

**Report to the European Commission for 2004 under Article 4(1) of  
Directive 2003/30/EC of the European Parliament and of the Council on the  
promotion of the use of biofuels or other renewable fuels for transport**

**Prepared at the Ministry of Agriculture and Rural Development in cooperation with the  
Ministry of Economy and Labour, the Ministry of Finance, the Ministry of Scientific  
Research and Information Technology, the Ministry of Environment and the Ministry of  
Infrastructure**

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## **Report to the European Commission for 2004 under Article 4(1) of Directive 2003/30/EC of the European Parliament and of the Council on the promotion of the use of biofuels or other renewable fuels for transport**

This report fulfils Poland's reporting obligation under Article 4(1) of the Directive of 8 May 2003 *on the promotion of the use of biofuels or other renewable fuels for transport*.

### **The report covers:**

- I. progress on achieving the national target for the reduction of greenhouse gas emissions in compliance with the Kyoto Protocol;
- II. measures taken to promote the use of biofuels or other renewable fuels to replace petrol or diesel for transport purposes;
- III. the share of biofuels in the transport fuel market;
- IV. the level of the national indicative target for 2005 – the minimum proportion of biofuels and other renewable fuels to be placed on the fuel market.

### **Progress on achieving the national target for the reduction of greenhouse gases in compliance with the Kyoto Protocol.**

The atmospheric phenomena experienced with increasing frequency over recent years, not only in Poland and Europe but around the entire globe, may be the first signs of climatic changes. These may include progressive warming of the Polish climate and changes in the pattern of precipitation intensity. Possible climate changes<sup>1</sup> give cause for concern, since they may have very severe consequences for the entire international community, irrespective of place of residence or material status.

Against the background of other very major problems relating to the political system, the economy, social affairs and the environment, climate protection has not been a key development issue for Poland during its period of transition. Yet one undoubtedly positive effect of the changes that have occurred is a significant improvement to the quality of the natural environment in virtually every respect, including a marked reduction in greenhouse gas emissions. As part of the economic restructuring process, given added impetus by European Union requirements particularly in the area of legislative harmonisation, measures have been taken which should result in maintaining and even enhancing favourable trends in environmental protection, also in terms of mitigating climate changes.

Strategic documents adopted by the Council of Ministers and the *Sejm* (Parliament) of the Republic of Poland (including plans, policy assumptions and strategies relating to sustainable development, the environment, the economy as a whole and its individual sectors) have an essential bearing on climate protection measures. Moreover, Poland operates a system of legal instruments which relate directly or indirectly to the problems of climate change and provide a stimulus for measures designed to contribute towards reducing greenhouse gas emissions.

Over the period 1988-2002, greenhouse gas emissions decreased by over 30%. This significant reduction came about largely as a result of the political and economic transformation processes which began in the early 1990s. For countries such as Poland undergoing economic transformation, the Kyoto Protocol<sup>2</sup> provides mechanisms designed to

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<sup>1</sup> Since 1994 Poland has been a party to the United Nations Framework Convention on Climate Change. This involves a commitment to undertake measures aimed at stabilising the level of greenhouse gases in the atmosphere so as to prevent permanent global climate changes.

<sup>2</sup> The Kyoto Protocol, which Poland signed on 15 July 1998 and ratified on 13 December 2002, entered into force on 16 February 2005.

provide partial compensation for the costs and burdens incurred by making it possible to purchase and sell rights to accumulated surpluses of greenhouse gas emission reductions.

Poland is already on target to meet its obligations to reduce greenhouse gas emissions and has achieved a considerable surplus so far (under the Kyoto Protocol, Poland is required to achieve a 6% reduction in greenhouse gas emissions over the period 2008-2012 compared with 1988, the base year for Poland).

In 2002, carbon dioxide accounted for the largest share (80.6%) of aggregated greenhouse gas emissions, followed by methane (11.8%) and nitrous oxides (7.1%), with other industrial gases, i.e. fluorinated hydrocarbons (HFCs), perfluorinated hydrocarbons (CFCs) and sulphur hexafluoride (SF<sub>6</sub>), making up the remaining 0.5%.

The breakdown of aggregated greenhouse gas emissions had changed compared with 1988 (base year), with smaller shares being accounted for by carbon dioxide (down from 83.43% in 1988 to 80.61% in 2002) and methane (down from 12.45% in 1988 to 11.837% in 2002), while the share of nitrous oxides had increased (from 4.12% in 1988 to 7.08% in 2002).

Fundamental economic factors affecting Poland's implementation of the United Nations Framework Convention on Climate Change and the Kyoto Protocol include low corporate profitability (making it difficult to allocate the requisite funds to urgent technical modernisation projects), high energy consumption of industrial processes and burgeoning road transport.

The energy sector is the main source of carbon dioxide and sulphur emissions into the atmosphere. In addition, hard coal and lignite mining operations change the face of the landscape and cause serious damage to the soil. They also adversely affect water quality. Table 1 sets out the structure of primary energy consumption in Poland.

Table 1

	1999		2000		2001		2002		2003	
	PJ	%	PJ	%	PJ	%	PJ	%	PJ	%
Primary energy	3929.8	100.00	3870.3	100.00	3917.8	100.00	3786.7	100.00	3939.8	100.00
Hard coal	2107.4	50.26	1940.7	50.15	1933.0	49.34	1905.0	50.31	2056.7	52.20
Lignite	521.5	13.27	507.5	13.11	510.8	13.04	507.2	13.399	516.9	13.12
Oil	702.6	17.88	768.5	19.86	770.2	19.66	760.2	20.08	742.0	18.83
Natural gas	421.0	10.71	452.7	11.69	471.2	12.03	458.6	12.11	509.4	12.93
Other	177.3	4.51	200.9	5.19	232.6	5.93	155.7	4.11	114.8	2.91

GUS (Central Statistical Office) "The Fuel and Energy Economy in 2002, 2003" - Warsaw 2004

The principal sources of energy in Poland are coal, oil and natural gas. One focus of pro-ecological measures, therefore, is the reduction of coal- and oil-derived pollutants through increased use of biomass or other renewable fuels for power generation and transport.

The main thrust of efforts to reduce the energy sector's impact on the natural environment will comprise the introduction of new technical solutions, changes in the structure of energy sources, use of environmentally friendly fuels and the implementation of economic mechanisms designed to facilitate adaptation to more stringent ecological requirements. Progress in the area of energy efficiency will also play its part in limiting environmental burdens.

It is planned to restrict emissions of pollutants, including greenhouse gases, also by increasing the share of renewable energy sources and hydrocarbon fuels in the total balance of primary energy.

Since hard coal and lignite are set for the time being to remain the basis for the production of electrical and thermal energy, it is appropriate to use "clean coal technology" enabling environmental protection standards to be met. The development of technologies permitting the reduction of carbon dioxide emissions is also essential.

Given the ever-increasing number of vehicles and associated traffic intensity in urban agglomerations, it is essential that fuels with improved quality parameters be used in order to reduce the adverse impact on human health and the environment. It is therefore planned to restrict the sulphur content of fuels and increase the proportion of biocomponents. These more stringent requirements are to be phased in so as to enable refineries to adapt to the production of these fuels. The restriction on sulphur content will also apply to heating oils.

The introduction of market mechanisms enabling allocated greenhouse-gas emission permits to be traded (as of 1 May 2004 Poland is bound by Community law, including the Directive on emissions trading) may contribute towards reducing the costs incurred by companies in adapting to more stringent requirements. It is also planned to introduce in the future an internal nationwide system of trade in NO<sub>2</sub> and NO<sub>x</sub> emission permits.

## **II. Measures taken to promote the use of biofuels or other renewable fuels to replace petrol or diesel for transport purposes,**

Experience to date suggests that the key way of promoting the use of biocomponents in engine fuels is to select an appropriate level of excise duty exemption on liquid fuels and liquid biofuels, in line with technological progress in the field of vehicle and fuel production. It is essential that such measures be constantly monitored, as tax exemptions have to be adapted to changing circumstances. A system of duty reliefs and exemptions has been operational in Poland since 1993 and has in practice applied to bioethanol and etherised bioethanol.

### **II. 1 Implemented research projects relating to biofuels**

Over the period 1994-1997, a research project entitled "*EPAL - Polish rape-seed biofuel for diesel engines*" was carried out. At the same time tests were performed on this fuel, leading to the formulation of a proposal for a national standard, PrPN-C-40030. Although it was never adopted by the Polish Committee for Standardisation, this draft enabled potential producers of biofuel to develop the technology needed to produce fuel of the appropriate quality. The resultant biodiesel, containing depressant additives, met the requirements for diesel fuel type DZ under the Polish standard PN-92/C-96051 and for EN-590 fuels, intended for winter use at ambient temperature down to minus 20<sup>0</sup>C.

Against a backdrop of considerable Polish interest in the development potential of the biodiesel market, the Wrocław branch of Centrala Produktów Naftowych S.A. (CPN S.A.) decided in the mid-1990s to undertake the promotional/experimental production and sale of diesel with an additive of fatty acid methyl esters (FAME) of vegetable origin. However, CPN S.A. discontinued the implementation of this project after a few months because production proved unprofitable. Excise duty reliefs at the time did not apply to FAME/diesel blends. Under the tax regulations then in force, FAME was not subject to excise duty as it was not an excise product. Nevertheless, the use of such fuel was not an economical proposition because its price was two to three times higher than that of fully taxed diesel.

## **II. 2 Expenditure on research or the implementation of research projects relating to the use of biofuels for transport purposes**

Seven projects in the field of biofuels are currently being carried out in Poland (two targeted and five broader research projects).

### **Subject matter of targeted projects currently being carried out**<sup>3</sup>

1. Development and implementation of technological procedures for adding methyl esters of rapeseed oil to diesel oil at the production stage, as well as criteria for assessment of material degradation in diesel engines. The project is scheduled for completion in 2006.
2. Development of a system for formulating diesel fuel on the basis of rapeseed oil esters meeting infrastructure service-life requirements for mining machinery, vehicles and tractors. The project is scheduled for completion in 2005.

**It is expected that the above projects will be completed in the period 2005- 2006 and that co-financing from State budget funds will amount to PLN 1 250 000.**

### **Subject matter of broader research projects currently being carried out**<sup>4</sup>

1. Productivity and characteristics of willow clones (*Salix* sp.) as biofuel.
2. Use of biofuels as reburning fuel for reducing nitrous oxide emissions from industrial furnaces using primary methods.
3. Development of a method and equipment for measuring rapeseed esters content in biofuel used for diesel engines.
4. Studies of properties of solid biofuels obtained from timber waste.
5. Assessment of scope for using vegetable oils (liquid biofuels) in sources of heat for power-generation purposes and the impact on the natural landscape.

**State budget funds to be allocated for the implementation of these projects will amount to PLN 1 039 000.**

## **II. 3 Expenditure on promoting the use of biocomponents in liquid fuels and liquid biofuels – system of tax exemption and relief**

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<sup>3</sup> Targeted projects – projects scheduled to be carried out within a set timeframe and under defined conditions, undertaken inter alia by entrepreneurs and research entities on their own initiative, by ministries or by autonomous regional authorities. They cover applied research, development work, industrial research, or pre-competition studies

<sup>4</sup> Broader research projects – defined research tasks whose completion is expected within a fixed timeframe under set conditions.

The inclusion of biocomponents in liquid fuels is encouraged by means of economic incentives. A system of tax exemptions and reliefs has been operational in Poland since 1993 on the basis of various decrees issued by the Minister of Finance.

Since 2004 the tax relief system has undergone modifications bringing it into line with the solutions applied in the European Union and resulting from the definitions set out in the Act dated 2 October 2003 on biocomponents used in liquid fuels and liquid biofuels, as well as in Directive 2003/30/EC of 8 May 2003 on the promotion of the use of biofuels or other renewable fuels for transport.

The Decree by the Minister of Finance dated 26 April 2004 *concerning exemption from excise duty* (Official Gazette No 97, item 966, as amended) has been in force since 1 May 2004. Compared with the situation prior to that date, the excise exemption was extended to include not only bioethanol and ethyl-tertio-butyl-ether but also methyl esters of rapeseed oil, in accordance with the definition of biocomponents set out in the Act of 2 October 2003 *on biocomponents used in liquid fuels and liquid biofuels*. That definition describes biocomponents as ester or bioethanol, including bioethanol contained in ethyl-tertio-butyl-ether or ethyl-tertio-amyl-ether as well as esters constituting engine fuel in their own right. The exemption applies to biocomponents intended for use in liquid fuels and liquid biofuels and produced from agricultural raw materials, by-products and waste meeting the relevant quality requirements.

The Decree also sets out the rules governing exemption from excise duty for liquid fuels containing a specified level of biocomponents.

At present, following the amendments introduced by the Minister of Finance's Decree of 18 November 2004 amending the Decree on exemptions from excise duty (Official Gazette No 248, item 2492), the following are exempt from excise duty:

- liquid fuels with a biocomponents content of between 2.0 and 5%, the exemption amounting to PLN 1.5 for each litre of biocomponents added to these fuels;
- liquid biofuels with a biocomponents content of between 5 and 10%, the exemption amounting to PLN 1.8 for each litre of biocomponents added to these fuels;
- liquid biofuels with a biocomponents content of more than 10%, the exemption amounting to PLN 2.2 for each litre of biocomponents added;

This is subject to the proviso that the exemption may not exceed the excise due from the sale of these fuels.

The Decree by the Minister of Finance dated 18 November 2004 amending the Decree on exemptions from excise duty sets the minimum biocomponents content required in liquid fuels in order to qualify for exemption at 2%, the previously applicable level having been 4.5%. The new 2% biocomponents content threshold came into force on 7 December 2004.

Total excise duty exemptions on sales of petrol containing biocomponents were as follows:

- **2002 – PLN 274 717 189**, including:
  - **PLN 53 417 391** on sales of petrol containing bioethanol,
  - **PLN 221 299 798** on sales of petrol containing ethyl-tertio-butyl-ether ,
- **2003 – PLN 170 143 786**, including:
  - **PLN 30 378 722** on sales of petrol containing bioethanol,
  - **PLN 139 765 064** on sales of petrol containing ethyl-tertio-butyl-ether.

In 2004, total exemptions from excise duty stood at an estimated PLN **68 983 902**. It should be stressed that this amount is mainly the result of excise duty relief on sales of petrol containing bioethanol. The quantities of ethyl-tertio-butyl-ether added to petrol as a biocomponent in 2004 were minimal, and there were no industrial-scale additions of esters to diesel.

### III. Share of biofuels in the transport fuel market

#### III. 1 Number of registered entrepreneurs producing or storing biocomponents

In accordance with Article 3(1) of the Act dated 2 October 2003 on biocomponents used in liquid fuels and biofuels (Official Gazette 2003, No 199, item 1934 as amended), economic activity in the field of biocomponents production or storage is a regulated activity within the meaning of the Act dated 2 July 2004 on the freedom of economic activity, and requires an entry in the register of entrepreneurs producing or storing biocomponents.

At the end of 2004, entries in the register of entrepreneurs producing or storing biocomponents were as follows:

- 18 entrepreneurs producing and storing (including one entrepreneur exclusively storing) bioethanol; the declared annual bioethanol production capacity of the entrepreneurs entered in the register totalled 493.6 million litres;
- 2 entrepreneurs producing and storing esters, their declared annual ester production capacity totalling 119.11 million litres.

#### III. 2 Bioethanol production

In 2004, around 48.5 million litres of bioethanol were placed on the fuel market, while the trend in petrol consumption remained downward. The use of bioethanol in petrol over the period 1994-2003 and the estimate for 2004 are set out in Table 2.

Table 2

Year	Petrol consumption <sup>1</sup> - (‘000 m <sup>3</sup> )	Including bioethanol (‘000 m <sup>3</sup> )	% share of volume
1994	7 325	27.0	0.37
1995	8 332	63.0	0.76
1996	6 174	100.9	1.63
1997	6 691	110.6	1.65
1998	6 672	99.8	1.50
1999	7 770	83.2	1.07
2000	6 808	51.4	0.75
2001	6 233	66.4	1.07
2002	5 645	82.8	1.47
2003	5 453	76.2	1.40
2004 – estimated petrol consumption	5 150	48.5	0.94 <sup>2</sup>

1 – the petrol consumption figure provided by GUS (Central Statistical Office) in thousands of tonnes was converted applying:

petrol density = 0.76 kg/dm<sup>3</sup>;

2 – calculating on an annual basis.

#### III. 3 Ester production

The agro-refinery industry in Poland is currently at the project-planning stage or taking preliminary investment decisions. The first biodiesel production facility has been set up at Rafineria Trzebinia S.A, with a planned annual production capacity of 100 thousand tonnes of rapeseed-oil methyl esters.

#### **IV. Level of national indicative target for 2005 – minimum proportion of biofuels and other renewable fuels to be placed on the fuel market**

Under Directive 2003/30/EC, EU Member States are obliged to indicate the level of their national indicative target for fuels used for transport purposes. For 2005 the indicative target was set at 0.5%, by energy content, of all fuels used for transport purposes.

Analysis of the data provided by Poland’s Central Statistical Office on the use of petrol and diesel for transport purposes over the period 2000-2004 shows that the percentage use of biofuels, by energy content, was as follows:

Year	Petrol (’000 tonnes)	Diesel (’000 tonnes)	Bioethanol (’000 tonnes)	Percentage
2000	4 841	2 343	40.55	0.35%
2001	4 484	2 562	52.39	0.46%
2002	4 109	2 940	65.33	0.57%
2003	3 941	3 606	60.12	0.49%
2004	3 953	3 886	38.27	0.30%

In calculating the percentage for 2005, account was taken both of the scope for financing from the State budget and of the fact that the target has to be achievable for biocomponents and fuel producers alike.

It is estimated that, if the level of 0.5% is reached, the associated exemption from excise duty may result in a decrease in budget revenue of around PLN 140 million.

The use of energy from renewable sources is one of the priority measures under the “Second State Ecology Policy”. It is also a priority target in the “Development Strategy for Renewable Energy” (which assumes that in the structure of use of primary energy sources the share of renewable energy in Poland’s fuel and energy balance will increase to 7.5% by 2010) and in “Energy Policy in Poland until 2025”, a document adopted by the Council of Ministers on 4 January 2005.

Prepared at  
The Ministry of Agriculture  
and Rural Development in cooperation with  
the Ministries  
of Economy and Labour, Finance,

Approved by:



Environment, Scientific Research and Information Technology,  
Infrastructure

Under-Secretary of State  
Andrzej Kowalski