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## SECOND NATIONAL REPORT ON THE IMPLEMENTATION OF DIRECTIVE 2003/30/EC OF 8 MAY 2003 ON THE PROMOTION OF THE USE OF BIOFUELS OR OTHER RENEWABLE FUELS FOR TRANSPORT

for 2004

### Preliminary comments

The second report under Article 4(1) of Directive 2003/30/EC/30/EC of 8 May 2003 on the promotion of the use of biofuels or other renewable fuels for transport must be submitted to the Commission by 1 July 2005.

**Germany is still striving to increase the proportion of biofuels to 2% of total fuel consumption in 2005. The prospects of achieving this goal are considered to be good.** In 2004, biofuels accounted for 1.9% by volume of total fuel consumption in Germany (see paragraph 3). In relation to energy content, this was about 1.8% of total fuel consumption in 2004.

### 1. General development of the biofuels market in 2004

In addition to **biodiesel** which has been used as pure fuel since 1993, rape methyl ester (RME/biodiesel) has also been added to fossil diesel since the beginning of 2004. During the very first year, the mixture increased to about 30% of total biodiesel used. A further 30% was sold as pure fuel for use in private cars. Most of the pure fuel sold was for use in vehicle fleets (mainly lorries). About 40% of the biodiesel sold was in this sector. The addition of biodiesel to fossil diesel fuel up to the 5% limit which standards allow is expected to increase significantly.

The use of **pure rape oil** is further increasing, but more slowly. The number of cars which use rape oil, about 4 000 mainly in southern Germany, is almost constant.

Pure rape oil is increasingly being used in heavy goods vehicles. Up to 30% rape oil by volume is added to fossil diesel, sometimes in the vehicle tank. The total market volume is estimated at about 5 000 tonnes per annum.

With regard to the use of **bio-ethanol**, there was market development in two sectors in 2004. Some ETBE (ethyl-tertio-butyl-ether) producers have converted their MTBE (methyl-tertio-butyl-ether) production plants and now supply the petroleum industry with ETBE based on bio-ethanol, which is used to be improved the octane number of petrol, instead of fossil MTBE. This use will further increase in 2005. In total, this market sector is estimated at about 240 000 tonnes per annum in Germany.

The direct addition of bio-ethanol requires the fuel to be modified to reduce the vapour pressure of the mixture at the same time. Otherwise the requisite maximum vapour pressure – limit value 60Kpa – cannot be maintained in summer.

### 2. Measures to promote the use of biofuels or other renewable fuels

#### 2.1 Tax relief

The amendment to the Petroleum Tax Act (*Mineralölsteuergesetz*), which entered into force on 1 January 2004, has created the basis for tax relief – currently total tax relief – for biofuels and bioheating fuels, provided they are produced from biomass, in Germany. Biogenic fuels in pure form and the fractions of biofuels and bioheating fuels in mixtures with fossil motor fuel and heating fuels are therefore exempt from petroleum tax. This measure makes use of Article 16 of Council Directive 2003/93/EC of 27 October 2003. The measure is limited until 2009, and the tax relief must be adjusted if overcompensation is established between now and then.

In the annual report the Federal Government is required to submit to the Bundestag, the Government must indicate whether it believes there has been overcompensation. The first report has been drawn up for presentation to the Bundestag and will be available shortly.

## **2.2 Research, development and demonstration activities**

### **2.2.1 Pure rape oil**

The trial referred to in the report for 2003 with 100 agricultural tractors running on pure vegetable oil will finish in September 2005. The results should provide further recommendations for this sector.

### **2.2.2 Biodiesel**

In 2005 Volkswagen withdrew permission for new diesel cars to use biodiesel. Following the successful development of a biodiesel sensor in recent years, it may be possible to offer the sensor in future as a special item in new vehicles sold. In this way, vehicles fitted with the sensor would also be able to meet the demanding EURO-4 limit values when using biodiesel.

The discussions taking in place in Germany on particulate emissions from diesel engines also concern biodiesel. The Federal Agricultural Research Authority (*Bundesforschungsanstalt für Landwirtschaft*) and the Technical High School of Coburg (*Fachhochschule Coburg*) have so far been able to demonstrate that the use of pure biodiesel reduces the mass of particulates in exhaust gases by 40 to 60%. Furthermore, scientific tests on the residual dust show that the mutagenicity of biodiesel emissions is considerably lower than that of the dust from modern fossil diesel fuel.

Since the Federal Government plans to go beyond the statutory emission requirements for fuels and to provide broad tax relief in particular for vehicles with reduced particulate emissions, which includes diesel vehicles retro-fitted with particulate reduction systems, the users of pure biodiesel must also be prepared for this. CRT filters with smoke particle filters are already used in heavy goods vehicles and also operate with biodiesel. Tests for the general use of particulate reduction systems (e.g. smoke filters) when using biodiesel are currently on the R&D agenda.

### **2.2.3. Bio-ethanol**

The project entitled “Energy and environmental evaluation of the production of ethanol from renewable raw materials with special regard to new procedures and technologies” announced in the report for 2003 has now been completed. The results can be found on the Internet under [www.fnr.de](http://www.fnr.de).

Preparations are currently being made for a practical trial with fleet operators to test flexible fuel vehicles. Filling stations at three to four locations will offer a fuel mixture of 85% bio-ethanol and 15% petrol. The target is for at least 120 vehicles to use this fuel on a trial basis. The project is intended to demonstrate the practical suitability of FFV technology.

At the Otto von Guericke University in Magdeburg an R&D project is currently being carried out together with the Federal Agricultural Research Authority in Braunschweig to test O<sub>2</sub> diesel fuel (a mixture of 7 to 10% bio-ethanol plus 90% fossil diesel plus additives) in modern diesel engines for technical suitability and to measure the resulting emissions.

As regards the direct addition of bio-ethanol to petrol, different approaches are being tried out to resolve the vapour pressure problem and to comply with the requisite limit value of 60 KPa in summer as well. This is a precondition for the widespread use of bio-ethanol as an additive to petrol. The petroleum industry carried out a pilot project on the vapour pressure problem and is currently evaluating the results.

#### **2.2.4 BtL fuels**

Synthetic fuels produced from biomass have become more significant in recent years. They promise various advantages:

- no new engines or filling station infrastructure required;
- use of the whole plant when energy crops are used as the raw material;
- lower exhaust emissions from engine combustion, CO-natural.

Various projects using different processes to produce synthetic fuel from biomass are currently in preparation. These projects are intended to investigate ways of producing BtL fuels on a pilot scale and to clarify outstanding issues regarding environmental and economic assessment.

### **2.3 The Federal Government's strategy on alternative fuels and drive systems**

In the framework of the national sustainability strategy, in 2004 the Federal Government developed a long-term strategy for the promotion of alternative fuels and drive system technology in cooperation with industry. The strategy stresses that the development of synthetic biofuels is an important field of action. Of the renewable fuels, biodiesel and bio-ethanol are regarded as having the greatest short and medium-term potential. As renewable fuels, biofuels are an essential part of the strategy. The Federal Government's fuels strategy can be found on the Internet under:

[www.bundesregierung.de/Artikel/-,413.749643/dokument.htm](http://www.bundesregierung.de/Artikel/-,413.749643/dokument.htm) .

### **2.4 Public relations**

Public relations activities on biofuels were substantially stepped up in 2004. In addition to the traditionally wide-ranging activities of the Union for the Promotion of Oil and Protein Crops (UFOP) and the Association for the Quality Management of Biodiesel (AGQM) for rape methyl ester, the public's attention was drawn to other alternative fuels such as bio-ethanol and synthetic biofuels and to the use of vegetable oil as fuel.

The attention of agricultural target groups and interested consumers was drawn to the use of biofuels at various trade fairs and specialised and consumer affairs events as well as through the press and a wide range of published documents. Among these were brochures with user information, lists of filling stations and users' reports; additional PR activities were also launched. The sector was represented jointly at the international conference on renewables in Bonn with activities for conference visitors and consumers.

The Specialised Agency for Renewable Fuels (FNR) has greatly expanded its public relations' work on biofuels. In addition to scientific publications, an international congress on BtL fuels was held in cooperation with DaimlerChrysler and Volkswagen with the participation of the Federal Ministry for Consumer Protection, Nutrition and Agriculture. FNR also set up a scientific platform on BtL fuels to increase networking between the players concerned and to promote exchanges. It also supports this initiative with material on the Internet at [www.btl-plattform.de](http://www.btl-plattform.de).

## 2.5 Administrative law

The Tenth Ordinance implementing the Federal Pollution Prevention Act (Ordinance on the nature and designation of the quality of fuels – 10.BimSchV) of 24 June 2005 lays down the first quality requirements for biodiesel as fuel, among other things. The addition of bio-ethanol to petrol and biodiesel to diesel fuel for transport is regulated in accordance with Directive 2003/30/EC of the European Parliament and of the Council of 8 May 2003 on the promotion of the use of biofuels and other renewable fuels for transport.

## 3. Sales of biofuels and other renewable fuels in Germany in 2004

In 2004 **biodiesel** was the most widely sold biofuel in Germany. As in 2003, a very small volume of **pure vegetable oil** was used by about 4 000 cars and by a slowly increasing number of lorries and agricultural tractors. Bio-ethanol is being introduced onto the German market and the figures for 2004 must be seen in that light.

### Consumption of fuels for transport in Germany in 2004

	'000 tonnes	'000 litres	Energy content in MJ/L	Energy consumption in 1 000 MJ	% of energy consumption	% of consumption by volume
Fuel consumption	54 317	68 236.99		2 316 206.95	100	100
Petrol	24 972	33 296.00	32.48	1 079 719.10	46.60	48.8
Diesel	28 605	33 652.94	35.87	1 195 377.00	51.60	49.3
Biogenic fuels,* including:	1 120	1 288.05		41 110.85	1.80	1.9
Biodiesel	1 050	1 200.00	32.65	39 180.00	1.69	1.76
Pure rape oil	5	5.66	34.59	195.87	1.01	0.01
Bio-ethanol	65	82.38	21.06	1 734.98	0.07	0.12
Biogas	0	0.00	23.50	0.00	0.00	0.00

\* The proportion of biogenic components added has been subtracted for fossil fuels and is shown separately together with the biogenic pure fuels.

Source: Association of the Petroleum Industry, petroleum excise statistics, own calculations

The figures for biofuels sold in 2004 were accurately taken from the fuel tax statistics. The figures indicated correspond to the volume in Germany which is exempt from tax.