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BIOFUELS IN THE TRANSPORT SECTOR IN AUSTRIA 2007

Summary of the data for the Republic of Austria
pursuant to Article 4(1) of Directive 2003/30/EC
for the 2006 reporting year

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SUMMARY

Directive 2003/30/EC on the promotion of the use of biofuels or other renewable fuels for transport (the Biofuels Directive) sets Member States indicative targets for the use of biogenic or other renewable fuels in the transport sector. Accordingly, since 2005, renewable fuels should replace 2% (calculated on the basis of energy content) of all fuels placed on the market, with the proportion rising to 5.75% in 2010.

The Directive was transposed into Austrian national law by an amendment to the Fuel Order (*Kraftstoffverordnung*) in November 2004. Since 1 October 2005, in accordance with Austrian legislation, those subject to the substitution requirement have had to ensure that biofuels replace 2.5% (calculated on the basis of energy content) of all petrol and diesel fuels placed on the market. This will increase to 4.3% on 1 October 2007 and to 5.75% on 1 October 2008.

Since October 2005, biofuels have been placed on the Austrian market primarily by blending around 4.7% biodiesel by volume with diesel.

In total, 321 000 tonnes of biodiesel were placed on the market during the reporting year, of which 288 500 tonnes were blended with fossil fuels and 32 500 tonnes were used in the transport sector in Austria as pure biofuel or as diesel with a higher, non-standard proportion of biofuel (e.g. through company filling stations belonging to fleet operators). In addition, 10 000 tonnes of pure vegetable oil were used, chiefly in the agricultural sector. Altogether, the renewable fuels used in the transport sector accounted for 3.54%¹ of the energy consumed.

¹ 95.6 million kWh of fuel in total and 3.4 million kWh of biofuels.

1 INTRODUCTION

1.1 Legal framework

In its White Paper *European transport policy for 2010: time to decide*, the European Commission expects CO₂ emissions from transport to increase by 50% between 1990 and 2010, reaching 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 the transport sector to reduce its dependence on oil (currently 98%) by using alternative fuels (e.g. biofuels).

To this end, on 8 May 2003, the European Parliament and the Council adopted a Directive on the promotion of the use of biofuels or other renewable fuels for transport (Directive 2003/30/EC). The Directive is designed to promote the use of biofuels or other renewable fuels in the transport sector in each Member State as a replacement for diesel and petrol, thereby contributing to objectives such as meeting climate-change commitments, achieving 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 must set national indicative targets to achieve this.

The reference value for these targets, calculated on the basis of energy content, is 2% of all petrol and diesel placed on their markets by 31 December 2005 for use in the transport sector. By 31 December 2010, the reference value will be increased 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 of 1999 was amended on 4 November 2004 (BGBl. [Official Journal of the Federal Republic of Austria] II No 417/2004) to transpose the Directive into national law and 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 use in vehicle combustion engines.

"Biomass" means the biodegradable fraction 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 household waste.

"Other renewable fuels" means renewable fuels other than biofuels. These fuels are produced 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

In accordance with the draft report on the amendment of the Fuel Order, the term "biofuels" includes at least the following products, provided that they are used as fuels or as a component of fuels for combustion engines:

- "**Bioethanol**" is an ethanol produced from biomass and/or the biodegradable fraction of waste.
- "**Fatty acid methyl ester**" (FAME or biodiesel) is a methyl ester produced from vegetable or animal oil or fat.
- "**Biogas**" is a gas produced from biomass and/or the biodegradable fraction of waste by means of pyrolysis or fermentation.
- "**Biomethanol**" is a methanol produced from biomass and/or the biodegradable fraction of waste.
- "**Biodimethylether**" is a dimethylether produced from biomass.
- "**Bio-ETBE**" (**ethyl-tertio-butyl-ether**) is an ETBE produced on the basis of bioethanol and is calculated to have a biofuel content of 47% by volume.
- "**Bio-MTBE**" (**methyl-tertio-butyl-ether**) is an MTBE produced on the basis of biomethanol and is calculated to have a biofuel content of 36% by volume.
- "**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 the biodegradable fraction of waste.
- "**Pure vegetable oil**" is oil produced from oil crops through pressing, extraction or comparable procedures. It may be crude or refined, but is 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

The **Mineral Oil Duty Act (*Mineralölsteuergesetz*)** (BGBl. I No 180/2004) was amended by the Tax Amendment Act (*Abgabenänderungsgesetz*) of 30 December 2004. The following rates of duty per 1 000 litres were laid down therein:

Petrol

- from 31 December 2004 to 1 October 2007
 - with a sulphur content of no more than 10 mg/kg: €417
 - with a sulphur content of more than 10 mg/kg: €432
- after 30 September 2007
 - containing at least 44 l of biogenic substances and with a sulphur content of no more than 10 mg/kg: €412
 - other: €445

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
 - containing at least 44 l of biogenic substances and with a sulphur content of no more than 10 mg/kg: €297
 - other: €325

Biofuels

- Pure biofuels are completely exempt from mineral oil duty.

Under the 2007 Finance Act (*Budgetbegleitgesetz*, BBG 2007), mineral oil duty on **petrol** and **diesel** will increase by **3 cents per litre** and **5 cents per litre respectively** on 1 July 2007. This applies to all rates in each category.

3.1.1.1 Bioethanol Blending Order

Experience gained in countries with a climate similar to that of Austria has shown that it is possible to run engines on bioethanol blends all year round only if, instead of a 15% petrol blend, a 20% blend is used in summer and a 30% blend in winter.

The resulting legislation to amend the Bioethanol Blending Order (*Bioethanolgemischverordnung*) (BGBl. II No 378/2005) comes into force on 1 July 2007 and reads as follows (Section 1(1)):

"For blends produced in a tax warehouse within the tax territory in accordance with the ÖNORM C 1114 standard, issued on 1 July 2007, and with a bioethanol content of at least 70% by volume from 1 October to 31 March (autumn and winter) and at least 80% 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."

In order to enable effective market penetration, an amendment to the above Order removes the time limit (1 January 2011). The Order will therefore enter into force on 1 October 2007 for an unlimited period of time.

3.1.2 Substitution requirement

The Biofuels Directive was transposed into national law by an amendment to the Fuel Order on 4 November 2004 (BGBl. II No. 417/2004). It stipulates that, from 1 October 2005, the proportion of biofuels or other renewable fuels placed on the market by those subject to the substitution requirement must be 2.5% (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). From 1 October 2007, this will increase to 4.3%, with the 5.75% target laid down in the Directive for 2010 being reached as early as 1 October 2008.

The substitution requirement applies to any person first placing petrol or diesel on the Austrian market 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,² the Austrian association of liquid-biofuel manufacturers, there were 10 biodiesel plants operating in Austria in 2006, with a total capacity of approximately 199 000 tonnes. Capacity is expected to increase to 440 000 tonnes in 2007 as three new plants will start production and three existing plants are set to increase their capacity.

According to the information provided by ARGE Biokraft's members, 121 665 tonnes of biodiesel were produced in Austria in 2006 (by seven biodiesel producers). Of this amount, 11 693 tonnes were exported, 77 404 tonnes were blended with fossil diesel and 32 568 tonnes were used in the Austrian transport sector either as pure biofuel or as diesel with a higher, non-standard proportion of biofuel (e.g. through company filling stations belonging to fleet operators). The total volume of biodiesel sold in 2006 comes to approximately 321 000 tonnes (blended and pure).

3.2.2 Bioethanol

A plant was under construction in 2006 (Pischelsdorf, Lower Austria) and should become operational in Autumn 2007.

According to the information provided by the operator, the plant should produce approximately 200 000 m³ of ethanol per year,³ an annual output of 160 000 tonnes.

3.2.3 Biogas

² ARGE Flüssige Biokraftstoffe was officially founded on 18 December 2006 in accordance with the Chamber of Commerce Act (*Wirtschaftskammergesetz*).

³ Source: <http://www.agrana.com>

In Austria, almost all of the biogas produced from biomass is used to generate electricity and heat. As at 31 March 2006, there were 325 licensed biogas plants in Austria with a total maximum capacity of 81.06 MW. In 2006, 358 GWh of electricity from biogas and 52 GWh of electricity from landfill gas or sewage gas were fed into the grid.

There is hardly any 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,⁴ the total amount of biogas produced in Austria is between 265 and 414 million cubic metres.

Austria's first biogas pilot plant (Pucking, Upper Austria) capable of purifying biogas and feeding it into the natural-gas grid became operational in 2005.

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 there are no records of the quantities produced. This is primarily because there are various different distribution channels for this fuel, e.g. sale through private fuel pumps.

According to Agrarplus,⁵ an estimated 10 000 tonnes of vegetable oil were produced for the transport sector in 2006, although this quantity was used exclusively for agricultural production.

3.2.5 Biomass

In 2004, gross domestic energy consumption in Austria was 1 283 PJ.⁶ With 300 PJ, renewable energy accounted for 23.4% of this. More than half of this renewable energy (52.3% or 157 PJ) was produced from bioenergy.⁷ Solid biomass accounted for 130 PJ, while 27 PJ were used in gaseous or liquid form.

Wood fuel, which accounts for approximately 38% of bioenergy, remains the most important biogenic energy source. 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. Bark and waste liquors and sludge from paper mills 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.

⁴ IFA Tulln (Institute for Agrobiotechnology).

⁵ <http://www.agrarplus.com>.

⁶ Also includes gas, oil and coal.

⁷ The remainder was produced primarily from hydropower (131 PJ) with some produced using photovoltaic cells, heat pumps, wind energy, solar thermal energy or geothermal energy.

3.3 Sales of fuel in Austria in 2006

In accordance with the Oil Stockholding and Registration Act (*Erdöl-Bevorratungs- und Meldegesetz*), the quantity of fuel sold is determined by the Federal Ministry of Economic Affairs and Labour on the basis of a notification requirement. In addition to the quantities of fuel sold in 2006, the figures for 2001-05 are also shown for comparison.

Table 1: National sales of mineral oil products in the transport sector in Austria⁸

Type of fuel	Total national sales 2001 (tonnes)	Total National Sales 2002 (tonnes)	Total National Sales 2003 (tonnes)	Total National Sales 2004 (tonnes)	Total National Sales 2005 (tonnes)	Total National Sales 2006 (tonnes)
Regular unleaded petrol (91•RON<95)	599 831	603 783	597 989	563 869	545 331	512 703
Unleaded petrol (super) (95•RON<98)	1 311 286	1 444 538	1 530 973	1 492 409	1 467 054	1 423 229
Unleaded petrol (super plus) (98•RON)	87 038	93 445	93 519	77 039	61 054	56 096
Diesel without biofuel	4 674 751	5 175 368	5 741 610	5 935 601	5 755 597	353 169
Diesel with biofuel					1 508 539	5 801 416

⁸ Source: Federal Ministry of Economic Affairs and Labour (2006).

4 QUANTITIES OF BIOFUELS

In 2006, 94% of all diesel sold had an average B100 content of 4.7% by volume. Altogether, some 288 500 tonnes of blended biodiesel and 32 500 tonnes of pure biodiesel were placed on the market. Furthermore, 10 000 tonnes of pure vegetable oil were used in the agricultural sector. This corresponds to a substituted energy content of approximately 3.54%, thus meeting the requirement laid down by the Fuel Order (2.5%).

It is possible to estimate the quantities of biofuels needed for blending in 2007. Altogether, 300 000 tonnes of biodiesel and 23 000 tonnes of bioethanol are expected to be placed on the market in blends. The quantity of bioethanol is much lower because ethanol will start being blended with petrol only from the last quarter of 2007, as this is when the reduced rate of duty will come into force.⁹

In addition to these quantities and on top of the quantities of pure biodiesel, when the Bioethanol Blending Order comes into force in October 2007, sales of bioethanol E85 are also expected.

Nevertheless, a considerable effort will have to be made to achieve the 5.75% target for the share of biofuels in the total energy consumption for transport. As the Fuel Standard limits the proportion of biofuels that can be blended to 5% by volume, the target will have to be achieved through increased use of pure biodiesel or higher concentration blends in fleets of vehicles.

⁹ At the same time (on 1 October 2007), the substitution requirement, calculated on the basis of energy content, will also increase from 2.5% to 4.3%.

5 REFERENCES

Bioethanol Blending Order (*Bioethanalgemischverordnung*) (BGBl. II No 378/2005): Order of the Federal Minister for Finance on the favourable treatment of mixtures of bioethanol and petrol.

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.

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.

Commission White Paper of 12 September 2001: *European transport policy for 2010: time to decide*, COM(2001) 370 final.