

Important notice: this report has been submitted in the language of the Member State, which is the sole authentic version. Translation into the English language is being provided for information purposes only. The European Commission does not guarantee the accuracy of the data or information provided in the translation, nor does it accept responsibility for any use made thereof.

# **Biofuels in the transport sector in Austria in 2009**

Summary of the data for the Republic of Austria pursuant to Article 4(1)  
of Directive 2003/30/EC for the reporting year 2008

# **IMPRINT**

## **Publisher**

Federal Ministry for Agriculture and Forestry, the Environment and Water Management  
Stubenring 1, 1010 Vienna  
[www.lebensministerium.at](http://www.lebensministerium.at)

## **Coordination team**

Robert Thaler, Heinz Bach  
Unit for Transport, Mobility, Housing and Noise  
Federal Ministry for Agriculture and Forestry, the Environment and Water  
Management  
Stubenbastei 5, 1010 Vienna

## **Author**

Ralf Winter  
Environment Agency  
Spittelauer Lände 5, 1090 Vienna

## **Images**

Title page: Bernhard Gröger, Environment Agency

# **Biofuels in the transport sector in Austria in 2009**

Summary of the data for the Republic of Austria pursuant to Article 4(1)  
of Directive 2003/30/EC for the reporting year 2008

**June 2009**

## CONTENTS

0.	<b>SUMMARY</b>	<b>5</b>
1.	<b>INTRODUCTION</b>	<b>6</b>
1.1	<b>Legal framework</b>	<b>6</b>
2.	<b>BIOFUELS</b>	<b>7</b>
2.1	<b>Definition of biofuels and other renewable fuels</b>	<b>7</b>
2.2	<b>Types of biofuels</b>	<b>7</b>
3.	<b>INFORMATION ON BIOFUELS IN AUSTRIA</b>	<b>9</b>
3.1	<b>MEASURES to promote the use of biofuels in the transport sector</b>	<b>9</b>
3.1.1	Rates of duty	9
3.1.2	Bioethanol Blending Order ( <i>Bioethanolgemischverordnung</i> )	10
3.1.3	Substitution requirement	10
3.2	<b>National resources for the production of biomass</b>	<b>10</b>
3.2.1	Biodiesel	10
3.2.2	Bioethanol	11
3.2.3	Biogas	11
3.2.4	Vegetable oil	12
3.2.5	Biomass	12
3.3	<b>Sales of fuel in Austria in 2008</b>	<b>13</b>
4.	<b>QUANTITIES OF BIOFUELS</b>	<b>14</b>
5.	<b>REFERENCES</b>	<b>16</b>

## 0. SUMMARY

Directive 2003/30/EC on the promotion of the use of biofuels or other renewable fuels for transport (the Biofuels Directive) [6] sets indicative targets for the Member States for the use of biogenic or other renewable fuels in the transport sector. Thus, 2% (calculated on the basis of energy content) of all the fuels used in transport should be replaced by biofuels and other renewable fuels after 2005, rising to 5.75% in 2010.

The Directive was transposed into Austrian national law by amendment to the Fuel Order (Kraftstoffverordnung) [5] in November 2004. Under that Order, since 1 October 2005 a person subject to the substitution requirement has had to substitute with biofuels 2.5% (calculated on the basis of energy content) of all petrol and diesel fuels used in transport. This increased to 4.3% (calculated on the basis of energy content) as of 1 October 2007, and to 5.75% (calculated on the basis of energy content) on 1 October 2008.

Since October 2005 biofuels have been placed on the market in Austria by mixing about 4.7% biodiesel by volume with diesel. Since October 2007 bioethanol has also been added in similar proportions to sorts of fossil petrol.

In the 2008 reporting year, a total of 406 291 tonnes of biodiesel was placed on the market. Of this total, 304 291 tonnes were added to fossil fuels and 102 000 tonnes were used either as pure biofuel or as diesel fuel with a higher, non-standard biofuel content (e.g. at the private fuel pumps of fleet operators) in the Austrian transport sector.

Bioethanol, of which some 84 910 tonnes were sold during the year, was marketed mainly as an additive<sup>1</sup>.

The total quantity of vegetable oil (which, as well as being used in agricultural machinery, was used increasingly in the transport of freight by road) marketed in 2008 was 19 276 tonnes.

During the 2008 calendar year, the annual substitution target of 4.66% (calculated on the basis of energy content) was, at 5.5%, surpassed by a large margin.

---

<sup>1</sup> The ethanol was used either in its pure form or as ETBE (with 47% content).

# 1. INTRODUCTION

## 1.1 LEGAL FRAMEWORK

In the White Paper *European transport policy for 2010: time to decide* [7] the European Commission expects CO<sub>2</sub> emissions from transport to rise by 50 % between 1990 and 2010, to around 1 113 billion tonnes. The constantly expanding transport sector accounts for more than 30% of total energy consumption in the European Union. The White Paper calls for dependence on oil (currently around 98%) in the transport sector to be reduced by using alternative fuels such as biofuels.

To this end, the Directive on the promotion of the use of biofuels or other renewable fuels for transport (Directive 2003/30/EC) was adopted by the European Parliament and the Council on 8 May 2003 [6]. The Directive aims at promoting the use of biofuels or other renewable fuels to replace diesel or petrol for transport purposes in each Member State, with a view to contributing to objectives such as meeting climate change commitments, environmentally friendly security of supply and promoting renewable energy sources.

Member States should ensure that a minimum proportion of biofuels and other renewable fuels is placed on their markets, and, to that effect, must set national indicative targets.

The reference value for these targets is 2%, calculated on the basis of energy content, of all petrol and diesel for transport purposes placed on their markets by 31 December 2005. The reference value will be increased by 31 December 2010 to 5.75% of all petrol and diesel.

In accordance with Article 4(1), the following information must be reported to the Commission each year:

- the measures taken to promote the use of biofuels or other renewable fuels to replace diesel or petrol for transport purposes;
- the national resources allocated to the production of biomass for energy uses other than transport;
- the total sales of transport fuel and the share of biofuels, pure or blended, and other renewable fuels placed on the market for the preceding year. Where appropriate, Member States must report on any exceptional conditions in the supply of crude oil or oil products that have affected the marketing of biofuels and other renewable fuels.

## 2. BIOFUELS

The Austrian Fuel Order 1999, which was amended on 4 November 2004 (BGBl. II No 417/2004) [5] to transpose the Directive into national law, accordingly contains the following definitions.

### 2.1 DEFINITION OF BIOFUELS AND OTHER RENEWABLE FUELS

"**Biofuels**" are liquid or gaseous fuels produced from biomass and intended for the operation of vehicle combustion engines.

"**Biomass**" means biodegradable fractions of products, waste or residues from agriculture and forestry (including vegetal and animal substances) and related industries, as well as the biodegradable fraction of industrial and municipal waste.

"**Other renewable fuels**" means renewable fuels other than biofuels. They originate from renewable, non-fossil energy sources – such as wind, solar, geothermal, wave, tidal or hydropower – and are intended for use in vehicle combustion engines.

### 2.2 TYPES OF BIOFUELS

As a minimum, the following products come under the term "biofuels" in accordance with the Fuel Order [5], provided that these are used as fuels or a fuel component for the operation of vehicle combustion engines:

- "**Bioethanol**" is an ethanol produced from biomass and/or biodegradable fractions of waste;
- "**Fatty acid methyl ester**" (FAME, biodiesel) is a methyl ester produced from vegetable or animal oil or fat;
- "**Biogas**" is a gas produced from biomass and/or biodegradable fractions of waste by means of pyrolysis or fermentation;
- "**Biomethanol**" is a methanol produced from biomass and/or biodegradable fractions of waste;
- "**Biodimethylether**" is a dimethylether produced from biomass;
- "**Bio-ETBE (ethyl-tertio-butyl-ether)**" is an ETBE produced on the basis of bioethanol with a percentage by volume that is calculated as biofuels of 47%;

**"Bio-MTBE (methyl-tertio-butyl-ether)"** is an MTBE produced on the basis of biomethanol with a percentage by volume that is calculated as biofuels of 36%;

**"Synthetic biofuels"** are synthetic hydrocarbons or mixtures of synthetic hydrocarbons, which have been produced from biomass;

**"Biohydrogen"** is a hydrogen produced from biomass and/or biodegradable fractions of waste;

**"Pure vegetable oil"** is oil produced from oil plants through pressing, extraction or comparable procedures, crude or refined but chemically unmodified.



### 3. INFORMATION ON BIOFUELS IN AUSTRIA

#### 3.1 MEASURES TO PROMOTE THE USE OF BIOFUELS IN THE TRANSPORT SECTOR

##### 3.1.1 Rates of duty

By Decision of the Austrian Parliament of 24 April 2007, the 1995 **Mineral Oil Duty Act** (*Mineralölsteuergesetz*) (BGBl. No 630/1994), as last amended by Federal Act BGBl. I No 180/2004 [8], was amended by means of the 2007 Finance Act (*Budgetbegleitgesetz*, BBG 2007). The following rates of duty per 1 000 litres were laid down therein:

Petrol:

- after 31 December 2004 and before 1 July 2007
  - with a sulphur content of no more than 10 mg/kg: €117
  - with a sulphur content of more than 10 mg/kg: €132
- after 30 June and before 1 October 2007
  - with a sulphur content of no more than 10 mg/kg: €147
  - with a sulphur content of more than 10 mg/kg: €162
- after 30 September 2007
  - containing at least 44 l of biogenic substances and with a sulphur content of no more than 10 mg/kg: €142
  - other: €175

Diesel:

- from 31 December 2004 to 1 October 2005
  - with a sulphur content of no more than 10 mg/kg: €302
  - with a sulphur content of more than 10 mg/kg: €317
- after 30 September 2005 and before 1 July 2007
  - containing at least 44 l of biogenic substances and with a sulphur content of no more than 10 mg/kg: €297
  - other: €325
- after 30 June 2007
  - containing at least 44 l of biogenic substances and with a sulphur content of no more than 10 mg/kg: €347
  - other: €375

Biofuels:

- Pure biofuels are fully exempt from mineral oil duty.

### **3.1.2 Bioethanol Blending Order**

The Bioethanol Blending Order (*Bioethanolgemischverordnung*) (BGBl. II No 378/2005) [2], as last amended by Order BGBl. II No 260/2007 [3], reads as follows:

*"For blends produced in a tax warehouse within the tax territory in accordance with Section 25(2) of the 1995 Mineral Oil Duty Act (Mineralölsteuergesetz) and with a bioethanol content of at least 65% and at most 75% by volume from 1 October to 31 March (autumn and winter) and of at least 75% and at most 85% by volume from 1 April to 30 September (spring and summer), €0.442 of the mineral oil duty levied on the blend shall be refunded for each litre of blended bioethanol at the request of the tax warehouse keeper"*

The Order entered into force on 1 October 2007.

### **3.1.3 Substitution requirement**

The Biofuels Directive was transposed into national law with the amendment of the Fuel Order on 4 November 2004 (BGBl. II, No 417/2004) [5]. This stipulates that, from 1 October 2005, those who are subject to the substitution requirement must place on the market a proportion of 2.5% biofuels or other renewable fuels (calculated on the basis of the total energy content of the petrol and diesel placed on the market in the transport sector each year by those subject to mineral oil duty in Austria) and that this proportion must increase to 4.3% from 1 October 2007, and to 5.75% from 1 October 2008.

The targets laid down in the Biofuels Directive (2003/30/EC) [6] will thus be met much earlier.

The substitution requirement applies to any person placing petrol or diesel on the market for the first time in Austria or importing it into Austria, other than in the fuel tank of a vehicle.

## **3.2 NATIONAL RESOURCES FOR THE PRODUCTION OF BIOMASS**

### **3.2.1 Biodiesel**

According to ARGE Biokraft (the Austrian association of liquid biofuel producers), there were 18 biodiesel plants operating in Austria in 2008, with a total capacity of approximately 560 000 tonnes. Due to difficult market conditions, the forecast for 2009 is uncertain but it can be assumed that the previous year's capacity will be maintained.

According to information provided by ARGE Biokraft's members, 231 586 tonnes of biodiesel were produced in Austria in 2008 (by eight biodiesel producers). Of this amount, 158 939 tonnes were sold in Austria, 115 114 tonnes of which were supplied to the oil industry for blending. Disregarding any variations in stocks, some 72 647 tonnes of biodiesel were exported in 2008. Some 46 031 tonnes of biodiesel were used in the Austrian transport sector either as pure biofuel or as biogenic additives for diesel with a higher, non-standard biofuel content.

### **3.2.2 Bioethanol**

The first bioethanol production plant (Pischelsdorf, Lower Austria) was completed in autumn 2007. The plant which, according to information provided by the operator<sup>2</sup>, produces around 200 000 m<sup>3</sup> of ethanol (an annual output of approximately 160 000 tonnes). The plant's capacity can be increased to 190 000 tonnes a year (240 000 m<sup>3</sup>).

However, due to the extremely high cost of raw materials, the plant did not start production as planned despite successful test runs in mid-2007. The plant resumed operations at the end of May 2008, and has been producing bioethanol since the beginning of June.

According to ARGE Biokraft, 70 323 tonnes of ethanol were produced in the reporting year. Of this amount, 39 807 tonnes were sold in Austria, with a very small amount being used as pure ethanol ("super-ethanol") and most being supplied to the oil industry for blending. The rest (approximately 30 500 tonnes) was exported.

### **3.2.3 Biogas**

In Austria, almost all of the biogas produced from biomass is used to generate electricity and heat. As at February 2009<sup>3</sup>, there were 342 licensed biogas plants in Austria with a

---

<sup>2</sup> Source: <http://www.agrana.com>

<sup>3</sup> Source: Statistics Austria & E-Control

total maximum capacity of 92.0 MW. In 2008, some 503 GWh of electricity from biogas as well as 50 GWh of electricity from sewage gas or landfill gas were fed into the grid<sup>4</sup>.

There is no information available on the amount of biogas actually produced because, in practice, the engine generator draws the gas straight out of the digester vessel for burning. According to experts' estimates<sup>5</sup>, the total amount of biogas produced in Austria is somewhere between 372 and 582 million cubic metres.

As well as being used to generate electricity, biogas is sold in very small quantities as fuel for motor vehicles<sup>6</sup>. At present, there are also four biogas plants in operation which purify biogas before feeding it into the natural gas grid. Two more such plants are planned and are due to become operational soon.

### **3.2.4 Vegetable oil**

In recent years, the use of vegetable oil as a fuel has been increasing. However, it is difficult to estimate the quantities involved, as the records of the quantities produced cannot be sufficiently differentiated between according to their purpose and use. Another problem is the fact that there are various distribution channels for this fuel, e.g. sale through private fuel pumps.

It can nevertheless be assumed on the basis of the regional distribution patterns that the 3 389 tonnes of vegetable oil used in agriculture are from domestic production. According to the Austrian Vegetable Oil Association, this drop in the use of vegetable oil as a fuel is largely due to the fact that the price of fossil fuels has fallen while, at the same time, the price for grains and seeds has increased (as a result of bad harvests).

### **3.2.5 Biomass**

In 2007, gross domestic energy consumption in Austria was 1 421 PJ<sup>7</sup>, with renewable energy sources accounting for 25.2% of this figure (359 PJ). Some 350 PJ of this

---

<sup>4</sup> In 2008, there were 64 biogas plants at sewage treatment plants and landfills, with a maximum capacity of 29.1 MW. Much of the electricity generated is used to meet the plants' own demand and was not recorded.

<sup>5</sup> IFA Tulln (Institute for Agrobiotechnology) and our own calculations.

<sup>6</sup> At present, there are three filling stations; <http://www.methapur.at>

<sup>7</sup> Source: Statistics Austria's total energy balance; also includes gas, oil and coal.

renewable energy<sup>8</sup> was produced in Austria. Taken together, firewood and biogenic fuels account for 50% of bioenergy, with firewood alone accounting for around 18%.

Wood fuel is the most important source of energy. Logwood and industrial timber are used primarily in the sawmill and wood-processing industries and in district heating plants, while pellets are increasingly being used primarily in household heating systems. Waste liquors and sludge from papermills and bark are used to generate electricity and heat for use in the paper and pulp industry. Other waste and refuse is burned in district heating plants or to generate heat for industrial use or electricity.

### 3.3 SALES OF FUEL IN AUSTRIA IN 2008

The quantity of fuel sold is determined by the Federal Ministry for Economic Affairs and Labour in accordance with the Oil Stockholding and Registration Act [4] on the basis of a notification requirement. In addition to the quantities of fuel sold in 2008, the figures for 2001-08 are also shown for comparison.

Type of fuel	Total national sales in tonnes							
	2001	2002	2003	2004	2005	2006	2007	2008
Regular unleaded petrol (91•RON<95)	599 831	603 783	597 989	563 869	545 331	512 703	369 431	<b>33 665</b>
Regular unleaded petrol (91•RON<95) with biofuel	-	-	-	-	-	-	104 714	<b>276 835</b>
Unleaded petrol (super) (95•RON<98)	1 311 286	1 444 538	1 530 973	1 492 409	1 467 054	1 423 229	1 141 524	<b>82 255</b>
Unleaded petrol (super) (95•RON<98) with biofuel	-	-	-	-	-	-	294.538	<b>1 394 583</b>

---

<sup>8</sup> By definition, "renewable sources of energy" include the following: firewood, biogenic fuels (woodchips, sawmill by-products, logwood, bark, straw, liquor from paper mills, biogas, landfill gas, sewage sludge, rapeseed methyl ester (RME), meat-and-bone meal and animal fat), ambient heat (heat pumps, solar thermal energy, geothermal heat), wind and photovoltaic energy, hydropower and combustible waste (household and other waste).

Unleaded petrol (super plus) (98•RON)	87 038	93 445	93 519	77 039	61 054	56 096	48 350	<b>12 519</b>
Unleaded petrol (super plus) (98•RON) with biofuel	-	-	-	-	-	-	7 528	<b>35 137</b>
Diesel without biofuel	4 674 751	5 175 368	5 741 610	5 935 601	4 755 597	353 169	232 339	<b>157 621</b>
Diesel with biofuel	-	-	-	-	1 508 539	5 801 416	6 063 719	<b>5 932 279</b>
Total diesel	4 674 751	5 175 368	5 741 610	5 935 601	6 264 136	6 154 585	6 296 058	<b>6 089 900</b>
Total petrol	1 998 155	2 141 766	2 222 481	2 133 317	2 073 439	1 992 028	1 966 085	<b>1 834 994</b>
Total fuel	6 672 906	7 317 134	7 964 091	8 068 918	8 337 575	8 146 613	8 262 143	<b>7 924 894</b>

**Table 1: National sales of petroleum products with or without biofuel blend in the transport sector in Austria (in tonnes)<sup>9</sup>**

#### **4. QUANTITIES OF BIOFUELS**

In 2008, a total of 6 089 900 tonnes of diesel was sold, 5 932 279 tonnes (or 97.4%) of which had an average of 4.85% by volume of biodiesel added.

Altogether, 304 291 tonnes of blended biodiesel were placed on the market. Furthermore, 102 000 tonnes of pure biodiesel or diesel with a higher biogenic component were sold through producers and retailers in Austria<sup>10</sup>. In the 2008 reporting year, therefore, a total of 406 291 tonnes of biodiesel was placed on the market.

The blending of bioethanol with petrol began in the last quarter of 2007. In the 2008 reporting year, a total of 1 834 994 tonnes of petrol was sold, including

<sup>9</sup> Source: Federal Ministry for the Economy, Family and Youth (2008)

<sup>10</sup> Information received from ARGE Biokraft and based on experts' opinion: In the reporting year, the ten producers not covered by ARGE Biokraft sold around 26 000 tonnes and the Austrian biodiesel retailers a further 30 000 tonnes of pure biodiesel.

1 706 555 tonnes<sup>11</sup> with a biogenic content averaging 4.7%<sup>12</sup> by volume. Therefore, with the addition of the quantities marketed as "superethanol", some 84 910 tonnes of bioethanol were sold during the reporting year.

As in previous years, vegetable oil was also used in the agricultural sector in 2008: some 3 389 tonnes<sup>13</sup> of it. Apart from its use in agriculture, increasing use is being made of vegetable oil in Austria's road haulage industry. Judging by the number of grant applications received for converting vehicles to run on vegetable oil, a figure of at least 15 887 tonnes of vegetable oil seems likely, indicating an assured total of 19 276 tonnes of vegetable oil for fuel purposes in the reporting year.

Under the Fuel Order the substitution target for energy content was 4.3% for the period from 1 January to 30 September 2008 and 5.75% from 1 October to 31 December 2008. That represents a substitution target of 4.66% for the year as a whole.

According to the reports submitted by the persons subject to the substitution requirement under Section 6a of the Fuel Order, the quantities of biofuels placed on the market or used by them in the 2008 calendar year, the 4.66% substitution target for that year was attained and, at 5.5%<sup>14</sup>, substantially exceeded.

If the 5.75% annual target for the share of biofuels in the total energy consumption for transport in 2009 is to be met, further efforts will be needed to increase biofuel use. These could include increasing the limit for blending biodiesel with diesel to 7%.

---

<sup>11</sup> According to data provided by the Federal Ministry of the Economy, Family and Youth, see Table 1.

<sup>12</sup> Besides ethanol, bio-ETBE was also used as an additive. Bio-ETBE contains 47% ethanol.

<sup>13</sup> This information was provided by the Austrian Vegetable Oil Association. These data relate only to member firms and do not include individual farmers with oil presses for making their own supplies.

<sup>14</sup> 5.129 TWh of biofuels compared to total marketed fuel of 93.588 TWh.

## 5. REFERENCES

- [1] BBG 2007 – 43 d.B. (XXIII, GP): 2007 Finance Act (*Budgetbegleitgesetz 2007*), (BGBl. I No 24/2007).
- [2] Bioethanol Blending Order (*Bioethanolgemischverordnung*) (BGBl. II No 378/2005): Order of the Federal Minister for Finance on the favourable treatment of mixtures of bioethanol and petrol.
- [3] Bioethanol Blending Order (*Bioethanolgemischverordnung*) (BGBl. II No 260/2007): Order of the Federal Minister for Finance amending the Bioethanol Blending Order.
- [4] 1982 Oil Stockholding and Registration Act (*Erdöl-Bevorratungs- und Meldegesetz 1982*) (BGBl. No 546/1982 as last amended): Federal Act of 21 October 1982 on the holding of emergency reserves of petroleum and petroleum products and on reporting obligations for securing energy supply.
- [5] Fuel Order (*Kraftstoffverordnung*) (Order No 417/2004, as last amended): Order of the Federal Minister for the Environment, Youth and the Family on fuel quality. Mineral Oil Duty Act (*Mineralölsteuergesetz*) (BGBl. 180/2004, as last amended): Federal Act adapting mineral oil duty to Community law.
- [6] Directive 2003/30/EC of the European Parliament and of the Council of 8 May 2003 on the promotion of the use of biofuels or other renewable fuels for transport.
- [7] Commission White Paper of 12 September 2001: *European transport policy for 2010: time to decide*, COM(2001) 370 final.
- [8] 1995 Mineral Oil Duty Act (BGBl. I 630/1994, as last amended by Federal Act BGBl. I 57/2004)