feedstock for bioethanol production. In MY2012/2013, production of bioethanol from sugar syrup increased because of the availability of large supplies of EU out-of-quota sugar while cereal prices surged (see FAS EU Sugar Annual).

In the EU, the required feedstock for the 2013 production (5,190 million liters of bioethanol) is estimated at nearly 10.6 MMT of cereals and 9.5 MMT of sugar beets. This is about 3.7 percent of total EU cereal production and 7.7 percent of total sugar beet production. Co-products of the bioethanol production are distillers dried grains (DDG), wheat gluten and yeast concentrates. In 2013, the maximum theoretical production of co-products is forecast to reach 3.3 MMT. This is about 2.0 percent of total EU feed grain consumption.

Consumption

Fuel Ethanol Consumption – Main Consumers (million liters)								
Calendar Year	**2007[r]**	**2008[r]**	**2009[r]**	**2010[r]**	**2011[e]**	**2012[f]**	**2013[f]**	**2014[f]**
Germany	584	791	1,142	1,475	1,568	1,581	1,646	1,709
United Kingdom	94	152	354	582	696	1,013	1,139	1,266
France	539	814	805	782	777	759	759	759
Italy	0	176	232	306	480	482	482	482
Benelux	168	234	357	366	396	420	435	450
Other	990	1,342	1,713	1,742	1,589	1,378	1,239	1,094
Total	**2,375**	**3,509**	**4,603**	**5,253**	**5,506**	**5,633**	**5,700**	**5,760**

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

During 2006 – 2009, EU bioethanol consumption expanded by 0.6 to 1.2 million liters per year. But the growth has flattened during 2010, 2011 and 2012, and is anticipated to further slow down during 2013 and 2014. For 2013 and 2014, the UK and Germany are expected to be the main growth markets. Market expansion in other Member States is forecast to remain either stagnant, such as in France, Spain and Italy, or expand only marginally, such as in the Benelux and Sweden. Based on mandatory mandates, consumption growth in the UK is forecast to be at least 100 million liters per year. As of January 1,

2011, Germany allowed gasoline to contain up to 10 percent of bioethanol. The introduction of E10 is expected to increase German bioethanol use by about 60 million liters in 2013 and 2014. In Germany and throughout the EU, an important drag on further growth is the falling consumption of transport fuels.

The downturn of France's first generation biofuels consumption can be explained by reduced domestic and European incentives. The most influential incentive set in favor of biofuel consumption consists of an environmental tax imposed on blenders when the annual target blending is not reached. In addition, the petroleum tax rebate that biofuels have benefitted has significantly declined and is likely to disappear. The French Agricultural Minister announced in September 2012 that a plan that would put a "gradual end to public support for first generation-biofuels starting from 2014 and terminating December 31, 2015," as part of his national action plan to address high feedstock prices. In Spain, bioethanol consumption is expected to decline in 2013 as a result of the end of the tax exemption for biofuels and the downward revision of consumption mandates, and to remain stagnant in 2014.

Due to the lower gasoline use and reduced incentives, EU bioethanol consumption is expected to grow only marginally from 5.63 billion liters in 2012 to 5.70 billion liters in 2013 and 5.76 billion liters in 2014. A surplus will be available in the Benelux countries, and in some Central European countries, mainly Hungary and Austria. France and Spain will be for the most part self sufficient. Germany and the UK are expected to be main deficit markets in 2013 and 2014 with a volume of about 800 million liter. Other deficit markets are Italy (400), Denmark (250), Sweden (200), Finland (150), Poland (90) and Romania (50).

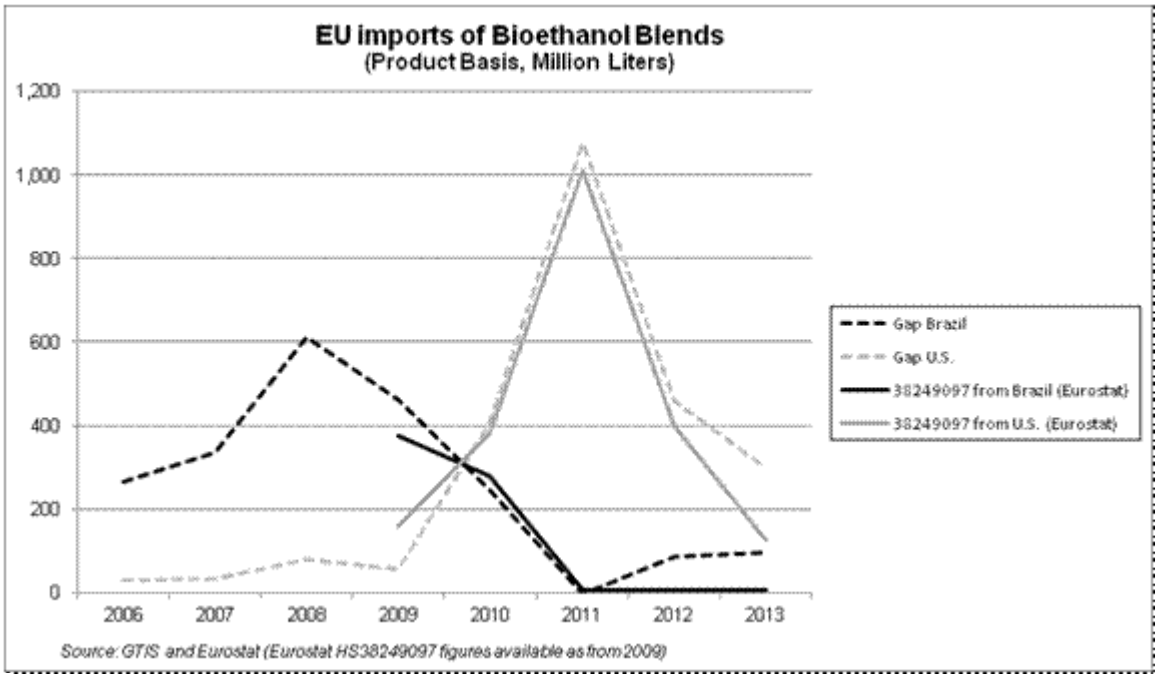
Trade

During 2006 – 2012, the majority of the bioethanol has been imported by the Benelux countries, the UK, Sweden, and Finland mainly through the port of Rotterdam. A part of the bioethanol imports is blended with gasoline in Rotterdam, but most of the biofuel is blended at its final destination to fulfill local EU Member State requirements.

The EU tariff on undenatured ethanol (HS 2207.10) is 192 Euro per thousand liters, while the tariff on denatured ethanol (HS 2207.20) is 102 Euro per thousand liters. By denaturing, ethanol is made unsuitable for human consumption by adding substances according EC Regulation 3199/93. Most EU Member States only permit blending with undenatured ethanol, protecting their domestic market by the higher tariff rate. The governments of the UK, the Netherlands, Finland, Denmark, the Czech Republic and Slovakia, however, also permit blending with denatured ethanol.

The bioethanol loophole

In 2012, the EU closed a popular loophole in the tariff regime. During 2009 – 2012, the major part of the bioethanol shipped to the EU was *exported* under HS 2207 but *imported* as a blend with a Binding Tariff Information (BTI) under the HS code 3824.90.97, subject to a lower tariff, namely 6.5 percent of the customs value. On a T1 FOB EU NW (duty unpaid, free on board, in EU northwestern seaport) ethanol price of 600 euro per 1,000 liter, this is a duty of about 39 euro instead of 102 euro per 1,000 liter. This practice of blending gasoline with bioethanol is conducted either before arrival on the continent, or under customs control on EU territory. As a result, a significant difference exists between the reported HS 2207 *export* volume to the EU and reported HS 2207 *import* volume. This gap is roughly equal to the import volume under HS 3824.90.97 reported by Eurostat (see graph below).

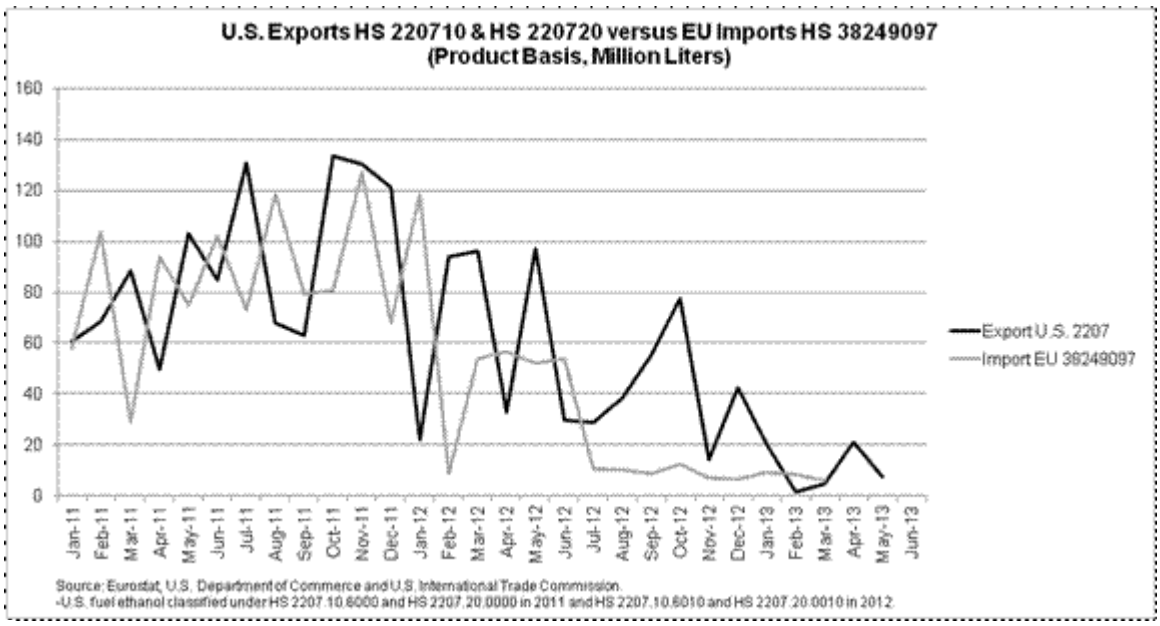


During 2010, 2011 and 2012, the imports of bioethanol blends from Brazil were replaced by imports from the United States (see graph above). Reportedly the majority has been imported as E90 (90 percent bioethanol). The termination of the blender's credit on December 31, 2011, had no noticeable effect on these imports. Because the E90 imports avoided the high tariffs for HS 2207, the price deviation between the world and protected EU market disappeared, and as a result, EU domestic prices for bioethanol plummeted. Bioethanol imports from Brazil were also replaced by increased imports of ETBE, from both Brazil and the United States. In 2010, 2011 and 2012, the EU imported respectively 632, 611, and 433 million liter. Significant growth of ETBE imports is not anticipated due to the limited production capacity in the producing countries.

Reclassification of E90

On from April 3 2012, the EU's Customs Code Committee reclassified ethanol blends of 70 percent, previously classified under HS 3824.90.97, as denatured ethanol under HS 2207, subject to the higher import tariff of 102 Euro per thousand liters (Regulation 211/2012). On a T1 FOB EU NW ethanol price of 600 euro per 1,000 liter, this is an additional fee of about ten percent. Companies with a Binding Tariff Indication (BTI) were allowed to continue importing bioethanol blends under HS 3824 for three additional months. The graph below shows the correspondence of the exports of U.S. fuel ethanol classified under HS 2207 and the EU HS 3824.90.97 imports until the drop of EU HS 3824 imports in July 2012.

According to some sector sources, an uncertain factor is that the language of Regulation 211/2012, which enforces the reclassification, is not explicit and is open for interpretation. Exporters could possibly avoid the higher tariff rate with a blend of just below 70 percent bioethanol. Another option could be finished blends, E5 or E10, under the HS code 27, with a tariff of 4.7 percent. Trading such blends holds, however, a risk due to the uncertainty about the exact enforcement of the regulation. Furthermore, the EC has reportedly communicated that with the regulation, in practice all blends will fall under the high tariff rate of denatured ethanol. BTIs for importation under HS 3824 will reportedly not be granted. Under this trading condition, importing pure bioethanol under HS code 2207 would be the most cost-effective option.



Anti-dumping duty

Following a complaint from the European bioethanol industry (ePURE), the European Commission imposed an anti-dumping duty on the bioethanol imports from the United States. On February 23, 2013, the duty was set at 62.3 euro per MT (49.2 euro per 1,000 liter) for the coming five years (see for more information the Policy Chapter). This duty is in addition to the import tariff of 102 euro per 1,000 liters, and as a consequence 1,000 liters of ethanol from the United States is charged with 151.2 euro. This rate is expected to cut off U.S. exports of bioethanol to the EU. While the United States and Brazil have gained free access to each other's bioethanol markets, the EU is becoming an increasingly isolated market with high import tariffs.

During 2013 and 2014, EU bioethanol production expansion is not expected to be able to replace the imports from Brazil and the United States. Even with the anticipated expansion in the Benelux and the UK of nearly 600 million liters in 2013 and 200 million liters in 2014, an annual import of about 500 million liters will be needed. The regulated demand in the EU, is expected to raise domestic ethanol prices and will attract bioethanol from the market in Brazil, the United States or other countries, unless oil companies chose to pay the penalties for not complying with the blending mandates. Germany and the UK are expected to be main deficit markets in 2013 and 2014 with a volume of about 800 million liter each (see consumption section).

The question remains from which countries the 500 million liters of bioethanol will be imported. About 350 million liter of ethanol is expected to be supplied through preferential trade measures, mainly used by Guatemala, Peru and Pakistan. Guatemalan and Peruvian ethanol production is estimated at respectively about 270 million liters and 220 million liters annually, while the domestic market is not fully developed (see the FAS Guatemala Biofuels Annual and the FAS Peru Biofuels Annual). Under the EU Generalized Scheme of Preferences (GSP) Guatemala and Peru are able to export unlimited quantities of ethanol duty-free during the period 2009 – 2013. An uncertain factor is the demand in the U.S. which could attract ethanol from Latin America. It is however anticipated that production from this region will be better able to compete with Brazilian ethanol on the EU market then on the U.S market as they have the competitive advantage to enter the EU market duty-free. Also Pakistan has duty-free access for 2013 with a quota of 95 million liters, of which 40 million liters were already allocated through the first half year. Based on historical import figures, about 100 million liters imported through preferential trade measures is used for non-fuel purposes, and about 250 million liters could be used as transport fuel.

The other likely source is Brazil. Production in Brazil is forecast to increase significantly due to a record cane harvest and

low sugar prices. Despite government incentives, which will further support the domestic market, a surplus is expected to be available for exports. As a consequence of the anti dumping duty, EU imports from the United States are the least likely. Trade sources belief that only if high EU domestic grain prices are combined with low U.S. corn prices imports could possibly resume during the fourth quarter of 2013.

Imports of both corn and sugar cane ethanol are not expected to be constrained by the implementation of the sustainability requirements laid down in the Renewable Energy Directive 2009/28/EC (RED) in national MS legislation (see policy section of the report). Future policies of the EC and MS Governments' interpretation and implementation of the RED remain however an uncertain aspect in forecasting future bioethanol imports. Imports could be hampered by a stricter or even inconsistent execution of the RED by the individual EU Member States.

Stocks

As a result of elevated domestic production and imports, ethanol stocks have been building during 2007 and 2008. The current storage capacity for ethanol, bioethanol and ethanol for non-fuel use, in the port of Rotterdam is estimated at about 600 million liters. Due to the cutoff of imports, the ample stock available on the market in 2011 and 2012 is expected to be depleted during this and next year.

Conventional Biodiesel

EU Production, Supply and Demand Table

The EU is the world's largest biodiesel producer. Biodiesel is also the most important biofuel in the EU and, on volume basis, represents about 70 percent of the total transport biofuels market. Biodiesel was the first biofuel developed and used in the EU in the transport sector in the 1990s. At the time, rapid expansion was driven by increasing crude oil prices, the Blair House Agreement and resulting provisions on the production of oilseeds under Common Agricultural Policy set-aside programs, and generous tax incentives, mainly in Germany and France. EU biofuels goals set out in directive 2003/30/EC (indicative goals) and in the RED 2009/28/EC (mandatory goals) further pushed the use of biodiesel.

Biodiesel (Million Liters)									
Calendar Year	2006	2007	2008	2009	2010[r]	2011[e]	2012[f]	2013[f]	2014[f]
Beginning Stocks	0	0	0	1,100	805	530	440	880	790
Production	5,410	6,670	9,550	9,860	10,710	10,920	9,665	10,280	10,280
Imports	70	1,060	2,020	2,190	2,400	3,005	3,215	1,700	1,800
Exports	0	0	70	75	115	95	110	200	200
Consumption	5,480	7,730	10,400	12,270	13,270	13,920	12,330	11,870	12,000
Ending Stocks	0	0	1,100	805	530	440	880	790	670
Production Capacity									
Number of refineries	119	187	240	248	260	256	256	256	256
Nameplate Capacity	6,600	12,745	18,375	23,230	23,700	24,470	25,220	25,220	25,220
Capacity Use (%)	82%	52%	52%	42%	45%	45%	38%	41%	41%
Feedstock Use (1,000 MT)									
Rapeseed oil	3,710	4,230	6,040	6,050	6,220	6,550	6,050	5,700	5,750
Soybean oil	570	830	960	1,050	1,100	850	500	700	690
Sunflower oil	30	70	130	170	150	160	150	175	170
Palm oil, crude	280	390	600	660	910	650	430	910	910
Animal fats	60	140	350	360	390	420	400	450	460
Recycled oils (UCO)	100	200	320	380	650	980	980	1,225	1,225
Other	10	10	10	10	10	85	110	130	130
Market Penetration (Million Liters)									
Biodiesel, on-road	5,480	7,730	10,400	12,270	13,270	13,920	12,330	11,870	12,000
Diesel, on-road use	225,145	232,891	230,968	225,221	229,725	231,103	229,949	232,246	234,801
Blend Rate (%)	2.43%	3.32%	4.50%	5.45%	5.78%	6.02%	5.36%	5.11%	5.11%
Diesel, total use	230,625	240,621	241,368	237,491	242,995	245,023	242,279	244,116	246,801

r = revised / e = estimate / f = forecast EU FAS Posts. Production capacity as of December 31 of year stated. The PSD is built on information in MT and converted to liters using a conversion rate of 1 MT = 1,136 liters. Sources: FAS Posts, Global Trade Atlas (GTA), European Biodiesel Board (EBB), Eurostat. Note: Data for feedstock use is not available. The figures above represent estimates by EU FAS posts.

Production Capacity

The years of rapid expansion in EU biodiesel production capacity seem to be over. From 2006 to 2009, production capacity increased by 360 percent, followed by a comparatively small increase in 2011 of six percent. For 2012, capacity is forecast to contract by 0.5 percent, driven by reductions in France and Germany. Capacity is expected to remain stable in 2013 and 2014.

The waning interest in investing in biodiesel capacity is a result of difficult market conditions. From 2008 onwards, comparatively low crude oil prices, high vegetable oil prices, increasing imports, and the financial crisiresulted in reduced or negative production margins. As a result, capacity use dropped from 52 percent in 2007 to a mere 45 percent in 2011. It is expected that capacity use wull drop even further, as a number of plants all over the EU temporarily stopped production or closed. Reduced demand due to double counting provisions introduced in several member states, together with a cut in minimum blending obligations in Spain in 2013, also suggests that the market will not support existing production capacity.

The structure of the biodiesel sector is very diverse and plant sizes range from an annual capacity of 2,000 MT owned by a group of farmers to 600,000 MT owned by a large multi-national company.

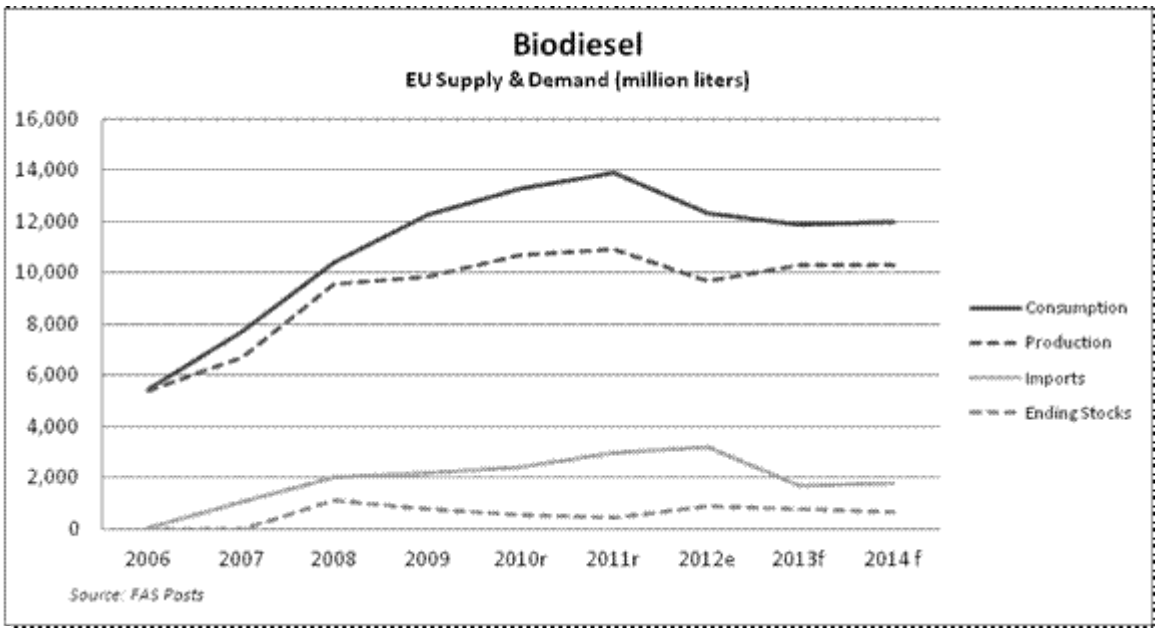
Production

In contrast to previous expectations, EU biodiesel peaked in 2011 and domestic production does not seem to be benefiting from increased use mandates. Double counting measures in some member states, and reduced mandates since 2013 in Spain, are having a negative impact on EU demand and production. In addition there is increasing competition to conventional biodiesel coming from increased production and availability of hydrotreated vegetable oils (HVO). Production of conventional biodiesel in 2012 is forecast to drop by about eleven percent. Spain, France and Italy report significantly lower production in 2012 and 2013 than previously expected. Only Poland foresees an increase in biodiesel production for 2012. Expected lower imports due to anti-dumping duties for biodiesel from Argentina and Indonesia in 2013 and 2014 will stimulate domestic production but output is nonetheless forecast to be a lower than in 2011.

Germany, France and the Benelux remain the major producing countries within the EU. Due to the expected production increases, Poland will rank fourth in biodiesel production in 2012.

EU Biodiesel Production – Main Producers (million liters)									
Calendar Year	**2006**	**2007**	**2008**	**2009**	**2010[r]**	**2011[r]**	**2012[e]**	**2013[f]**	**2014[f]**
Germany	2,730	3,280	3,250	2,600	2,880	3,400	3,180	3,180	3,180
France	650	1,090	2,000	2,610	2,270	2,060	2,040	2,040	2,040
Benelux	50	290	430	840	910	950	1,000	1,050	1,090
Poland	100	60	310	420	430	410	670	720	740
Italy	680	530	760	900	830	700	570	570	570
Spain	140	170	280	700	1,370	740	510	400	400
Others	1,060	1,250	2,520	1,790	2,020	2,660	1,695	2,320	2,260
Total	**5,410**	**6,670**	**9,550**	**9,860**	**10,710**	**10,920**	**9,665**	**10,280**	**10,280**

Source: FAS EU Posts



Feedstock Use

Rapeseed oil is the the main biodiesel feedstock in the EU, accounting for two thirds of total production. The use of soybean and palm oil is limited by the EU biodiesel standard DIN EN 14214. Soybean-based biodiesel does not comply with the iodine value prescribed by this standard (the iodine value functions as a measure for oxidation stability). Palm oil-based biodiesel reportedly does not provide enough winter stability in northern Europe. However, it is possible to meet the standard by using a feedstock mix of rapeseed oil, soybean oil, and palm oil. In the past, the vast majority of soybean oil was used in Spain, France, Italy, and Portugal. In 2013 and 2014 the major countries using soybean oil are expected to be Germany, Portugal and France. Recycled vegetable oils and animal fat are not as popular feedstock as vegetable oils, however, their use is steadily increasing as 1) they form a cheaper alternative feedstock and 2) in some member states (Austria, Denmark, Finland, France, Germany, Ireland, the Netherlands, and the U.K.) they count double against the use mandates. The category "other" includes cottonseed oil (Greece), as well as pine oil and wood (Sweden).

At least 1.5 million MT ofvegetable oil is imported (palm oil, soybean oil, and to a lesser extent rapeseed oil) for biodiesel production. A significant share of domestically produced biodiesel feedstock is crushed from imported oilseeds (soybeans and rapeseed). The 5.7 MMT of rapeseed oil feedstock projected for 2013 is equivalent to about14.3 MMT of rapeseed. This alsoenerates about 8 MMT of rapeseed meal as byproduct, most of which is used for feed. Similarly, the 0.7 MMT soybean oil will have to be crushed from 3.5 MMT of soybeans and generate about 2.8 MMT soybean meal (see also FAS EU Oilseeds Annual).

Consumption

After years of rapid use increases, EU biodiesel consumption seems to have reached its peak. In 2011, Germany, France, Italy, Spain, Poland and the United Kingdom were the largest biodiesel consumers in the EU (see table). Projections for the following years indicate that Germany and France still remain the leading consumers, followed by Spain, Poland, Italy and the Benelux. The introduction of double counting measures in several member states and increasing competition from HVO leads to an estimated drop in EU consumption of conventional biodiesel by 11 percent in 2012. Significantly lower 2012 consumption is reported in Italy, the United Kingdom, Poland, and Spain. Reduced mandates in Spain introduced are expected to cause a further drop of 4 percent in 2013. Lower EU consumption in 2013 is almost exclusively due to reduced consumption in Spain. Forecasts for 2014 are for no further decline but flat or a slightly increasing consumption.

Biodiesel consumption is driven almost exclusively by MS mandates and to a lesser extent by tax incentives. Despite the

declining trend 2012 and 2013 a few member states like Germany and the Benelux are expected to increase their consumption but only to a small extent.

EU Biodiesel Consumption – Main Consumers (million liters)									
Calendar Year	**2006**	**2007**	**2008**	**2009**	**2010[r]**	**2011[r]**	**2012[e]**	**2013[f]**	**2014[f]**
Germany	3,270	3,560	3,060	2,860	2,930	2,756	2,816	2,840	2,840
France	720	1,480	2,390	2,620	2,580	2,584	2,499	2,500	2,500
Spain	70	330	590	1,170	1,550	1,727	1,585	1,040	1,040
Poland	20	40	550	600	780	1,079	909	965	980
Italy	250	230	810	1,310	1,500	1,853	761	770	770
Benelux	30	420	410	740	580	627	682	730	770
Austria	370	420	460	590	600	576	574	575	580
UK	250	470	1,020	910	970	1,022	511	455	455
Portugal	90	170	170	290	420	394	375	365	365
Sweden	70	140	100	170	190	303	318	340	365
Others	340	469	840	1,010	1,170	998	1,301	1,290	1,335
Total	**5,480**	**7,730**	**10,400**	**12,270**	**13,270**	**13,920**	**12,330**	**11,870**	**12,000**

Trade

Anti-dumping duties for biodiesel from the United States

In March 2009, the EC introduced countervailing (CvD) and anti-dumping (AD) duties on biodiesel imports from the United States on B20 and above (see Policy Chapter). In May 2011, the duties were extended to all U.S. biodiesel irrespective of the blending ratio. The duties dramatically reduced EU biodiesel imports from the United States. Hopes by the EU domestic biodiesel industry that this would reduce the pressure on the market were not fulfilled as the void was filled with increased biodiesel imports from mainly Argentina and Indonesia (see graph below). Total biodiesel imports grew from 2,020 million liters in 2008 to 3,215 million liters in 2012.

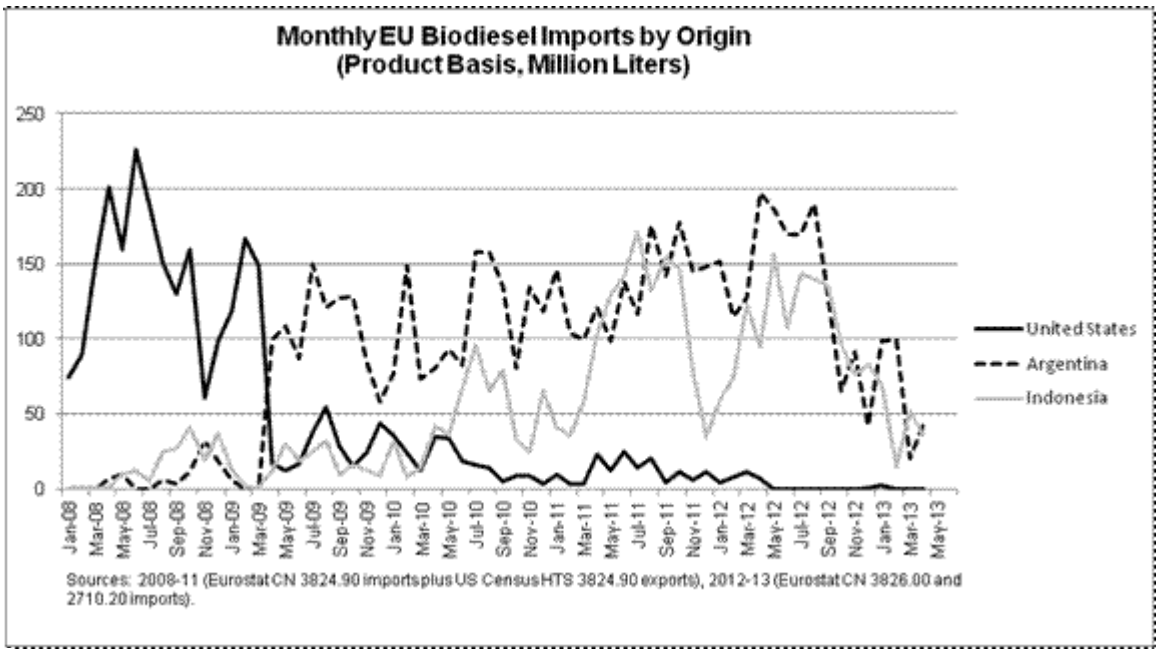
In 2012, most biodiesel, about 3,100 million liters, was imported under HS code 3826.00.10 containing at least 96.5 percent biodiesel. About 100 million liters was imported as blend under HS code 2710.20.11 containing at most 30 percent biodiesel. It is assumed that most of the product traded under the last HS code is B5. Most of the biodiesel is imported through Spain and the Netherlands. The quota system announced by the Government of Spain in April, 2012, and amended in December 2012, is yet to be implemented.

Anti-dumping duties for biodiesel from Argentina and Indonesia

In an attempt to curb down the biodiesel imports from Argentina and Indonesia, the EC enforced anti dumping duties on biodiesel imports from these origins as of May 29, 2013. The EC set provisional tariffs ranging from 6.8-10.6 percent for imports from Argentina and between zero and 9.6 percent for those from Indonesia. The EU Member States are expected to vote on definitive duties before the end of November. For more information see the Policy Chapter of this report.

As a consequence of mainly the additional duties, EU biodiesel imports are expected to almost half in 2013. The anti-dumping duties on biodiesel from Argentina and Indonesia could open up opportunities for biodiesel from other origins such as Malaysia or Brazil. Trade sources expect domestic demand in Brazil will hamper exports. Imports are more likely to increase from Malaysia. Malaysian producers are reportedly gearing up supplies for increasing their exports to the EU.

Another constraint for biodiesel imports are the sustainability requirements laid down in the Renewable Energy Directive (RED). As of April 1, 2013 all biofuels will need to have at least 35 percent greenhouse gas (GHG) savings. Default values of biodiesel produced from both soybean oil and palm oil are set lower in the RED.



Stocks

Reliable data for biodiesel stocks is not available. In 2006 and 2007, most biodiesel was used as B100 and consumed shortly after its production. Commercial stocks are estimated to have been fairly small and are included in the consumption figure. In 2008, blending started to play a bigger role and stocks were held by traders, blenders, and the minerals oil industry.

In 2008, the use of B99 substantially increased and prompted the EC to start an anti-dumping investigation. In anticipation of the EU imposing duties on biodiesel imports from the United States, European traders and mineral oil industry accumulated large stocks at the end of 2008. These were partially reduced in 2009 and by the end of 2010 should have fallen to the assumed average level. In the absence of reliable data, the data for stocks is based on the assumption that average stocks amount to the equivalent of two weeks supply of consumption.

Advanced Biofuels

For reporting purposes, advanced biofuels, or next generation biofuels, are biofuels beyond the conventional sugar, starch, vegetable oils and animal fat-based biofuels now produced commercially. Advanced biofuels can be derived from non-food, energy crops or agricultural, forestry and municipal wastes. Advanced biofuels include (cellulosic) ethanol, butanol, methanol, and dimethyl ether (DME), Fischer-Tropsch diesel, drop in fuels, and biofuels made from algae.

In the RED (Renewable Energy Directive 2009/28/EC, see policy section of this report), second generation biofuels will get a double credit. This means that biofuels made out of ligno-cellulosic, non-food cellulosic, waste and residue materials will count double towards the ten percent target for renewable energy in transport in 2020.

In the EU, the commercialization of advanced biofuel production is in general lagging the developments in the United States. In the National Renewable Energy Action Plans of the EU MS, the contribution of advanced biofuels (biofuels conform Article 21.2 of the RED) is expected to grow between 2010 and 2020 but the share remains limited at about seven percent in 2020 (see GAIN Report NL0028). With the goal to support the commercialization of advanced biofuels and the

bio-based economy in general the European Commission (EC) developed the following programs:

-On February 13, 2012, the EC adopted a new strategy entitled "Innovating for Sustainable Growth: a Bioeconomy for Europe". The main goal of the strategy is to reduce the EU's dependency on fossil resources, for more information see the Bioeconomy website of the EC. One of the policy areas under the strategy is biorefinery, including the production of biofuels. The EC will fund biorefinery research and commercialization by the Horizon 2020 program. This financial instrument has a budget of Euro 80 billion for the period 2014-2020.
-The goals of the Biorefinery policy area overlap the goals of the European Strategic Energy Technology (SET) Plan. The SET-Plan includes the European Industrial Bioenergy Initiative (EIBI), which key objective is to accelerate the commercial development of sustainable bioenergy. The estimated budget is Euro 8 billion over 10 years to support 15-20 projects.
-On July 10, 2013, the EC presented the Biobased Industries Public Private Partnership with the Biobased Industries Consortium (BIC), a cross sector group of 48 private companies. The partnership plans to accelerate the exploitation of biobased products in Europe by 2020, and has a budget of Euro 3.8 billion.

Commercial production of advanced biofuels

Currently there are six advanced biofuel plants operational at commercial scale in the EU (see table below).

Advanced Biofuels Plants in the EU

Country	Process	Biofuel	Feedstock	Capacity (million liters per year)	Year of opening
Thermochemical					
Finland	H	HVO	Oils and fats	430 (two lines)	2009
The Netherlands	H	HVO	Oils and fats	960	2011
The Netherlands	P/FT	Methanol	Glycerine	250	2010
Germany	G/FT	BtL	Wood Waste	18	2011
Biochemical					
Italy	HL/F	Ethanol	Wheat straw	20	2013

Source: EU FAS Posts BtL=Biomass to Liquid, DME=Dimethyl Ether, F=fermentation, FT=Fischer Tropsch synthesis, G=gasification, H=hydrogenation, HVO=Hydrotreated Vegetable Oils, HL=hydrolysis, OS=oxygenate synthesis, P=pyrolysis

Thermochemical processes

Finland / The Netherlands: Neste Oil has developed a process of hydrogenation to produce hydrotreated vegetable oils (HVO) with the product name NExBTL. The hydrogenation process to produce HVO is reportedly the most cost effective process currently available to produce advanced biofuels. In Finland, Neste operates one plant with two lines of about 190,000 MT each. In 2010, Neste Oil opened up a renewable diesel plant in Singapore with an annual capacity of 800,000 MT and a similar plant in Rotterdam in 2011. In 2012, the Neste plants were operating at nearly full capacity and refined 1.36 MMT of palm oil, 0.74 MMT of waste and residues and 7,000 MT of other vegetable oils. The waste and residues consist of 0.54 MMT of palm fatty acid distillate (PFAD) and 0.2 MMT of animal fats. It is assumed that the majority of the PFAD is used in the plant in Singapore and most of the animal fats in the European plants.

The Netherlands: In June 2010, the advanced biofuel plant BioMCN started production. The plant has a capacity of 250 million liters and produces biomethanol from glycerine. The glycerine is a byproduct of biodiesel production. The glycerine is converted into syngas, which is used to synthesize the bio-methanol. Bio-methanol can be blended with gasoline or used for the production of bio-MTBE, bio-DME, or synthetic biofuels. On December 18, 2012, BioMCN received a grant of Euro 199 million for the construction of a commercial scale biomass refinery using wood residues as feedstock. Through torrefaction and gasification the feedstock will be transferred into syngas and finally bio-methanol.

Germany: In cooperation with the automobile makers Volkswagen and Daimler, the Choren Industries Company has developed a process for gasification of biomass as feedstock for the production of BtL. Choren has erected a pilot plant with a production capacity of 18,000 million liters of BtL in Freiberg. However, the company became insolvent in July 2011. In February, the Carbo-V technology was sold to Linde engeneering Dresden. An alternative project for the research and

production of BtL fuels is run by the Karlsruhe Institute for Technology (KIT). It is known as the Bioliq® project. KIT works on processes to convert crop residues and wood residues into diesel and gasoline fuels. The Bioliq® process allows the physical separation of the pyrolysis from the rest of the process. This means that feedstock can be converted into pyrolysis oil in decentralized plants which is then shipped to a central plant for final conversion. This helps to reduce volume and costs for feedstock transport.

United Kingdom: In November 2009, BP and DuPont announced the formation of Kingston Research Ltd and the establishment of an advanced biofuels research centre in Hull for demonstration of biobutanol technology. The first commercial-scale biobutanol facility is expected to begin operating in 2014. Green Biologics (UK) has developed butanol-producing genetically enhanced microbial strains and will integrate these into a novel fermentation process. This technology advance should result in a step change in the economic viability of the fermentation and enable the large scale production.

Biochemical processes

Spain: Abengoa Bioenergy has built a demonstration plant in Babilafuente (Salamanca). The plant construction was completed in December 2008 and it has been operating since September 2009. This plant has a 5 million liters/year production capacity, and uses wheat and barley straw as feedstock. The process is based on enzymatic hydrolysis. Since 2013, in the same pilot facility up to 25,000 MT of urban solid waste per year can be processed to produce 1.5 million liters of biofuels.

Italy: In the last quarter of 2012, Beta Renewables started the production of cellulosic ethanol from wheat straw. The Crescentino plant aims to produce 20 million liters of ethanol via 60,000 MT of non-food feedstock including rice straw, wheat straw, corn stover, Arundo Donax and poplar. It will also generate electricity beyond what is needed to run the plant. The Danish enzyme producer Novozymes is taken part in the project. Currently the plant is in its start up phase.

Use of conventional and advanced biofuels by the aviation sector

In 2011, the EC, Airbus, and the aviation and biofuel producers industries, launched the European Advanced Biofuels Flightpath. This action is scheduled to achieve 2 million MT of sustainable biofuels used in the EU civil aviation sector by the year 2020. In the short term, before 2015, the intention is to make 1,000 MT of Fisher-Tropsch biofuel available, and to produce hydrotreated vegetable oil (HVO) suitable as aviation fuel. Since 2008, the aviation sector has been conducting test flights with biofuels. On March 8, 2013, KLM launched the first ever intercontinental flight series on biofuel, between New York and Amsterdam. Currently, the price of biojet fuel is about eight times the price of conventional kerosene. The aviation industry expects that the economy of scale will make biojet fuel competitive around 2018.

Biomass for Heat and Power

The European Commission (EC) expects heat and power production from biomass to play an important role in meeting the 20 percent target for renewable use by 2020 and in the future reduction of CO_2 emissions in Europe. Based on the Renewable Energy Action Plans (NREAPs) submitted by the Member States to the EC, focus is on biomass for heating and cooling rather than for electricity (see table below). A major part of the biomass used is forecast to be forestry products.

The European Biomass Association (AEBIOM) expects the EU consumption of wood pellets to increase from 2.5 Mtoe in 2008 to 20 - 32 Mtoe in 2020. This is about 20 to 30 percent of the forecast biomass consumption in the NREAPs and equal to a volume of 50 – 80 MMT. Based on the NREAPs, biogas production from biomass is expected to reach 8.4 Mtoe in 2020, which is about 8 percent of the projected total biomass use.

Renewable Energy Use and share of Biomass and Biofuels (Mtoe)				
Calendar Year	**2005**	**2010**	**2015**	**2020**
Heat & Cooling	**54.3**	**67.8**	**84.7**	**111.5**
-Of which Biomass	52.6	61.7	73.1	90.4
Electricity	**41.2**	**54.9**	**77.5**	**104.6**
-Of which Biomass	5.2	8.9	14.5	19.9

Transport	**3.1**	**14.0**	**19.8**	**29.7**
-Of which Biofuels	2.9	13.9	19.5	28.9

Based on the Renewable Energy Action Plans (NREAPs)

Wood Pellets

EU Production, Supply and Demand Table

Wood Pellets (1,000 MT)									
Calendar Year	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012[c]**	**2013[c]**	**2014[c]**
Beginning Stocks	500	167	771	1244	620	999	777	877	907
Production[a]	3,520	5,782	6,294	6,669	9,241	9,620[c]	10,000	10,150	10,300
Imports[b]	800	900	1,250	1,771	2,610	3,226	4,490	6,000	7,000
Exports[b]	50	50	50	64	72	68	90	120	160
Consumption[a]	4,603	6,028	7,021	9,000	11,400	13,000[c]	14,300	16,000	17,100
Ending Stocks	167	771	1,244	620	999	777	877	907	947
Production Capacity									
Number of Plants[a]				499		670[c]			
Capacity[a]	6,643	8,583	11,283	13,694	14,845	15,500[c]	16,000	16,200	16,400
Capacity Use (%)	53.0%	67.4%	55.8%	48.7%	62.2%	62.1%	62.5%	62.7%	62.8%

Source: (a) The European Biomass Association (AEBIOM), (b) GTIS, (c) FAS Post Estimates

The EU is the world's largest wood pellets market, with a consumption of about 14.3 MMT of pellets in 2012 (see table above). Driven by the EC mandates and Member State incentives, the demand is expected to expand further to about 17 MMT in 2014. Consumption forecasts for 2020 range from 35 MMT for Western Europe (Pöyry) to 50 – 80 MMT for the total EU (AEBIOM). Future consumption will however, depend on a range of market and policy factors.

Main Pellet Producers (1,000 MT)							
Calendar Year	**2007**	**2008**	**2009**	**2010**	**2011**	**2012[e]**	**2013[e]**
Germany	1,100	1,460	1,600	1,750	1,880	2,000	2,000
Sweden	1,360	1,580	1,580	1,650	1,340	1,340	1,350
Austria	700	625	695	850	940	890	950
Portugal	-	-	400	550	650	650	650
France	190	240	350	350	550	600	600
Italy	600	700	550	600	470	600	600
Poland	329	378	400	410	410	410	410
Total	**5,782**	**6,294**	**6,669**	**9,241**	**9,620[e]**	**10,000**	**10,150**

Source: AEBIOM and Member State sector organisations, e = estimate EU FAS Posts.

Germany and Sweden are the largest pellets producers in the EU. In 2011, Swedish production fell by about 300,000 MT. The production cut has been partly replaced by competitive imports from the Baltic Region and Russia. During 2010, 2011 and 2012, Swedish imports have been increasing rapidly, mainly to the large-scale users. In the other major producing EU Member States, production is expected to remain stagnant or increase only marginally. The weak investment climate and the limited availability of feedstock supplies are constraining further capacity and production growth. The major raw material for pellets has traditionally been sawdust and byproducts from sawmills. With the increasing competition for the sawdust resources, a broader sustainable raw material basis is becoming necessary. There is an increased interest in forest residues, wood waste and agricultural residues. In Central Europe some expansion is anticipated, mainly supplying the residential heating market in that region. Capacity growth for supplying the demand in northwestern Europe will however not be sufficient. Overall, EU wood pellet production is not expected to be able to keep up with the domestic demand.

Consumption

Of the consumption of 14.3 MMT in 2012, an equal share is estimated to be used for industrial use and household use. The major users of wood pellets in the EU are the UK, Denmark, the Netherlands, Sweden, Germany and Belgium.

Main Pellet Consumers (1,000 MT)							
Calendar Year	**2007**	**2008**	**2009[e]**	**2010**	**2011[e]**	**2012[e]**	**2013[e]**
UK	-	-	-	1,990	2,720	3,380	4,540
Denmark	993	1,200	1,400	1,720	2,350	2,400	2,500
Netherlands	705	912	912	913	1,290	1,710	2,000
Sweden	1,715	1,850	1,920	2,280	1,880	1,700	1,700
Germany	600	900	1,050	1,200	1,400	1,600	1,600
Belgium	735	920	920	950	1,130	1,200	1,320
Total	**6,028**	**7,021**	**9,000**	**11,400**	**13,000**	**14,300**	**16,000**

Source: AEBIOM and Member State sector organisations, e = estimate EU FAS Posts

Differences in consumption characterize the European pellet market. The market can be divided in three regions. Markets such as the Netherlands, Belgium and the UK are dominated by large-scale power plants. In Denmark and Sweden, pellets are used by power plants but also by households and by medium scale consumers using wood pellets for district heating. In Germany, Austria, Italy and France pellets are mainly used in small-scale private residential and industrial boilers for heating. The demand for industrial pellets depends primarily on EU Member State mandates and incentives, while the residential pellet market is driven by prices of alternative fuels.

The UK, the Netherlands and Belgium are expected to be the main growth market for pellets, and also the most dependent on imports. The large scale use of wood pellets by the power plants in the UK and the Benelux countries is driven by the EU mandates for renewable energy use in 2020. The governments of these countries opted to fulfill their obligations mainly by the use of biomass for the generation of electricity. Recently, the UK Government enforced the Industrial Emissions Directive, which is expected to boost consumption further in 2013 and 2014. The Dutch Government will decide upon the national renewable energy policy in the second half of August. According the draft proposal, old power plants build in the eighties will have to be closed and biomass use will be capped at 25 PJ per year. For more information see the GAIN Reports – *The Market for Wood Pellets in the Benelux*, and *The Market for Wood Pellets in the UK*.

Trade

Main EU Importers of Wood Pellets (1,000 MT)				
	Total Imports[a]		**Imports from U.S.**	
Calendar Year	**2011**	**2012**	**2011**	**2012**
Denmark	2,295	2,032	38	43
United Kingdom	1,015	1,470	274	475
Italy	1,009	1,197	21	31
Netherlands	944	1,031	423	602
Belgium	514	972	203	572
Sweden	665	487	41	40
Germany	253	317	0	0
Austria	316	256	0	0
Total EU27	**-**	**-**	**1,029**	**1,764**

Source: GTIS (HS Code: 44013020 in 2011 and 440131 in 2012)
(a) Includes EU intra-trade.

Following the three regional markets in the EU, also three trade flows can be determined in the EU market. The Benelux countries and the UK mainly import from the United States and Canada. Despite their significant domestic production, the

Scandinavian countries, mainly Denmark and Sweden, partly depend on imports, from predominantly the Baltic Region and Russia. The market for pellets in Germany, Austria and Italy is more isolated and depends mostly on the production in this region itself.

Main Suppliers of Wood Pellets to EU (1,000 MT)				
Calendar Year	**2009**	**2010**	**2011**	**2012**
United States	535	763	1,029	1,764
Canada	520	983	1,174	1,346
Russia	379	396	475	637
Ukraine	30	57	149	217
Croatia	72	95	115	136
Belarus	75	90	100	112
Other	160	226	226	279
Total	**1,771**	**2,610**	**3,226**	**4,491**

Source: GTIS (HS Code: 44013020 in 2011 and 440131 in 2012)

Since 2008, the demand for pellets has significantly outpaced domestic production in Europe. This has resulted in increased imports from the United States. In 2012, U.S. wood pellets exports were boosted by seventy percent to nearly 1.8 MMT, representing a value of US$ 331 million. From 4.5 MMT of wood pellets imports in 2012, imports are expected to surge further to 6 and 7 MMT this and next year. Imports are mainly driven by the demand of large scale power plants. If trade flows remain consistent with current patterns, the United States has the potential to supply at least half of the import demand, which would represent a trade value of approximately US$ 650 million in 2014. Other significant exporters of pellets to the EU are Canada and Russia. In response to the EU demand for industrial pellets, capacity is expanded in the supplying regions. On the East coast of Canada and the United States, an additional capacity of about one million MT will be available by the end of 2013. These third country imports could, however, be affected by the implementation of the Renewable Energy Directive (RED) by the individual Member State governments, in particular by the Dutch and UK Government. In the following GAIN Reports, the national policies on sustainability are outlined: *The Market for Wood Pellets in the Benelux*, and *The Market for Wood Pellets in the UK*.

Pellet Standards and Sustainability Criteria

European traders and end-users of industrial wood pellets are calling for clear, consistent, harmonized and long term government regulations. Also standardization of pellet quality is regarded as important for further development of the international wood pellet trade.

Quality Standards and Certification

-Standards and certification for non industrial pellets: European standards for solid biomass (CEN/TC 335) were introduced in 2011. They include a standard for wood pellets (EN 14961-2). This standard is developed only for non industrial use. The European Pellet Council (EPC) developed ENplus, a traceability and certification scheme, which implements this standard.

-Standards for industrial pellets: European pellet producers and users have been consulted about a product standard for industrial wood pellets. This consultation is part of a project supported by the European Commission (EC), the EUBioNetIII project. Results of these inquiries will be used for a CEN and an international ISO standard for wood pellets for industrial use (for more info see www.eubionet.org). The ISO fuel specification standards are planned to be published in 2013.

-Certification for industrial pellets: The EPC is also developing an ENplus certification scheme for industrial quality, the PellCert project. The European Biomass Association (AEBIOM) and ten EPC members are involved in the project: the biomass and pellet associations in Austria, Germany, Belgium, Sweden, Finland, France, Italy, Spain, Portugal and

Hungary. For more information see www.pellcert.eu.

Sustainability Criteria and Certification

The EC is expected to come forward with a proposal on sustainability criteria for biomass destined for the generation of power, heat and cooling (for more information see the Policy Chapter). EU third country imports could be affected by addition of biomass sustainability requirements in the RED and the implementation of the RED by the individual Member State governments. Awaiting the sustainability criteria of the EC and Member State governments, the industry is actively formulating their own criteria.

-For non-industrial wood pellets, ENplus included the requirement to document the origin of the raw material and the share of raw material coming from certified sources (FSC, PEFC or equivalent systems). In addition, pellet producers must be able to state the amount of greenhouse gases emitted as a consequence of pellet production.

-For industrial wood pellets, the EPC has the opinion that sustainability requirements are key for large scale investments in the biomass sector and wood pellet imports. The European Biomass Association (AEBIOM) leads a project to implement sustainability criteria in the ENplus program in consultation with the EPC, Laborelec and Eurelectric, the Union of the European Electricity Industry.

Buyers of wood pellets are represented by the Wood Pellet Buyers Initiative (WPBI). The WPBI is developing harmonized quality and sustainability standards parallel with the ENplus program. WPBI is developing the sustainability standards and related certification scheme based on the existing programs of RWE/Essent, Drax, Vattenfall, and the verification procedure of Laborelec and SGS. The aim is to make the sustainability certification scheme compliant with all existing national regulations in the EU. The WPBI plans to complete the scheme in October 2013.

Biogas

The biogas sector is very diverse across Europe. Depending on national priorities, i.e. whether biogas production is primarily seen as a means of waste management, as a means of generating renewable energy, or a combination of the two, countries have structured their financial incentives (or the lack thereof) to favor different feedstocks.

According to Eurostat data, Germany and the UK, the two largest biogas producers in the EU represent the two ends of the scale. Germany generates 90 percent of its biogas from agricultural crops while the UK along with Bulgaria, Estonia, Finland, and Latvia rely almost entirely on landfill and sewage sludge gas. All other countries use a variety of feedstock combinations.

Biogas for Heat and Electricity in the EU (Ktoe)

Calendar Year	2007	2008	2009	2010	2011	2012 [e]	2013 [f]	2014 [f]
Field Crops /Manure/ Agro-food industry waste	3,422	3,564	4,324	7,062	8,500	8,800	9,100	9,400
Landfill	2,655	2,757	2,800	2,825	2,817	2,850	2,900	2,950
Sewage Sludge	930	954	989	1,072	1,241	1,300	1,350	1,400
Total	7,007	7,275	8,113	10,959	12,558	12,950	13,350	13,750

Sources: 2007-2010 Eurostat; 2011-2014: e, f = Estimate/Forecast EU FAS Posts

European farmers are investing in on-farm biogas digesters to convert agricultural crops, manure and other farm and food industry residues into methane gas. The leader in this production segment is Germany which accounts for more than 80 percent of the EU production of biogas from biomass. The incentive for farmers in Germany to invest in biogas digesters is a guaranteed feed-in price for the generated electricity which is considerably higher than that of electricity generated from fossil fuels, natural gas coal or nuclear sources. A change in the guaranteed feed-in price in Germany renewable energy law in 2012 reduced the attractiveness of investing in new plants. As a result, the erection of new plants continues but at a much slower pace than in the years of 2009-2011. In the Netherlands in contrast, half of the existing plants are expected to close

down within five years due to the termination of subsidies from the Dutch Government in 2016/17. Without the subsidy plants will not be able to generate positive margins.

Because biogas production already uses considerable area requiring about 810,000 hectares of cropland in Germany (compared to about 3.3 million hectares for wheat production), environmental NGOs, organic farm organizations, and livestock farmers are increasingly expressing concerns that this production sector represents unfair competition to food and feed producing farmers. Farm land prices in the biogas producing areas reportedly rise faster than in other agricultural regions. Similar criticism has not yet been reported from other EU countries as land use for the production of feedstock for biogas production is much smaller. For example, in the Netherlands and Belgium corn acreage for biogas amounts to only 15,000 ha and 3,800 ha, respectively. However, in some MS (for example Poland and Portugal) investments in biogas facilities face opposition from local communities out of concerns over odor pollution.

As a new development, biogas plants are increasingly co-located with other biofuel plants and use residues from bioethanol production (Germany) or glycerine from biodiesel production (Benelux).

The majority of the biogas is used to generate electricity and/or heat. Here the trend is toward the so-called cogeneration plants which produce electricity and capture the process heat at the same time. The heat can be supplied to nearby building or sold to district heating systems.

A growing number of large scale operations are purifying the biogas to bio-methane and subsequently enter it into the natural gas grid. The use of purified biogas as transportation fuel is still marginal in most EU countries with the exception of Sweden and Germany. In Sweden a remarkable 44 percent of the biogas was used for vehicle fuel or fed into the gas distribution net in 2010. At the end of 2011, there were over 39,000 gas vehicles in Sweden and 132 public filling stations. Many Swedish communities choose biogas to run local buses and distribution vehicles. However, there is currently an uncertainty among private green car owners who are still awaiting news on the flex-fuel incentives after 2012. Germany has a higher number of gas vehicles (100,000) and filling stations (900) than Sweden but due to the size of the total fuel market the share of biogas is much lower.

Country	**No. of biogas plants**	**Total capacity in MW**	**Biogas production in million m^3**	**Electricty production GWh**	**Feedstock**
Austria (2011)	362	104		539 GWh	
Belgium (2012)	39				Manure, corn silage, agricultural and food waste
Czech Republic (2010)	200	117		634 GWh	Corn silage, hay, industrial and municipal waste
Denmark (2011)	81				Manure
Estonia (2007)			12		Landfill gas, sewage sludge, manure
Finland (2010)	70		139		Municipal waste
France (2010)	495			6760 GWh	Municipal waste, sewage sludge, agro-industry waste
Germany (2012)	7,589	3179		21880 GWh	Corn and rye silage, grains, manure, waste, sugar beets
Hungary (2010)	23				Manure, sewage sludge, food industry waste
Italy (2010)	243				Manure, agro-industry waste, OFSUW
Latvia	8	11	174	57 GWh	Manure, municipal and food

(2010)					processing waste, waste water treatment sludge, animal byproducts
Lithuania (2008)	7	4.2 MW electricity 6.1 MW heat	21		
Netherlands (2012)	100				Manure, corn silage, agricultural and food waste
Poland (2012)	173 (thereof 18 using agricultural feedstocks	104 (18)			Sewage sludge, landfill gas, energy crops, plant and animal waste
Portugal (2011)	100	42		140 GWh	Manure Landfill gas, OFSUW
Slovakia (2011)	33	17		125 GWh	Corn silage, plant residues
Spain (2011)	94				Landfill collections, agro-industrial waste, sewage sludge, OFSUW
Sweden (2011)	230			1400 GWh	waste materials, manure, crops
United Kingdom (2010)	55				Food waste, brewery waste, OFSUW, animal slurry & manure

Source: EU FAS Posts

Notes on Statistical Data

Bioethanol

Production capacity, production and consumption figures are based on statistics of European Commission statistics, Eurostat, the European Renewable Ethanol Association (ePURE) and FAS Posts. FAS Posts based their estimates on figures of national industry organizations and government sources. Ethyl tert-butyl ether (ETBE) is not included in ethanol production, but is included in the consumption figures. ETBE is predominantly consumed in France, Spain, the Netherlands and Poland.

Bioethanol import figures during 2006-2009 are based on estimates of ePURE. Other trade figures are based on Eurostat and Global Trade Atlas (GTIS) data, which are sourced from EU MS customs data, and the U.S. Bureau of Census. As the EU has no Harmonized System (HS) code for bioethanol, trade numbers are difficult to assess. The estimation of the EU import figures after 2009 is based on EU imports through preferential trade under HS 2207, EU imports from Brazil under HS code 3824.90.97, U.S. exports to the EU under HS 2207.10.60.00 and HS 2207.20.00.00 in 2010 and 2011 and HS 2207.10.60.10 and HS 2207.20.00.10 in 2012, and EU imports of HS code 29091910 (ETBE, 45 percent ethanol).

Feedstock and co-product figures: Official data for feedstock use is scarcely made available by industry and government sources. The figures in this report represent FAS Posts estimates of the percentage of bioethanol (MT) produced by feedstock (MT). The conversion factors used are; wheat: 0.31; corn: 0.32; barley and rye: 0.19; and sugar beet: 0.075 (source: USDA publication "The Economic Feasibility of Ethanol Production from Sugar in the U.S."). The applied conversion factor for the production of DDG is 0.31 across all grains.

Biodiesel

Production and consumption figures are based on statistics of the European Biodiesel Board (EBB) and adjusted by EU FAS Posts using additional information obtained from national industry organizations and government sources.

Trade figures are based on Global Trade Atlas (GTA) data, which are sourced from EU MS customs data, 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 and HS 2710.20.11 for blends containing at most 30 percent biodiesel. In this report is assumed that these two codes represent a blend of 99 and 5 percent, respectively.

Prior to 2008, biodiesel entering the EU was subsumed under the CN code 38.24.90.98 (other chemicals). CN stands for "Combined Nomenclature" and is the equivalent of the "Harmonized System" used in the United States. Therefore, biodiesel imports prior to 2008 are estimated based on industry information. The U.S. Bureau of the Census introduced HTS export code 3824.90.40.30 in January 2011 which exclusively covers pure biodiesel (B100) and biodiesel blends above B30.

Feedstock and co-product figures: Data for feedstock use is not available. The figures in this report represent estimates by EU FAS posts.

Abbreviations and definitions used in this report

Benelux = Belgium, the Netherlands and Luxembourg
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
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.
GHG = greenhouse gas
GJ = Gigajoule = 1,000,000,000 Joule or 1 million KJ
Ha = Hectares, 1 hectare = 2.471 acres
HS = Harmonized System of tariff codes
HVO = Hydrotreated Vegetable Oil
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
MWh = Mega Watt hours = 1,000 Kilo Watt hours (KWh)
MY = Marketing Year
NMS = New Member State(s) = Countries that joined the EU in/after 2004
Nordics = Denmark, Sweden, Finland, Norway and Iceland
PVO = Pure vegetable oil used as transport fuel
RME = Rapeseed Methyl Ester
Toe = Tons of oil equivalent = 41,868 MJ = 11.63 MWh
TWh = Tera Watt hours = 1 billion Kilo Watt hours (KWh)
US$ = U.S. Dollar

Energy content and Conversion rates [1] :

Gasoline = 43.10 MJ/kg = 43.1 GJ/MT

Ethanol = 26.90 MJ/kg
Diesel = 42.80 MJ/kg
Biodiesel = 37.50 MJ/kg
Pure vegetable oil = 34.60 MJ/kg
BtL = 33.50 MJ/kg

1 Toe = 41.87 GJ

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

[1] Based on information from:
Massachusetts Institute of Technology (MIT) http://web.mit.edu/mit_energy/resources/factsheets/UnitsAndConversions.pdf ,
- German Federal Agency for Renewable Resources (FNR)

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