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**Second 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**

**Compiled by the Ministry for Agriculture and Rural Development with the cooperation of the Ministry for Economic Affairs and Labour, the Ministry for Finance, the Ministry for Science and Information Technology, the Ministry for the Environment and the Ministry for Infrastructure**

**Poland, June 2005**

**Second 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 meets Poland's reporting obligations 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.

It covers the:

- I. measures taken to promote the use of biofuels or other renewable fuels to replace diesel or petrol for transport purposes;
- II. national resources allocated to the production of biomass for energy uses other than transport;
- III. total sales of transport fuel and the share of biofuels, pure or blended, and other renewable fuels placed on the market in previous years;
- IV. level of the national indicative targets for the first phase;
- V. impact of combustion of liquid fuels on the level of greenhouse gas emissions in Poland.

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

**I.1 Support for use of biocomponents in liquid fuels and liquid biofuels - tax exemptions and tax relief**

The addition of biocomponents to liquid fuels is promoted by means of economic incentives. A tax exemption and tax relief scheme has been in operation in Poland since 1993 on the basis of various Orders issued by the Minister for Finance. Since 2004 the tax exemptions have been brought into line with the approaches taken in the European Union, based on the definitions in the Law of 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 Order of the Minister for Finance of 26 April 2004 on exemptions from excise duty (Official Gazette No 97, item 966, as last amended) has been in force since 1 May 2004. In accordance with the Law of 2 October 2003 on biocomponents used in liquid fuels and liquid biofuels (Official Gazette No 199, item 1934, as last amended), the following biocomponents qualify for exemption from excise duty: bioethanol, including bioethanol contained in ethyl tertiary butyl ether or in tertiary amyl ethyl ether, as well as methyl esters or ethyl esters of all fatty acids obtained from processing oilseed rape or by-products and wastes. The exemption applies to biocomponents intended for use in liquid fuels and liquid biofuels produced from agricultural raw materials, by-products and waste meeting the relevant quality requirements.

The Order also lays down rules governing exemption from excise duty for liquid fuels containing a specified level of biocomponents.

At present, following the amendments made by the Order of the Minister for Finance of 18 November 2004 amending the Order on exemptions from excise duty (Official Gazette No 248, item 2492), the following exemptions from excise duty apply:

- liquid fuels with a biocomponents content of between 2.0% and 5% qualify for an exemption of PLZ 1.5 per litre of biocomponents added to them;
- liquid biofuels with a biocomponents content of over 5% and not more than 10% qualify for an exemption of PLZ 1.8 per litre of biocomponents added;
- liquid biofuels with a biocomponents content of more than 10% qualify for an exemption of PLZ 2.2 per litre of biocomponents added.

These exemptions may not exceed the excise due on the sale of these fuels.

The Order of the Minister for Finance of 18 November 2004 amending the Order on exemptions from excise duty lowered the minimum biocomponents content required in liquid fuels in order to qualify for exemption from 4.5% to 2%. The new 2% minimum for the biocomponents content came into force on 7 December 2004.

In **2004** exemptions from excise duty for use of biocomponents in fuels totalled an estimated **PLZ 68 983 902**. It should be stressed that this is the amount of excise duty relief on sales of petrol containing bioethanol, including bioethanol contained in ethyl tertiary butyl ether (ETBE).

In 2004 practically no commercial-scale production of esters was started up in Poland. Technological commissioning of a plant with production capacity of approximately 100 000 tonnes (113.6 million litres) of esters a year started in December 2004.

## **I. 2 Financial support for research relating to biofuels**

Research relating to biofuels is supported by the State, in the form of funding for research projects.

Five projects are currently underway. They are expected to be completed in 2005 to 2006.

### **Research projects relating to biofuels carried out in 2004-2005<sup>1</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 potential for using vegetable oils (liquid biofuels) in sources of heat for power-generation purposes and of the impact on the natural landscape.

Funding totalling PLZ 1 039 000 (€257 657)<sup>2</sup> is being allocated for the implementation of these projects.

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<sup>1</sup> Research projects – defined research tasks expected to be completed within a fixed timeframe under set conditions.

<sup>2</sup> The amount in euros was calculated at the Polish National Bank's (NBP) exchange rate on 15 June 2005, i.e. 4.0325 zloty = 1 euro.

## **II. National resources allocated to the production of biomass for energy uses other than transport**

One good means of stimulating the development of renewables is financial support for investment in this field. This is particularly beneficial at the first stage as a start-up mechanism when new technology is introduced. Poland has a long-standing tradition of financial support for investment in renewable energy sources (RES), particularly from:

- national, regional, district and local funds for environmental protection and water management: these funds consist of the revenue from fines and charges for use of the environment, including fines for non-compliance with the obligation to purchase energy generated from renewable sources;
- Fundacja Ekofundusz (EcoFund Foundation): the EcoFund subsidises environmental protection projects which are not only important for the region or the whole country but also help to attain ecological goals recognised by the international community as European or even global priorities. One of the five priority areas for grants from the EcoFund is reduction of emissions of greenhouse gases which cause global climate change, which to a large degree includes renewable energy sources.

Public aid for renewable energy sources is regulated by the Order of the Council of Ministers of 27 April 2004 on the detailed conditions for granting public aid for investments relating to renewable energy sources (this Order was notified to the European Commission). This lists the types of investment which could qualify for financial support, inter alia construction or modernisation of installations producing heat and power from renewable energy sources.

The document "Energy policy of Poland until 2025" states that specific action should be taken to ensure that renewable energy sources take their rightful position in the energy industry. From the point of view of development of biomass, the most important measures are:

- maintaining the stability of support mechanisms for the use of renewable energy sources, i.e. creating conditions for safe investment in RES. Continued monitoring of support mechanisms is planned, as well as their enhancement, if needed. Any substantial amendments to these mechanisms will be implemented with appropriate notice, so as to guarantee stable conditions for investment;
- use of biomass in electricity and heat generation. In Polish conditions technologies using biomass will remain the fundamental line of development of RES, but use of biomass for energy purposes should not lead to shortages of wood in the timber, cellulose/paper and timber-processing industries. The use of biomass will have a substantial influence in terms of improvement of agricultural and forest management and should be a key element of agricultural policy. It is assumed that biomass for energy generation will be obtained largely from energy crops. There are also plans to use a wide range of biomass contained in various types of industrial and communal waste, not only from plant and animal production. However, intensive cultivation of energy crops calls for guarantees that the necessary intensive fertilisation will not lead to any deterioration of environmental conditions (water and soil);
- development of industry for renewable energy generation. Greater use of renewable energy sources brings positive effects, particularly in the form of activating labour in areas with high unemployment, by stimulating the development of agricultural production, increasing employment and developing industry and services for renewable energy. The growing use of renewable energy sources will be accompanied by the growth of industry operating in the renewable energy field.

The existing system for co-financing investment in use of renewable energy sources (including biomass) from the funds for environmental protection and water management and other eco-funds is one factor stimulating greater use of RES. Resources from the National Fund for Environmental Protection and Water Management and from the regional, district and local funds for the same purposes are allocated exclusively to supporting the activities specified in the Environmental Protection Act. These include support for harnessing local renewable energy sources and aid for the introduction of more environmentally friendly energy carriers.

Since 1 May 2004 the Order of the Council of Ministers of 27 April 2004 on the detailed conditions for granting public aid for investments relating to renewable energy sources (Official Gazette No 98, item 996) has been in force. Such a measure was necessary in order to obtain approval from the European Commission for aid programmes so that aid could be granted on the basis of principles in line with the Community rules without needing to apply to the Commission for approval to grant aid in each individual case. The Order lists the types of investment which will be able to qualify for financial support, inter alia construction or modernisation of installations producing heat and power from renewable energy sources.

### **III. Total sales of transport fuel and the share of biofuels, pure or blended, and other renewable fuels placed on the market in previous years**

#### **III.1 Sales of transport fuel and share of biofuels placed on the market in 2000-2004**

Analysis of the data provided by the Central Statistical Office and by the Energy Market Agency on use of petrol and diesel fuel shows that the share of biofuels in transport fuels in 2000-2004 was as follows:

Year	Petrol (thousand tonnes)	Diesel fuel (thousand tonnes)	Bioethanol (thousand tonnes)	Share based on energy content
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%

#### **III.2 Number of registered undertakings producing or storing biocomponents**

In accordance with Article 3(1) of the Law of 2 October 2003 on biocomponents used in liquid fuels and liquid biofuels (Official Gazette 2003, No 199, item 1934, as last amended), economic activity in the field of production or storage of biocomponents is a regulated activity, as defined by the Law of 2 July 2004 on the freedom of economic activity, and must be entered in the register of undertakings producing or storing biocomponents.

On 15 June 2005 the number of registered undertakings producing or storing biocomponents was as follows:

- 20 undertakings producing and/or storing bioethanol (including two undertakings only storing bioethanol); the registered undertakings declared annual bioethanol production capacity totalling 501.6 million litres (396 thousand tonnes)<sup>3</sup>;
- 4 undertakings producing and storing esters, with a declared annual production capacity totalling 134.1 million litres (118 thousand tonnes)<sup>4</sup>. In practice, this capacity will come on stream in 2005.

### III. 3 Bioethanol production

In 2004 around 48.5 million litres (38.3 thousand tonnes) of bioethanol were placed on the fuel market. Petrol consumption has been holding steady for the last three years. The figures for use of bioethanol in petrol over the period 1994-2004 and the estimates for 2004 [sic] are set out below.

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	5 564	48.5	0.87

- 1 The petrol consumption figure provided by the Central Statistical Office (GUS) in thousand tonnes was converted applying petrol density = 0.76 kg/l.

### III. 4 Ester production

As mentioned earlier, the agro-refinery industry in Poland is currently at the construction stage and preliminary investment decisions are still being taken. The first biodiesel production facility came into operation at Rafineria Trzebinia S.A in late December 2004, with planned annual production capacity of 100 thousand tonnes (113.6 million litres) of rapeseed oil methyl esters.

<sup>3</sup> Assuming that the specific density of bioethanol = 0.789 kg/l.

<sup>4</sup> Assuming that the specific density of methyl ester = 0.880 kg/l.

#### **IV. Level of the national indicative targets for the first phase (up to 2007)**

The national indicative targets, based on the energy content of fuels used for transport purposes, are:

- **2005: 0.5%,**
- **2006: 1.5%.**

The national indicative target for 2007 will be adopted by 31 May 2006 and the targets for 2008-2010 by 31 May 2007.

The targets to be set for subsequent years will systematically bring Poland up to the level agreed under Directive 2003/30/EC, i.e. **5.75% by 2010.**

##### **IV.1 Level of the national indicative target for 2006**

In calculating the indicative target for 2006, account was taken both of the funding available from the State budget and of the fact that the target has to be achievable for biocomponent and fuel producers alike. Account was also taken of the potential for production of agricultural raw materials for use as fuel. Assuming an indicative national target of 1.5% in 2006, the estimated area under cereal crops required for production of bioethanol to add to petrol should total approximately 167 thousand hectares, while the area under oilseed rape for production of esters to add to diesel fuel would be approximately 102 thousand hectares.

According to the spring situation report on agricultural and horticultural crops issued by the Central Statistical Office in the first half of May 2005, provisional estimates suggest that the area under basic cereal crops this year will be close to the total for the previous year on approximately 7.9 million hectares. The total area under oilseed rape will be approximately 5% lower than the very high level of 583 000 hectares achieved in 2004. The situation as regards winter cereals and winter rape in mid-May this year was close to or slightly worse than in the corresponding period in 2004. The area under, and forecast harvests of, cereals (wheat and rye) and of potatoes - the basic raw materials for bioethanol production - and of rape and colza - the basic raw materials for ester production - will meet the raw material needs of the fuel industry.

The level set for the national indicative target for 2006 was based on the following premises:

- according to the data provided by the Energy Market Agency, in the first quarter of 2005 use of biocomponents in liquid fuels was approximately 25% higher than in the corresponding period in 2004;
- in the third quarter of 2005 an Order on the quality requirements and methods of analysis for biocomponents is expected to be adopted, which will allow use of esters of fatty acids as an additive to diesel fuel;
- preparatory work is in progress on a draft Order on the quality requirements for liquid fuels with an ester content of between 5% and 30%, which will significantly widen the scope for using biocomponents in liquid fuels and liquid biofuels;
- analysis of the technological refinery capacity shows that it is feasible to increase the production potential, which will create the conditions for increasing the shares of biocomponents used in liquid fuels and liquid biofuels, laying the foundation for setting a higher indicative target for 2006.

## V. Impact of combustion of liquid fuels on the level of greenhouse gas emissions in Poland

Under Decision No 280/2004/EC concerning a mechanism for monitoring Community greenhouse gas emissions, Poland is under an obligation to submit an annual inventory of its greenhouse gas emissions. At the moment the Ministry for the Environment is preparing the report for 2003.

Estimates put greenhouse gas emissions in 2003 at:

– Net CO <sub>2</sub> emissions, taking account of absorption:	293 424.41 thousand tonnes
– CH <sub>4</sub> :	1794.58 thousand tonnes
– N <sub>2</sub> O:	78.21 thousand tonnes
– Industrial gases (HCF, PFC and SF <sub>6</sub> ) (actual emissions as CO <sub>2</sub> equivalent):	1937.16 thousand tonnes.

Compared with 2002, net CO<sub>2</sub> emissions rose from 257 576.87 thousand tonnes to 293 424.41 thousand tonnes in 2003.

In the fuel combustion subsector, which is the leading source of CO<sub>2</sub> emissions, emissions from transport accounted for 9.6%. In 2004 a total of 48.5 million litres of bioethanol was used for transport.

Both alcohols and esters can be produced from agricultural raw materials and can, therefore, be classified as "renewable". Assuming that as they grow the crops from which biofuels are produced absorb from the air the same amount of CO<sub>2</sub> as emitted by vehicles as they burn biofuels, thereby creating a closed cycle, it can be assumed that use of biofuels - in this case bioethanol - in place of conventional fuels results in a reduction in CO<sub>2</sub> emissions into the atmosphere.

The amount of CO<sub>2</sub> emitted depends on the carbon content in the fuel and can be expressed by the formula:

$$E_{CO_2} = 3.175 \times Q \text{ [kg CO}_2\text{/1 kg fuel]},^5$$

where Q = fuel used (in kg).

Applying this formula and assuming that 48.5 million litres of conventional fuel would produce emissions of 1 162 605.630 tonnes of CO<sub>2</sub>, compared with zero if biofuel is used in a closed cycle, emissions at national level could be reduced by the same amount.

These calculations show that, based on the 2003 figures, the percentage reduction in national CO<sub>2</sub> emissions as a result of using 48.5 million litres of biofuel is negligible (in the order of 0.000396%).

Considering that transport accounts for a relatively small share of greenhouse gas emissions, the policy to reduce such emissions is concentrating on increasing the share of renewable sources in the energy production sector.

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<sup>5</sup> Figures from the Ministry for Infrastructure.



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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 primary energy mix renewable energy sources’ share in Poland’s fuel and energy balance will increase to 7.5% by 2010) and in “Energy policy of Poland until 2025”, as adopted by the Polish Council of Ministers on 4 January 2005.

As part of the work to incorporate Directive 2003/30/EC into Poland’s legislation, Poland has taken a series of measures to meet the targets set in the Directive.

Considering that in 2004 biofuels and other renewable fuels took a 0.3% share, based on the energy content used for transport, the decision was taken to increase this to 0.5% in 2005, taking account of the real situation and of the level of preparation of the Polish market for this switch. This approach to attaining the targets set by the Directive is provided for in recital 20 and Article 4(1) of the Directive.

Before the indicative targets for 2005 and 2006 were set, a thorough analysis was conducted of the fuel market, from the point of view of use of biocomponents and biofuels for transport and in the light of the figures for previous years. In calculating the indicative target for 2005, account was taken not only of the funding available from the State budget but also of the fact that the target has to be achievable for biocomponent and fuel producers alike. A target of 0.5% calculated on the basis of energy content was set.

The reference value of 2% proposed for this target in Article 3(1)(b) of the Directive is practically unfeasible for Poland, considering, amongst other things, the funding available from the budget and Poland’s technological capacity. Moreover, the measures introduced to promote use of biofuels and other renewable fuels for transport must be not only socially acceptable but also, as mentioned above, closely geared to the funding available from the budget, which is the main form of promoting production and use of such fuels.

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