



BIOFUELS IN THE TRANSPORT SECTOR IN AUSTRIA IN 2006

Summary of the data for the Republic of Austria
pursuant to Article 4(1) of Directive 2003/30/EC for
the reporting year 2005

Stefan Salchenegger



Project management Mr Stefan Salchenegger
Authors Mr Stefan Salchenegger
Mr Ralf Winter

Produced on behalf of the Federal Ministry for Agriculture, Forestry, the Environment and Water Management.

Transport, Mobility, Settlements and Noise Division

Head of Division

Mr Robert Thaler

Overall coordination:

Dr Heinz Bach

Stubenbastei 5

A - 1010 Vienna

Further information on publications of the Federal Environment Agency (*Umweltbundesamt*) at:
<http://www.umweltbundesamt.at/>

Imprint

Media proprietor and publisher: Umweltbundesamt GmbH
Spittelauer Lände 5, 1090 Vienna/Austria

Attributed contributions from external authors do not necessarily represent the views of the Federal Environment Agency.

This publication may be found only in electronic form at
<http://www.umweltbundesamt.at/>

© Umweltbundesamt GmbH, Wien, 2006
All rights reserved

TABLE OF CONTENTS

TABLE OF CONTENTS	3
SUMMARY	4
1. INTRODUCTION	5
1.1 Legal framework	5
2. BIOFUELS	6
2.1 Definition of biofuels and other renewable fuels	6
2.2 Types of biofuels	6
3. INFORMATION ON BIOFUELS IN AUSTRIA	7
3.1 Measures to promote the use of biofuels in the transport sector	7
3.1.1 Rates of duty	7
3.1.2 Substitution requirement	7
3.2 National resources for the production of biomass	8
3.2.1 Biodiesel	8
3.2.2 Ethanol	8
3.2.3 Biogas	8
3.2.4 Solid biomass	8
3.3 Sales of fuel in Austria in 2005	9
4. QUANTITIES OF BIOFUELS	10
5. REFERENCES	11

SUMMARY

Directive 2003/30/EC on the promotion of the use of biofuels or other renewable fuels for transport (the Biofuels Directive) 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 after 2005, 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. Under Austrian legislation, since 1 October 2005 a person subject to the substitution requirement has had to replace with biofuels 2.5% (calculated on the basis of energy content) of all petrol and diesel fuels used in transport. The proportion will rise to 4.3% in 2007 and 5.75% in 2008.

Since October 2005 biofuels have been put into circulation in Austria by mixing about 4.7% biodiesel by volume with diesel. In the last quarter of 2005, a total of some 75 000 tonnes of added biodiesel and 17 000 tonnes pure were used in the Austrian transport sector, resulting in about 3.2% (calculated on the basis of energy content) of fossil fuels being replaced.

1. INTRODUCTION

1.1 Legal framework

In the White Paper *European transport policy for 2010: time to decide*, the European Commission expects CO₂ 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 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. 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) so as 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 draft report on the amendment of the Fuel Order, 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 biofuel percentage by volume that is calculated as 47%;
- "Bio-MTBE (methyl-tertio-butyl-ether)" is an MTBE produced on the basis of biomethanol with a biofuel percentage by volume that is calculated as 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

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

Petrol:

- from 31 December 2004 to 1 October 2007
 - with a maximum sulphur content of 10 mg/kg: €17
 - with a sulphur content of more than 10 mg/kg: €32
- after 30 September 2007
 - with a content of biogenic substances of at least 44 l and a maximum sulphur content of 10 mg/kg: €12
 - other: €45

Diesel:

- from 31 December 2004 to 1 October 2005
 - with a maximum sulphur content of 10 mg/kg: €32
 - with a sulphur content of more than 10 mg/kg: €17
- after 30 September 2005
 - with a content of biogenic substances of at least 44 l and a maximum sulphur content of 10 mg/kg: €97
 - other: €25

Biofuels:

- Pure biofuels are completely exempt from mineral oil duty.

3.1.1.1 Bioethanol Blending Order (*Bioethanolgemischverordnung*)

For mixtures produced in a tax warehouse within the tax territory which contain at least 85% bioethanol by volume and, pursuant to Article 3(1)(1) of the Mineral Oil Duty Act 1995, a maximum 15% by volume of mineral oil, €0.412 per litre of blended bioethanol of the mineral oil duty levied on the blended mixtures should be refunded or reimbursed at the request of the tax warehouse keeper.

The Order comes into force on 1 October 2007 and expires at the close of 31 December 2010. It should also be applied to mixtures produced before 1 January 2011.

3.1.2 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). This lays down that those who are subject to the substitution requirement should place on the market from 1 October 2005 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). From 1 October 2007 the proportion rises to

4.3%, and the 5.75% target for 2010 in the Directive will be reached as early as 1 October 2008.

The obligation to substitute applies to anyone who for the first time places petrol or diesel on the market in Austria or imports them into Austria, except in the fuel tank of a vehicle.

3.2 National resources for the production of biomass

3.2.1 Biodiesel

According to the Association of Biodiesel Manufacturers, there were eight biodiesel plants in Austria in 2005. The total capacity is approximately 92 000 tonnes a year. It is forecast to increase to some 200 000 tonnes in 2006.

In 2005, some 70 000 tonnes of biodiesel were produced in Austria according to information from the producers/estimates. From this quantity, however, approximately 50 % was sold abroad, since the price which can be obtained for biodiesel in Italy and Germany is currently higher than that in Austria.

Of the quantities sold in the domestic market, roughly half went to blending by those subject to the substitution requirement. Some 17 000 tonnes were used as pure biofuel in the Austrian transport sector.

3.2.2 Ethanol

There is currently no large-scale production of bioethanol in Austria. A plant is being built at the moment and will probably produce some 160 000 tonnes a year from October 2007.

3.2.3 Biogas

In 2005, approximately 157 million cubic metres of biogas were produced at 323 recognised sustainable electricity installations. According to experts' estimates, a further 94 biogas plants or methanisation units produce between 65 million and 132 million cubic metres. In total, more than 222 million cubic metres of biogas are produced each year in Austria, almost 100 % of which, however, is currently converted directly into electricity by the producers.

However, some producers are very interested in using biogas as a fuel for transport.

3.2.4 Solid biomass

Owing to the multiple uses of solid biomass, in particular for space heating and electricity in Austria, we have to rely on a statistical assessment. The current statistics give a figure of 71 787 TJ for solid biomass in 2003, which represents 5.1 % of gross domestic consumption. It can be assumed that energy use in 2005 from solid biomass was not stagnant. However, exact data on the energy use of solid biomass in 2004 and 2005 are not currently available.

3.3 Sales of fuel in Austria in 2005

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 on the basis of a notification requirement. In addition to the quantities of fuel sold in 2005, the comparable figures for 2001-04 are given.

Table 1 : National sales of mineral oil products in the transport sector in Austria¹

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)
Regular unleaded petrol (91<=RON<95)	599.831	603.783	597.989	563.869	545.331
Unleaded petrol (95<=RON<98)("Super")	1.311.286	1.444.538	1.530.973	1.492.409	1.467.054
Unleaded petrol (98<=RON)("Super Plus")	87.038	93.445	93.519	77.039	61.054
Diesel without biofuel	4.674.751	5.175.368	5.741.610	5.935.601	4.755.597
Diesel with biofuel					1.508.539

¹ Source: Federal Ministry for Economic Affairs and Labour (2006)

4. QUANTITIES OF BIOFUELS

For the period from October to December 2005 it can be assumed that roughly 95% of the diesel sold was placed on the market with a biocomponent of 4.7%. This is also borne out by the returns from those subject to the substitution requirement to the Federal Ministry of Agriculture, Forestry, Environment and Water Management. Altogether some 75 000 tonnes of blended and 17 000 tonnes of pure biodiesel were placed on the market in 2005. This corresponds to a substituted energy content of some 3.2% for the last quarter of 2005 (substitution obligation from 1 October). Thus the requirement in the Fuel Order (2.5%) was met.

The 17 000 tonnes of biodiesel mentioned in section 3.2.1., which was used in pure form in the Austrian transport sector, are based mainly on estimates, since the current underlying data are unfortunately not sufficient. Accordingly, this value has not yet been included in the calculations, not least because the blended portion of 4.7% clearly exceeds the substitution target of 2.5%.

The quantities of biofuels required for 2006 can be estimated from the forecast of fuel consumption and an analysis of the Austrian vehicle fleet. The quantity is calculated from the energy content of the fuels. It was assumed that the mileage remains constant when biofuels are used, which can only be represented by maintaining the total energy quantity.

Fluctuations in fuel consumption resulting from the different levels of energy content of biofuels were taken into account in the calculation.

For the whole of calendar 2006, and assuming that approximately 4.7% (v/v) biodiesel continues to be blended with the diesel, the quantity of biodiesel required can therefore be reckoned to be some 300 000 tonnes.

5. REFERENCES

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.

Order of the Federal Minister for the Environment, Youth and the Family on fuel quality (Fuel Order 1999, as last amended).

Mineral Oil Duty Act (BGBl. Xy 1999, as last amended), the Federal Act adapting mineral oil duty to Community law.

Order of the Federal Minister of Finance on the favourable treatment of mixtures of bioethanol and petrol (Bioethanol Blending Order 2005)

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



FQMS – FUEL QUALITY MONITORING SYSTEM 2005

Report on the Monitoring of Fuel Quality in the
Republic of Austria pursuant to Directive 98/70/EC
for reporting year 2005

Stefan Salchenegger



lebensministerium.at

REPORT
REP-0069

Vienna, 2006



Project management: Dr Gundi Lorbeer
Author: Mr Stefan Salchenegger

Produced on behalf of the Federal Ministry for Agriculture, Forestry, the Environment and Water Management.

Transport, Mobility, Settlements and Noise Division

Head of Division:

Mr Robert Thaler

Overall coordination:

Dr Heinz Bach

Stubenbastei 5

A - 1010 Vienna

Further information on publications of the Federal Environment Agency at: <http://www.umweltbundesamt.at/>

Imprint

Media proprietor and publisher: Umweltbundesamt GmbH
Spittelauer Lände 5, 1090 Vienna/Austria

This publication may be found in electronic form only at <http://www.umweltbundesamt.at/>.

© Umweltbundesamt GmbH, Wien, 200#
All rights reserved
ISBN 3-85457-866-0

SUMMARY

Under EU Directive 98/70/EC the Member States have to check, and report on, compliance with the current quality standards for fuels. The quality of liquid petrol and diesel is checked by the Federal Environment Agency and a report is sent to the Ministry for Agriculture, Forestry, the Environment and Water Management. The Ministry forwards the report to the European Commission.

In 2005, the sampling and chemical analysis required to fulfil the reporting obligation were carried out by the Federal Environment Agency. To this end, samples were taken at filling stations across Austria. In all, 115 filling stations were sampled, with altogether 305 samples being taken – 155 in the six winter months and 150 in the six summer ones. Diesel was tested for conformity with standard ON EN 590, and petrol with ON EN 228.

Altogether in 2005, nearly 8.3 million tonnes of fuel were sold in Austria, of which 6.3 million (some 75%) were diesel.

Of the 305 fuel samples taken in 2005, eight were found to exceed the criteria laid down in the standards:

- The maximum admissible sulphur content was exceeded twice
- Vapour pressure was exceeded in two instances
- In two instances, the motor octane number was not attained
- The aromatics were exceeded in one instance
- There was one instance of non-conformity with the 95% distillation curve.

TABLE OF CONTENTS

SUMMARY	3
TABLE OF CONTENTS.....	4
1. INTRODUCTION.....	5
2. DETAILS OF THOSE COMPILING THE FUEL QUALITY MONITORING REPORT.....	6
3. TYPES OF FUEL	7
4. DESCRIPTION OF THE FUEL MONITORING SYSTEM.....	8
5. TOTAL SALES OF PETROL AND DIESEL.....	9
6. GEOGRAPHICAL DISTRIBUTION OF SULPHUR-FREE FUELS.....	11
7. DEFINITION OF THE SIX SUMMER MONTHS WITH REGARD TO VOLATILE SUBSTANCES IN FUELS.....	12
8. RESULTS OF FUEL SURVEY.....	13

1. INTRODUCTION

Directive 98/70/EC of the European Parliament and of the Council of 13 October 1998 relating to the quality of petrol and diesel fuels and amending Council Directive 93/12/EEC², as last amended by Commission Directive 2003/17/EC³, lays down environmental specifications for all petrol and diesel fuels placed on the market in the European Union. The specifications are set out in Annexes I to IV of the Directive.

Under Article 8(1) the Member States must monitor compliance with the specifications for fuel quality. By no later than 30 June each year the Member States must submit a summary of the fuel quality monitoring data collected during the period January to December of the previous calendar year.

This report basically follows the Commission's directions concerning the summary of national fuel quality data⁴.

² OJ L 350, 28.12.1998, p. 58.

³ OJ L 67, 22.3.2003, p. 10.

⁴ Commission Decision of 18 February 2002 on a common format for the submission of summaries of national fuel quality data (notified under document number C(2002) 508), OJ L 53, 23.2.2002, pp. 30-36.

2. DETAILS OF THOSE COMPILING THE FUEL QUALITY MONITORING REPORT

Reporting year	2005
Country	Austria
Date on which the report was completed	29.6.2006
Institute responsible for the report	Federal Environment Agency, Vienna (Umweltbundesamt GmbH Wien)
Address of the institute	Spittelauer Lände 5 1090 Vienna
Person responsible for the report	Mr Stefan Salchenegger
Telephone number	0043/1/31304/5520
Email address:	stefan.salchenegger@umweltbundesamt.at

3. TYPES OF FUEL

Basic types of fuel: The basic fuel types correspond to the petrol and diesel fuels specified in Directive 98/70/EC – regular unleaded petrol RON 91 (ON EN 228 “Regular”), super unleaded petrol RON 95 (ON EN 228 “Super”) and diesel (ON EN 590)⁵. Super plus 98 fuel (ON EN 228 “Super Plus”) is also available on the Austrian market.

⁵ Since 1 October 2005, FAME (fatty acid methyl esters) have been mixed with most Austrian diesel in a proportion of 5% by volume.

4. DESCRIPTION OF THE FUEL MONITORING SYSTEM

During the fuel monitoring exercise, samples were taken by the Federal Environment Agency at filling stations across Austria. Altogether, 305 samples were taken at 115 filling stations – 155 in the six winter months and 150 in the six summer ones.

In the analysis of both petrol and diesel, all parameters were measured in accordance with Annexes I and II to the Commission Decision on a common format for the submission of summaries of national fuel quality data.

Austria has only one refinery (Schwechat). Its output meets a considerable proportion of domestic demand. The remaining fuel is imported in particular from Germany, Italy, Slovakia and Hungary.

Data on the regional distribution of imported fuels in Austria are not available. Fuel checks carried out in recent years have not revealed any qualitative differences between regions, and the quality of imported and domestically produced fuel can therefore be assumed to be broadly uniform. Since the national fuel supply comes mainly from one production plant and there is no clear difference in quality compared with imported fuel, the whole of Austria may be regarded as one region (statistical model C).

Total fuel consumption in Austria in 2005 was some 8.3 million tonnes (see section 5).

Austria should therefore be classified in accordance with EN 14274 (1 December 2003) as a small country.

5. TOTAL SALES OF PETROL AND DIESEL

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 on the basis of a notification requirement. In addition to the quantities of fuel sold in 2005, the comparable figures for 2001, 2002, 2003 and 2004 are given.

The statistical returns for the quantities of fuel sold do not reveal any difference in sulphur content. On the basis of the representative market surveys it can be assumed that all petrols comply with the maximum sulphur content of 10 ppm. For diesel, the representative market surveys revealed an average sulphur content of 12.5 ppm. Of the 100 samples tested, 13 had a sulphur content in excess of 10 ppm. An availability of sulphur-free diesel of approximately 87% can therefore be extrapolated.

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)
Regular unleaded petrol (91<=RON<95)	599.831	603.783	597.989	563.869	545.331
Unleaded petrol (95<=RON<98) "Super"	1.311.286	1.444.538	1.530.973	1.492.409	1.467.054
Unleaded petrol (98<=RON)"Super Plus"	87.038	93.445	93.519	77.039	61.054
Diesel without biofuel	4.674.751	5.175.368	5.741.610	5.935.601	4.755.597
Diesel with biofuel					1.508.539

The results for this table in accordance with the common format are as follows:

Type of fuel	Total national sales2005 (tonnes)
Regular unleaded petrol (RON= at least 91)	545.331
Regular unleaded petrol (RON= at least 95)	1.467.054
Unleaded petrol (RON= at least 95, and less than 50 ppm sulphur)	1.528.108
Sulphur-free unleaded petrol(less than 10 ppm)	2.073.439
Unleaded petrol (95<=RON<98)	
Unleaded petrol (RON=98)	61.054
Diesel	6.264.136
Diesel (less than 50 ppm Sulphur)	6.264.136
Diesel (less than 10 ppm sulphur)	5.449.799 ⁶

⁶ Extrapolation from 100 samples

6. GEOGRAPHICAL DISTRIBUTION OF SULPHUR-FREE FUELS

An agreement was concluded in 2003 between the Federal Minister for Agriculture, Forestry, the Environment and Water Management and the Director-General of OMV AG guaranteeing the nationwide supply of sulphur-free petrol and diesel from 1 January 2004. From February 2004 it can be assumed that sulphur-free fuels were being supplied throughout Austria.

7. DEFINITION OF THE SIX SUMMER MONTHS WITH REGARD TO VOLATILE SUBSTANCES IN FUELS

Six summer months (laid down for volatile substances in fuels)	1 May to 30 September
--	-----------------------

8. RESULTS OF FUEL SURVEY

Annexes I to IV show the analysis results for petrols and diesel in accordance with the common report format.

The following instances of overshooting or undershooting were recorded:

Type of fuel	Number of samples	Over-/undershoot ¹	Parameter
ON EN 228 "regular" petrol	100	3	MON 2 * DVPE
ON EN 228 "super" petrol	100	2	MON Aromatics
ON EN 228 "super plus" petrol	5	0	
ON EN 590 diesel	100	3	2 * sulphur 95% dist.

¹Over-/undershoots within the tolerance not shown.