

Voluntary Report – Voluntary - Public Distribution

Date: June 08, 2021

Report Number: E42021-0049

Report Name: Biofuel Mandates in the EU by Member State and United Kingdom - 2021

Country: European Union

Post: Berlin

Report Category: Biofuels

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Report Highlights:

This report provides an overview of the biofuel use mandates in EU-27 member states and the United Kingdom. It supplements the EU Biofuels Annual Report 2021.

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Abbreviations and definitions used in this report

| | |
|----------------------------|--|
| % Cal = | percent energy content |
| % Vol = | percent volume |
| % Biodiesel = | minimum percentage of biodiesel in total diesel use |
| % Bioethanol = | minimum percentage of bioethanol in total gasoline use |
| % Overall = | minimum percentage of biofuels in total fuel use |
| % GHG Emission Reduction = | Percentage of GHG reductions of total fuel use (fossil and renewable) compared to the hypothetical GHG emissions that would have occurred with the exclusive use of fossil fuels |

All of the above refer to fuel use in the transport sector.

| | |
|-------------------|---|
| Biodiesel = | Fatty acid methyl ester produced from agricultural or waste 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 |
| Cat 1 (2 and 3) = | Risk categories for animal-by-products as defined in EU Regulation (EC) 1069/2009 , with cat 1 having the highest and cat 3 the lowest risk. |
| Double counting = | Certain biofuels are counted twice against the mandates. This was introduced to support the use of certain biofuels and/or feedstocks. As a result of double counting, less physical volumes of a certain biofuel are needed to fill a mandate, which makes the respective biofuel more attractive than a comparable single counting biofuel. Definition and eligible feedstocks vary by member state (MS.) |
| EC = | European Community or European Commission - depending on the context |
| ETBE = | Ethyl tert-butyl ether, an oxygenate gasoline additive containing 47% Vol ethanol |
| EU = | European Union |
| FQD = | EU Fuel Quality Directive 98/70/EC amended by directives 2009/30/EC and (EU) 2015/1513 |
| GHG = | greenhouse gas |
| GJ = | Gigajoule = 1,000,000,000 Joule or 1 million KJ |
| Ktoe = | 1000 MT of oil equivalent = 41,868 GJ = 11.63 GWh |
| MJ = | Megajoule |
| MS = | Member State(s) of the EU |
| N/A = | Not applicable |
| POME = | Palm Oil Mill Effluent |
| RED = | EU Renewable Energy Directive 2009/28/EC |
| RED II = | EU Renewable Energy Directive 2018/2001/EC |
| RES = | Renewable energy sources |
| SBE = | Spent Bleached Earth |
| Tall oil = | By-product of the wood manufacturing industry; qualifies as advanced biofuels feedstock. |
| Tall-oil pitch = | The residue from the distillation of tall oil; qualifies as advanced biofuels feedstock. |
| TME = | Tallow Methyl Ester, biodiesel made from animal fat |
| Toe = | Tons of oil equivalent = 41,868 MJ |
| UCO = | Used cooking oil/ recycled vegetable oil |
| UCOME = | UCO based methyl ester biodiesel |
| UK = | United Kingdom |

Introduction:

The 2009 [EU Energy and Climate Change Package](#) set out a 10 percent minimum target for renewable energy consumed by the transport sector to be achieved by all EU member states (MS) in their countries in 2020. The [Renewable Energy Directive \(RED\)](#) laid down detailed provisions on the goals and conditions in the transport sector for the period 2010-2020. In 2018, the European Union adopted the [Renewable Energy Directive II \(REDII\)](#) covering the period 2021-2030. It set a new overall renewable energy target of 32 percent by 2030 and a 14 percent target for the transport sector.

Many MS have adopted minimum biofuel use mandates in order to achieve the RED and RED II goals. This report provides an overview of the current and future mandates from the various MS. Note that Cyprus, Estonia, Latvia, Lithuania, Luxemburg, and Malta are not included in this report. **The tables represent the status quo as of May 20, 2021.** If changes are being discussed but have not yet been adopted, they are mentioned in the text below the tables.

- *Renewable Energy Targets*

RED II sets an overall binding renewable energy target of at least 32 percent by 2030 with a 14 percent target for the transport sector, with a clause for a possible upwards revision by 2023. Within the 14 percent transport sector target, food-based biofuels are capped at MS 2020 levels up to one percent higher, but with a maximum cap of seven percent for each MS. If the cap on first generation biofuels in a MS is less than seven percent, the country may reduce the transport target by the same amount (for example, a country with a food and feed crop cap of six percent could set a transport target at 13 percent). Member states can also set a lower limit for conventional biofuels than prescribed in RED II. For advanced biofuels, RED II introduces two different sets of targets for feedstock listed in Part A of Annex IX and feedstock listed in Part B. Feedstock listed in Part A must be supplied at a minimum of 0.2 percent of transport energy in 2022, one percent in 2025, and at least 3.5 percent by 2030. Biofuels produced from feedstock listed in Part B will be capped at 1.7 percent in 2030. Advanced biofuels will be double counted towards both the 3.5 percent target and towards the 14 percent target.

**Table 1. Advanced Biofuel Sources,
Part A and Part B of Annex IX in RED II**

| Part A | Part B |
|--|--|
| <ul style="list-style-type: none"> • Algae if cultivated on land in ponds or photobioreactors • Biomass fraction of mixed municipal waste • Biowaste from private households subject to separate collection • Biomass fraction of industrial waste not fit for use in the food or feed chain • Straw • Animal manure and sewage sludge • Palm oil mill effluent and empty palm fruit bunches • Crude glycerin • Bagasse | <ul style="list-style-type: none"> • Used cooking oil (UCO) • Some categories of animal fats |

| | |
|---|--|
| <ul style="list-style-type: none"> • Grape marcs and wine lees • Nut shells • Husks • Cobs cleaned of kernels of corn • Biomass fraction of wastes and residues from forestry and forest-based industries • Other non-food cellulosic material • Other ligno-cellulosic material except saw logs and veneer logs | |
|---|--|

**Table 2. Advanced Biofuel Sources,
Part A and Part B of Annex IX, Mandates and Cap**

| | Part A Mandates (% cal) | Part B Cap (% cal) |
|------|-----------------------------------|------------------------------|
| 2022 | 0.2 | |
| 2025 | 1 | |
| 2030 | 3.5 | 1.7 |

- *Greenhouse Gas (GHG) Emission Reductions*

The [Renewable Energy Directive \(RED\)](#) stipulated that biofuels can only be counted against EU and/or member state targets if they fulfill the following minimum greenhouse gas (GHG) reduction requirements:

| | Table 3. RED Minimum % GHG Emission Reductions of Each Biofuel Compared to the Respective Fossil Fuel |
|------------------|---|
| 2009-2017 | 35% |
| 2018 and onwards | 50% for biofuels produced in operations that started production on or before October 5, 2015. 60% for biofuels produced in operations that started production after October 5, 2015. |

Source: Art. 7 b of EU Directive 98/70/EC as revised by Directive (EU) 2015/1513

<http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1502451943595&uri=CELEX:01998L0070-20151005>

The **Fuel Quality Directive (FQD)** ([directive 2009/30/EC](#)) complemented RED and mirrored some of its content such as the sustainability criteria. A key requirement in article 7a of the FQD is that all **fuel suppliers must meet a six percent reduction in GHG emissions by 2020 across all fuel categories supplied to the market**. This is designed to be consistent with the 10 percent minimum use target for biofuels and shift demand towards biofuels with higher GHG savings. In addition, the FQD limits ethanol blends to 10 percent or less when

ethanol is used as an oxygenate, and places limits on palm oil and soy oil content of biodiesel. The Commission does not plan to extend the GHG reduction target beyond 2020. Instead, the Commission addressed the issue of the decarbonization of transport fuels after 2020 in RED II.

RED II introduces new GHG emission criteria that biofuels used in transport must comply with to be counted towards the overall 14 percent target. The European Commission is allowed to revise and update the default values of GHG emissions when technological developments make it necessary. Economic operators have the option to either use default GHG intensity values provided in RED II or to calculate actual values for their pathway.

Table 3. Greenhouse gas savings thresholds in RED II

| Plants started/start operations | Transport biofuels | Transport renewable fuels of non-biological origin | Electricity, heating and cooling |
|---------------------------------|--------------------|--|----------------------------------|
| Before October 2015 | 50% | - | - |
| After October 2015 | 60% | - | - |
| After January 2021 | 65% | 70% | 70% |
| After January 2026 | 65% | 70% | 80% |

Mandates by Member State (MS):

In order to provide context, current, expired, and future mandates are listed below, by MS. Mandates based on energy content are expressed in % cal, volume-based mandates in % vol, and GHG saving mandates in % GHG emission reduction (compared to the hypothetical GHG emissions that would have occurred with the exclusive use of fossil fuels). **For easy reference, mandates applicable in 2021 are in bold.**

Austria

| | Overall Percentage (energy content, % cal) | Biodiesel (% cal) | Bioethanol (% cal) | Advanced Biofuels (% cal) | GHG Emission Reduction (%) | Cap on crop-based biofuel (% cal) | Double counting* |
|-------------|---|-----------------------------|------------------------------|-------------------------------------|--------------------------------------|---|-------------------------|
| 2012-2018 | 5.75 | 6.3 | 3.4 | | | | Yes |
| 2019 | 5.75 | 6.3 | 3.4 | | 6 | 7 | No |
| 2020 | 5.75 | 6.3 | 3.4 | 0.5 | 6 | 7 | No |
| 2021 | 5.75 | 6.3 | 3.4 | 0.5 | 6 | 7 | No |

Source: FAS Vienna based on Fuels Order 2012 (including amendments)

The [Austrian Fuels Order 2012](#), with its amendments in 2014, 2017, 2018, and 2020 lays down all Austrian requirements for biofuels in the transport sector.

Belgium

| | Overall Percentage | Biodiesel (% cal) | Bioethanol (% cal) | Double counting |
|--|---------------------------|-----------------------------|------------------------------|------------------------|
| Until December 31, 2016 | | 6.0 | 4.0 | Possible upon approval |
| 2017 - 2019 | | 6.0 | 8.5 | |
| From January 1, 2020, to March 31, 2020 | | 8.5 | 8.5 | |
| From April 1, 2020, to December 31, 2020 | | 9.9 | 9.9 | |
| From January 1, 2021 onwards | | 9.55 | 9.55 | Max 0.6 % |

Source: FAS USEU based on [Law of July 7, 2013](#); [Law of July 21, 2017](#); Law of May 4, 2018

Since the increase of the bioethanol mandate at the beginning of 2017, the majority of Belgian gasoline became E10, with the exception of a remnant market for bioethanol-free gasoline for older cars and small engines like lawnmowers.

Failing to meet the mandates is sanctioned with the following penalties:

| Penalty |
|--|
| Penalties for fuels suppliers not meeting the renewable mandates: €900/1,000 liters of missing biofuels, with a maximum of €10,000. In the event of a repeat offence, the fine can be doubled. |

Source: [ePure](#)

Bulgaria

| Biodiesel (% vol) | | Bioethanol (% vol) | | Advanced Biofuels (% cal) | Cap on crop-based biofuels (% vol) | Double counting |
|-----------------------------|-----------------------|------------------------------|----------|-------------------------------------|--|------------------------|
| Since June 1, 2012 | 6 | September 1, 2014 | 6 | - | - | No |
| | | March 1, 2015 | 7 | | | |
| | 6¹⁾ | September 1, 2018 | 8 | | | |
| | | March 1, 2019 | 9 | | | |
| | | April 1, 2019 | 9 | 0.05 | 7 | |

Source: FAS Sofia

1) Since April 1, 2019, the mandate is kept at six percent biodiesel, however, at least one percent of the volume of the biodiesel should be advanced biodiesel.

On October 24, 2018, (Official Gazette 91/November 2, 2018,) the Parliament amended the Renewable Energy Law to transpose Directive 2015/1513/EU into national law. The legislation introduced sustainability criteria (traceability) for advanced biofuels. Adopted changes are in Article 47 of the Bulgarian Renewable Energy Law and enforced since April 1, 2019.

The institution supervising the quality of fuel, biofuel mandates, and advanced biofuels on the market is the [Agency](#) for Metrological and Technical Surveillance under the Ministry of Economy. Per the current legislation, the maximum blend with conventional fuel cannot exceed seven percent for biodiesel, and ten percent for bioethanol, to be in line with the EU fuels' quality regulations FQD.

Transposition of RED II into the national law has been scheduled for June 2021. However, due to Parliamentary elections in April, the work on the new law is likely to be slowed down. Current expectations are that the local legislation may be amended by the end of the calendar year. The new target of 14 percent renewable energy in transportation, compared to 10 percent to date, by 2030, is likely to be achieved by the incorporation of more advanced biofuels, including second generation bioethanol due to new production capacities, and more electricity in the renewable energy mix.

Croatia

| | Overall Percentage (% cal) | Biodiesel (% cal) | Bioethanol (% cal) | Double counting |
|---------------------------|----------------------------|-------------------|--------------------|-----------------------------------|
| 2014 ^{1,2} | 3.18 | 2.83 | 0.35 | Advanced and waste-based biofuels |
| 2015 ^{1,2} | 3.88 | 3.04 | 0.84 | |
| 2016 ^{1,2} | 4.89 | 3.94 | 0.90 | |
| 2017 ^{1,2} | 5.89 | 4.83 | 0.94 | |
| 2018 ^{1,2} | 6.92 | 5.75 | 0.97 | |
| 2019 ^{1,2} | 7.85 | 6.61 | 0.98 | |
| 2020^{1,2} | 8.81 | 7.49 | 1.00 | |
| 2030 ^{3,4} | 13.2 (14) ⁵ | | | |

Source: FAS Zagreb based on

1. National Action Plan for Renewable Energy Sources to 2020, https://mzoe.gov.hr/UserDocsImages/UPRAVA%20ZA%20ENERGETIKU/Strategije.%20planovi%20i%20programi/National_Action_Plan%20for%20Renewable%20Energy%20Sources%20to%202020.pdf
2. Act on Biofuels for Transport (Official Gazette 65/09, 145/10, 26/11, 144/12, 14/14, 94/18), <https://www.zakon.hr/z/189/Zakon-o-biogorivima-za-prijevoz>
3. The Integrated National Energy and Climate Plan (NECP) for the Republic of Croatia (2021-2030), https://ec.europa.eu/energy/sites/default/files/documents/hr_final_necp_main_en.pdf
4. European Commission, Assessment of the final national energy and climate plan of Croatia, https://ec.europa.eu/energy/sites/default/files/documents/staff_working_document_assessment_necp_croatia_en.pdf
5. 13.2 percent according to the NECP (2021-2030), will be amended to 14 percent according to information from the Ministry of Environment and Sustainable Development.

The Law on Amendments to the Act on Biofuels for Transport passed first reading in the Croatian Parliament in March 2021. This means that it has not entered into force as it must still undergo further Parliamentary procedure. According to the Integrated National Energy and Climate Plan for the Republic of Croatia (2021-2030) (NECP), Croatia aims to have a share of renewable energy sources (RES) in gross final energy consumption at 36.4 percent and the share of RES in final energy consumption in transport at 13.2 percent by 2030. According to information from the Ministry of Environment and Sustainable Development, this share will be raised to 14 percent.

Czech Republic

| | Minimum GHG Emission Reduction ¹⁾ (%) | Biodiesel ¹⁾ (% vol) | Bioethanol ¹⁾ (% vol) | Double counting ¹⁾ |
|-----------------------------|--|---|--|--------------------------------------|
| 2014 – 2016 | 2 | 6 | 4.1 | No |
| 2017 | 3.5 | | | |
| 2018 | 3.5 | | | |
| 2019 | 3.5 | | | |
| 2020 and onwards | 6 | | | Yes ²⁾ |

Source: FAS Prague based on

- 1) According to act No. 201/2012 coll., on air protection, as amended by act No. 172/2018
- 2) According to Government Regulation 189/2018 from August 15, 2018, on Sustainability Criteria for Biofuels and Reduction of GHG Emissions from Fuels

RED II obligations for 2021 - 2030 were transposed into national law with Government Regulation 189/2018 on Sustainability Criteria for Biofuels and Reduction of GHG Emissions from Fuels, from August 15, 2018.

Failing to meet the mandates is sanctioned with the following penalties:

| Year | Penalty |
|------------------|--|
| 2009 and onwards | Biofuel: 40 CZK per liter of biofuel that was not supplied GHG: 10 CZK per kg CO ₂ eq reduction not achieved |

Denmark

| | Overall Percentage (% cal) | Biodiesel (% cal) | Bioethanol (% cal) | Advanced Biofuels (% cal) | Double counting |
|-------------------|--|-----------------------------|------------------------------|-------------------------------------|------------------------|
| 2012-2019 | 5.75 | | | | |
| Since 2020 | 7.6 | | | 0.9 ¹⁾ | |

Source: FAS The Hague based on Stratas

- 1) The advanced mandate excludes UCO and animal fats.

Until 2020, Denmark did not have sub-targets for specific biofuels. Instead, Act No. 674 of June 21, 2011, on Sustainable Biofuels and Reducing Greenhouse Gas Emissions from Transportation together with Act No 276 of March 27, 2012, set a general obligation of blending biofuels with fossil fuels at 5.75 percent from January 2012 onwards (Source: Stratas).

In December 2016, Denmark set a 0.9 percent (energy content) mandate for advanced biofuels in transportation that entered into force in 2020. This mandate supports biofuels produced from a number of waste feedstocks but notably excludes used cooking oil and animal fat (Source: F.O.Licht).

In September 2020, the Danish Parliament began negotiating the transition of the transport sector towards the RED II goals for 2030 and beyond. The current blending mandate of 7.6 percent will return to the pre-2020 level of 5.75 percent if a new regulation is not agreed upon (Source ePURE).

Penalties: Fuel suppliers failing to fulfill the quotas may be fined (Source ePURE).

Finland

| | Overall Percentage (% cal) | Biodiesel | Bioethanol | Double counting |
|-------------------------|--------------------------------------|------------------|-------------------|------------------------|
| 2014 | 6 | | | |
| 2015 | 8 | | | |
| 2016 | 10 | | | |
| 2017 | 12 | | | |
| 2018 | 15 | | | |
| 2019 | 18 | | | |
| 2020 and onwards | 20 | | | |

Source: FAS The Hague based on Stratas

The Finnish Parliament approved a law that sets a gradually increasing biofuel target until it reaches 30 percent in 2029. Additionally, Finland approved a law that mandates an advanced biofuel share of two percent in 2023, increasing to 10 percent in 2030 (Source: IEA Country Report).

| Penalties |
|--|
| Biofuel: : €0.04 per MJ (\approx €1,675/toe) of missing biofuel |
| Advanced biofuels: €0.03/MJ (\approx 1,260/toe) of missing advanced biofuel |

Source: ePure

France

| | Bioethanol (objective, % cal) | | Biodiesel (objective, % cal) | | Double counting |
|------------------|---|----------------------------|--|----------------------------|------------------------|
| | | Advanced (% cal) | | Advanced (% cal) | |
| 2010 to 2013 | 7 | | 7 | | No |
| 2014 to 2016 | 7 | | 7.7 | | Yes ¹⁾ |
| 2017 to 2018 | 7.5 | | 7.7 | | |
| 2019 | 7.9 | | 7.9 | | Yes ²⁾ |
| 2020 | 8.2 | | 8 | | |
| 2021-2022 | 8.6 | | | | |
| 2023-2027 | | 1.2 | | 0.4 | |
| 2028 and onwards | | 3.8 | | 2.8 | |

Source: FAS Paris

1) Double counting for cellulosic biofuels and waste biofuels up to:

- 0.5% double-counted bioethanol and 0.7% double-counted biodiesel in 2014-2016
- 0.6% double-counted bioethanol and 0.7% double-counted biodiesel in 2017-2018

2) Double counting for cellulosic biofuels and waste biofuels produced from the feedstocks listed in Annex IX of Directive 2009/28/EC except tall oil and tall oil pitch.

From 2019, the share of energy that can be taken into account is limited to a maximum of:

- Seven percent for conventional biofuels including biofuels produced from palm oil fatty acid distillates
- 0.9 percent for used cooking oil and animal fats
- 0.6 percent for tall oil and tall oil pitch
- 0.2 percent for sugar plant residues and starch residues extracted from starch-rich plants (0.4 percent from 2020)

Article 43 of the Energy Transition Law for Green Growth states that priority should be given to the development of advanced biofuels while preserving investments made in conventional biofuel production.

On February 24, 2021, the French Council of State confirmed the ban on palm oil in biofuels. This decision supported a 2019 vote by members of parliament to exclude palm oil products from the list of biofuels and the list of products eligible for tax incentives. These exclusions took effect on January 1, 2020.

Germany *

| | Overall Percentage ¹⁾ % Cal | Advanced Biofuels ³⁾ (% cal) | GHG Emission Reduction ¹⁾ (%) | Cap on crop-based biofuel ³⁾ (% cal) | Double counting ²⁾ |
|------------------|---|--|---|--|---|
| 2009 | 5.25 overall 4.4 biodiesel 2.8 bioethanol | - | | | - |
| 2010 | | | | | |
| 2011-2014 | 6.25 overall 4.4 biodiesel 2.8 bioethanol | | - | - | 2011-2014 UCO- and waste fatty acids based HVO, UCOME only; TME excluded |
| 2015 - 2016 | | | 3.5 | | |
| 2017 | | | 4.0 | | |
| 2018 - 2019 | | | | | |
| 2020 | | 0.05 ⁴⁾ | | | |
| 2021 | | 0.1⁵⁾ | | | |
| 2022 - 2023 | | 0.2 ⁶⁾ | 6.0 | 6.5 | No |
| 2025 and onwards | | 0.5 | | | |

Sources: FAS Berlin based on

- 1) 1)§ 37a Federal Act on Protection against Air Pollution (Bundes-Immissionsschutzgesetz) http://www.gesetze-im-internet.de/bimschg/___37a.html
- 2))§ 37b Federal Act on Protection against Air Pollution http://www.gesetze-im-internet.de/bimschg/___37b.html
- 3) §13 +14 of the 38th Implementation Ordinance on the Federal Act on Protection against Air Pollution http://www.gesetze-im-internet.de/bimschv_38_2017/___13.html
http://www.gesetze-im-internet.de/bimschv_38_2017/___14.html
- 4) Companies that put on the market 20 PJ or less of biofuels in the previous year are exempted
- 5) Companies that put on the market 10 PJ or less of biofuels in the previous year are exempted
- 6) Companies that put on the market 2 PJ or less of biofuels in the previous year are exempted

Double counting expired at the end of 2014 with the transition to a GHG reduction mandate. Since then, HVO and UCO based biodiesel enjoy competitive advantages based only on their higher GHG reduction compared to first generation biofuels.

Failing to meet the mandates is sanctioned with the following penalties:

| Year | Penalty |
|------------------|---|
| 2009-2014: | Biodiesel: 19 Euro per GJ under allocated Bioethanol: 43 Euro per GJ under allocated |
| 2015 and onwards | 0.47 Euro per kg CO ₂ eq under allocated reduction |

Source: FAS Berlin based on

§ 37c (2) Federal Act on Protection against Air Pollution

(Bundes-Immissionsschutzgesetz) http://www.gesetze-im-internet.de/bimsgschg/_37c.html

* The transposition of RED II into national law is still in the legislative process. At the time of writing, it is expected to be concluded at the end of June 2021.

Greece

| | Overall Percentage (% cal) | Biodiesel (% cal) | Bioethanol (% cal) | Double counting |
|---------------------------|--------------------------------------|-----------------------------|------------------------------|------------------------|
| 2014-2016 | 5.75 | 5.75 | - | No |
| 2017-2018 | 7.0 | 7.0 | - | |
| 2019 | | | 1.0 | |
| 2020 & onwards | 10.0 | | 3.3 | |

Source: FAS Rome

In 2012, decision 4062 (FEK 70/A/30.3.2012) harmonized the Greek legislation with European Commission Directive 2009/28/EC. As a result, the increased mandate of 10 percent in 2020 can be met either by domestic production or imports (Note: The previous lower mandate was only allowed to be filled through domestic production).

Law 3054/2002 and its amendments mandates that producers and distributors of petrol and diesel must blend their fuels with a certain amount ("quota") of biofuels. The quota is specified in the "distribution scheme," reviewed every year, and set at seven percent for 2019 and 2020. This translates into 133 million liters for 2020 and 110 million liters for 2021.

Hungary

| | Renewable energy in transport (% cal) ¹ | Biodiesel (% cal) ² | Bioethanol (% cal) ² | Advanced Biofuels (% cal) ¹ | Double counting ² |
|---------------------|--|--------------------------------|---------------------------------|--|---|
| 2014-8/31/2017 | 6.3 (2016) | 4.9 | 4.9 | | Waste materials and residual products from agricultural and forestry production including biofuels from non-food cellulosic and ligno-cellulosic materials. |
| 9/1/2017-12/31/2018 | 6.8 | 4.9 | 4.9 | | Waste-based biofuels produced from used cooking oil or animal fat derived from Cat 1 and Cat 2 materials. |
| 2019 | | 6.4 | 6.4 | | |
| 2020 | 8.2 | 8.2 | 6.1 | | |
| 2021 | 8.2 | 8.2 | 6.1 | | |
| 2022-2024 | TBD ³ | | | 0.2 | |
| 2025 | | | | 1 | |
| 2030 | 14 | | | 3.5 | |

Source: FAS Budapest

- 1) Hungary has set the target of a minimum 14 percent share of renewable energy in transport by 2030. This obligation entered into force with the [CXVII/2010 Act](#) (in Hungarian) on promoting the use of renewable energy and the reduction of GHG emissions of energy used in transport. To meet this requirement, Hungary will increase the share of crop based biofuels to roughly seven percent and the share of advanced biofuels produced from waste and biogas will grow to 3.5 percent of energy consumption in transport according to the [National Energy and Climate Plan](#). The remaining share of the target will be achieved through an increase of electricity use in transport as GHG emissions should be reduced by at least 40 percent by 2030 compared to 1990. This means, in 2030, gross GHG emissions may not exceed 56.19 million MT CO₂ equivalent.
- 2) With the amendment of Government [Decree No. 279/2017](#) (in Hungarian) on sustainability requirements and the certification of biofuels, Hungary set the biofuel blending rate at 8.2 percent between January 1, and December 31, 2021. Additionally, a double counting system encourages the use of waste-based biofuels produced from used cooking oil or animal fat derived from Category 1 and Category 2 materials (not intended for consumption, based on EC regulation No. 1069/2009).
- 3) Mandates for 2022-2029 will be determined in the respective year.

Failing to meet the mandates is sanctioned with the following penalties:

| Year | Penalty/MT CO ₂ equivalent under allocated reduction | |
|------------------|---|--|
| 2017-2019 | HUF 100,000 | |
| 2020 and onwards | If GHG reduction in energy units is 0-4% | If GHG reduction in energy units is 4-6% |
| | HUF 100,000 | HUF 10,000 |

Source: Annex 1 of the Act No. [CXVII of 2010](#) (in Hungarian) on promoting the use of renewable energy and the reduction of GHG emissions of energy used in transport.

Ireland

| | Overall Percentage (% vol of fossil fuel to be added) | Equals % vol of total fuel used | Double counting |
|-------------------------|---|--|--|
| 2010 | 4.166 (equal to 4 liters of biofuel for 96 liters of fossil fuel) | 4 | UCO |
| 2011 - 2013 | 4.166 | 4 | UCO & Cat 1 Tallow |
| 2014 - 2016 | 6.383 | 6 | UCO, Cat 1 Tallow, Spent Bleached Earth (SBE), Palm Oil Mill Effluent (POME) |
| 2017 - 2018 | 8.695 | 8 | UCO, Cat 1 Tallow, Spent Bleached Earth (SBE), Palm Oil Mill Effluent (POME), Whey Permeate |
| 2019 | 11.11 | 10 | |
| 2020 and onwards | 12.359 | 11 | |

Source: FAS London

Ireland will carry out public consultations on future obligation rate increases every two years post-2020. Further information on Ireland's Biofuels Obligation Scheme can be found at: <http://www.nora.ie/biofuels-obligation-scheme.141.html> and <https://www.nora.ie/biofuels-obligation-scheme/administration.142.html>.

Also see: Section 44C(3)(b) of the NATIONAL OIL RESERVES AGENCY ACT 2007
<http://revisedacts.lawreform.ie/eli/2007/act/7/revised/en/html#SEC44C>

Italy

| Year | Overall Percentage, incl. Advanced Biofuels (% cal) | Advanced Biofuels necessary for fulfilling the targets (% cal) | |
|-------------|---|--|--|
| | | % of advanced biomethane | % of other advanced biofuels |
| 2015 | 5 | - | - |
| 2016 | 5.5 | - | - |
| 2017 | 6.5 | - | - |
| 2018 | 7 | 0.6 | - |
| 2019 | 8 | 0.8 | - |
| 2020 | 9 | 0.9 | - |
| 2021 | 10 | 2.0 | 0.5 |
| 2022 | 10 | 2.5 | 0.6 |
| 2023 | 10 | 3.0 | To be set by subsequent decrees issued by the Italian Ministry of Economic Development |

Source: FAS Rome

Italy mandated the use of advanced biofuels through Ministerial Decree on October 10, 2014. The Italian Ministry of Economic Development amended this mandate with a new decree on December 30, 2020.

Penalties: As of 2020, fuels suppliers not complying with at least 95 percent of the renewable mandates have to pay a penalty of €750 per missing certificate. A certificate is equivalent to 10 Gcal \approx 1 toe or 5 Gcal \approx 0.5 toe for advanced biofuels. The penalty for advanced biofuels can be reduced if insufficient market availability is demonstrated.

The Netherlands

| | Overall Percentage (% cal) | Of which advanced biofuels¹⁾ (% cal) | Cap on conventional crop-based biofuel (% cal) | Double counting²⁾ |
|-------------|--------------------------------------|---|--|-------------------------------------|
| 2014 | 5.5 | | | Yes |
| 2015 | 6.25 | | | |
| 2016 | 7.0 | | | |
| 2017 | 7.75 | | | |
| 2018 | 8.5 | 0.6 | 3 | |
| 2019 | 12.5 | 0.8 | 4 | |
| 2020 | 16.4 | 1.0 | 5 | |
| 2021 | 17.5 | 1.2 | 5 | |
| 2022 | 16.4 | 1.7 | 1.2 | |
| 2023 | 17.4 | 2.3 | 1.2 | |
| 2024 | 18.5 | 2.9 | 1.2 | |
| 2025 | 19.8 | 3.5 | 1.2 | |

Source: FAS The Hague based on Dutch [Decision Transport Energy 2021](#) and [Amendment of Environmental Law](#)

- 1) The advanced biofuels must be produced from waste, not including used cooking oil and animal fats (NEA).
- 2) Dutch Law provides the possibility of double-counting biofuels from waste and residues

Since October 1, 2019, Dutch distributors are obliged to offer E10 at their stations. At least half of the offered blends must be E10 (Source: Dutch Government).

Penalties: A fuel supplier failing to fulfill the quota obligation is liable and can be brought to court for committing an economic violation (source: ePURE).

Poland

| | Overall Percentage (% cal) | Biodiesel (% cal) | Bioethanol (% cal) | Double counting |
|-------------|--------------------------------------|-----------------------------|------------------------------|------------------------|
| 2014 - 2017 | 7.1 | | | Yes |
| 2018 | 7.5 | | | |
| 2019 | 8.0 | | | |
| 2020 | 8.5 | | | |
| 2021 | 8.7 | | | |
| 2022 | 8.8 | | | |
| 2023 | 8.9 | | | |
| 2024 | 9.1 | | | |

Source: FAS Warsaw based on the Polish *act on bio-components and liquid biofuels* as amended by the Polish Parliament in July 2019.

Portugal

| | Overall Percentage (% cal) | Biodiesel (% cal) | Bioethanol/ ETBE (% cal) | Advanced Biofuels (% cal) | Double counting |
|-------------|--------------------------------------|-----------------------------|--|-------------------------------------|------------------------|
| 2014 | 5.5 | - | - | | Yes |
| 2015 | 7.5 | - | 2.5 | | |
| 2016-2018 | 7.5 | - | - | | |
| 2019 | 7 | - | - | | |
| 2020 | 10 | - | - | | |
| 2021 | 11 | - | - | 0.5 | |

Sources: FAS Madrid based on

Consumption mandates: [Decree-Law 117/2010](#), [Decree-Law 69/2016](#), [Law 42/2016](#), Budget Law for 2018 and 2019 and [Decree-Law 8/2021](#) as amended by [Rectification Declaration 9-A/2021](#).

Double counting: [Decree-Law 117/2010](#) and Annex III in [Implementing Order 8/2012](#).

[Dispatch 4736/2020](#) reintroduced the 6.75 percent minimum volumetric blending clause for the period from April 9, 2020 to 30 days after the end of the COVID-19 related state of emergency¹. This was until June 1, 2020. This clause secures a 6.75 percent biodiesel requirement for physical biodiesel as opposed to double-counting biodiesel. The share of conventional biofuels incorporated in 2021 cannot be more than one percent higher than the share incorporated in 2020, with a maximum of seven percent in energy content.

¹ Portugal's State of Emergency ended on May 2, 2020.

Failing to meet the mandates is sanctioned with the following penalties:

| Year | Penalty |
|------------------|--|
| 2011 and onwards | 2,000 Euros per TdB (título de biocombustíveis, equals a Ktoe) that the obliged party fails to meet. |

Source: FAS Madrid based on [Implementing Regulation 301/2011](#)

For additional information about Portugal's biofuel sector, see GAIN Report PO2020-0001 *Portugal Biofuels Policy and Market* available through the FAS report database at <https://gain.fas.usda.gov/#/search>.

Romania

| | Overall Percentage (% cal) | Biodiesel (% cal) | Bioethanol (% cal) | Double counting |
|--------------------|----------------------------|-------------------|--------------------|-----------------|
| 2014 - 2015 | N/A | 5.0 | 4.5 | Yes |
| 2016 - 2018 | | 6.5 | | |
| 2019 | | | 8.0 | |
| 2020 ¹⁾ | 10 | 6.5 | 8.0 | |
| 2021 | 10 | 6.5 | 8.0 | |

Sources: FAS Bucharest based on Government Decisions 1121/2013 and 931/2017

1) During the COVID related state of emergency fuel suppliers were able to apply for a temporary exemption (4/16/2020 to 5/14/2020) from blending mandates. For details, please see report: *RO2020-0012 Romania Approves New Biofuels Blending Exemptions* available through the FAS report database at <https://gain.fas.usda.gov/#/search>

Those failing to meet the mandates are sanctioned with the following penalties:

| Year | Penalty |
|------------------|--|
| 2019 and onwards | RON 70,000-100,000 (approx. USD 17,500-25,000) |

Source: FAS Bucharest based on provisions of Emergency Ordinance 80/2018

Romania is in the process of transposing RED II into Romanian national legislation. For additional information about Romania's biofuels sector, please see Romania Biofuels Market Overview available through the FAS report database at <https://gain.fas.usda.gov/#/search>

Slovakia

| | Overall Percentage (% cal) | Bioethanol (% vol) | Biodiesel (% vol) | Advanced Biofuels (% cal) | Double Counting |
|-------------|--------------------------------------|------------------------------|-----------------------------|-------------------------------------|------------------------|
| 2018 | 5.8 | 6.5 | 6.9 | | Yes |
| 2019 | 6.9 | | | 0.1 | |
| 2020 | 7.6 | Minimum E9* | Minimum B6.9* | 0.5 | |
| 2021 | 8.0 | | | 0.3 | |
| 2022 | 8.2 | | | 0.5 | |
| 2023 | | | | | |
| 2024 | | | | | |
| 2025-2030 | | | | 0.75 | |

Source: FAS Prague based on

- Act on the Support of Renewable Energy Sources and Highly Efficient Cogeneration, and on Amendments to Certain Acts No. 309/2009 Coll. and
- Act No. 362/2019 Coll. amending Act No. 609/2007 Coll., on excise duty on electricity, coal and natural gas, and amending Act No. 98/2004 Coll., on excise duty on mineral oil

*Act No. 362/2019 Coll. stipulates that motor gasoline sold on the Slovak market must contain at least nine percent of a bioethanol component (ETBE/bioethanol) in one liter, and diesel must contain at least 6.9 percent of a biodiesel component, as of January 1, 2020.

Slovenia

| | Overall Percentage (% cal) | Biodiesel (% cal) | Bioethanol (% cal) | GHG Emission Reduction (%) | Cap on crop-based biofuels (% cal) | Double counting |
|-------------|--------------------------------------|-----------------------------|------------------------------|--------------------------------------|--|--|
| 2017 | 6.2 | | | 6 | 7 | Yes (wastes, residues, non-food cellulosic material, lingo-cellulosic material) |
| 2018 | 7.0 | | | 6 | 7 | |
| 2019 | 8.4 | | | 6 | 7 | |
| 2020 | 10.0 | | | 6 | 7 | |
| 2021 | 10.0 | | | 6 | 7 | |

Source: FAS Vienna based on

Regulation on Renewable Energy Sources in Transport 2016 (including amendments), [ePure](#)

The Regulation on Renewable Energy Sources in Transport 2016 ([Uredba o obnovljivih virih energije v prometu](#)) and its amendment in 2021 lays down Slovenian requirements for biofuels in the transport sector.

Spain

| | Overall Percentage (% cal) | Biodiesel (% cal) | Bioethanol (% cal) | Advanced Biofuels (% cal) | Double counting |
|-------------|--------------------------------------|-----------------------------|------------------------------|-------------------------------------|------------------------|
| 2013-2015 | 4.1 | 4.1 | 3.9 | | No |
| 2016 | 4.3 | - | - | | |
| 2017 | 5 | - | - | | |
| 2018 | 6 | - | - | | |
| 2019* | 7 | - | - | | Yes* |
| 2020 | 8.5 | - | - | | |
| 2021 | 9.5 | - | - | 0.1 | |
| 2022 | 10 | - | - | 0.2 | |

Source: FAS Madrid based on [Royal Decree-Law 4/2013](#), [Royal Decree 1085/2015](#), Royal Decree 205/2021

* In 2019, double counting was only in place in the last quarter of the year.

[Royal Decree 235/2018 amending Royal Decree 1597/2011](#) (Spanish language only) classifies raw materials in two groups for double counting purposes:

Group A (qualify as advanced): Algae, bacteria, Organic Fraction of Municipal Waste (OFMSW), industrial residues not fit for food or feed use, forest residues and other cellulosic or lignocellulosic material, sewage sludge, straw, cobs cleaned of kernels of corn, husks, animal manure, glycerin, tall oil pitch, palm oil mill effluent and empty palm fruit bunches, bagasse, grape marcs, wine lees, nut shells, and renewable liquid and gaseous fuels of non-biological origin.

Group B (do not qualify as advanced): Used Cooking Oils and Animal Fats (Categories I and II according to [Regulation \(EC\) 1069/2009](#)).

This same Royal Decree set January 1, 2019 as the beginning of the implementation of double counting in Spain. Nevertheless, the double counting was only fully enforced during the fourth quarter of 2019 after [detailed guidelines](#) (Spanish language only) were issued by a *National Commission of Markets and Competition* (CNMC.)

Those failing to meet the mandates are sanctioned with the following penalties:

| Year | Penalty |
|------------------|--|
| 2008 and onwards | 763 Euros per missed certificate (each certificate equals one Ktoe.) |

Source: FAS Madrid based on [Orden ITC/2877/2008](#)

For additional information about Spain's biofuels sector, see GAIN Report SP2020-0026 available through the FAS report database at <https://gain.fas.usda.gov/#/search>.

Sweden

The main support program to foster renewable fuels for transport purposes is a biofuel mandate scheme. Furthermore, biofuels for transport purposes are exempted from Sweden's energy tax (depending on biofuel type and blending) and CO₂ taxes (all biofuels). On July 1, 2018, the Swedish government executed a system which builds on a gradual increase in reduction of greenhouse gas emissions through the addition of biofuels to gasoline and diesel. This decrease shall increase over time with specific control stations with the goal of a 70 percent decrease in greenhouse gas emissions by the transport sector by 2030 compared to 2010 (Source: FAS The Hague based on EurObserver Country Report and IEA Country Report).

Penalties: Fuel suppliers failing to fulfill their GHG obligations must pay a penalty per kgCO₂eq of SEK 5 (€0.48) for petrol and SEK 4 (€0.39) for diesel. Suppliers selling fossil fuels with no biofuels content must pay a fee of SEK 0.39/l of petrol (€0.038) and SEK 2.69/l of diesel (€0.26). High blends, such as E85, ED95, HVO100, and FAME100, do not count towards the achievement of the obligations and are incentivized through a tax reduction (source ePURE).

United Kingdom

Historic information:

| | Overall Percentage (% vol) | Cap on crop-based biofuels (% vol) | Double Counting |
|------------------------|--------------------------------------|--|--|
| 2008-2009 | 2.50 | - | No |
| 2009-2010 | 3.25 | | |
| 2010-2011 | 3.50 | | |
| 2011-2012 | 4.00 | | Approved waste and residue feedstocks |
| 2012-2013 | 4.50 | | |
| 2013-2017 | 4.75 | | |
| 04/15/17 – 04/14/18 | 4.75 | 4 | Certain waste or residue feedstocks determined by scheme Administrator; plus energy crops and renewable fuels of non-biological origin; also development fuels |
| 04/15/18 – 12/31/18 | 7.25 | | |

Current and future blend mandates:

| | Overall Percentage (% cal) | Development fuel target (% cal) | Cap on crop-based biofuels (% vol) | Double counting |
|----------------|---|--|--|--|
| 2019 | 9.180 | 0.109 | 4 | Certain waste or residue feedstocks determined by scheme administrator; plus energy crops and renewable fuels of non-biological origin; also development fuels |
| 2020 | 10.637 | 0.166 | | |
| 2021 | 10.679 | 0.556 | Decreasing incrementally until lowered to | |
| 2022 | 10.714 | 0.893 | | |
| 2023 - 2031 | Increasing each year in 0.025 percent increments by volume until: | Increasing each year in 0.23 percent increments by volume until: | | |
| 2032 | 10.959 | 3.196 | 2 | |

Source: FAS London based on [Renewable Transport Fuel Obligation Guidance](#)

The roll-out of E10 will start in September 2021. In practice, the incorporation rate will likely be around seven to eight percent in the initial stages.

Related reports: Please check the FAS report database for related reports at <https://gain.fas.usda.gov/#/search>.

Attachments:

No Attachments.