National Report on biodiesel use in Poland

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BIODIESEL CHAINS

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Project: **Biodiesel Chains**

"Promoting favourable conditions to establish biodiesel market actions"

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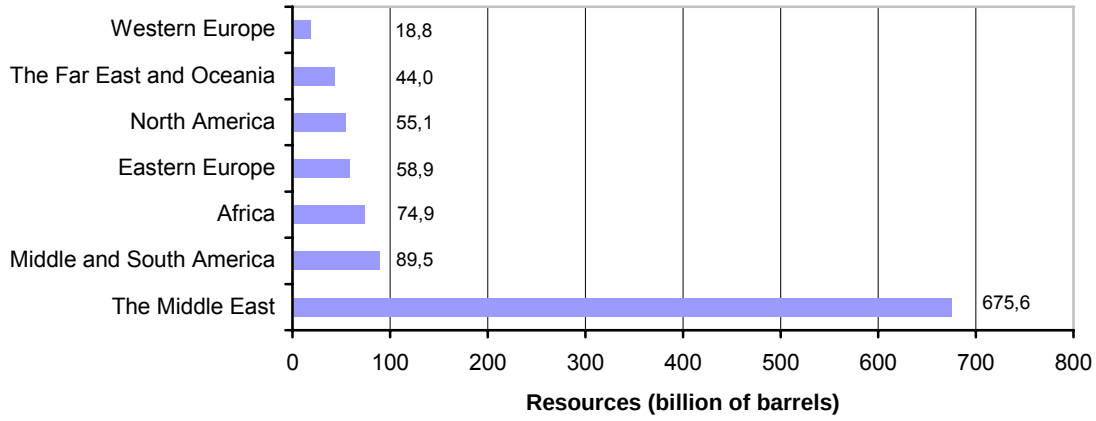
Introduction

The fuel crisis of the 1970s made the world aware of the limited nature of fossil fuels. At present, the threat of exceeding the globe's ecological capacity is often believed to be more likely than the depletion of fuel resources, especially if environmental issues are not given due consideration in the world's energy policy. Hence, it is not surprising that in 1968 the Club of Rome published its report "*The Limits to Growth*", followed a year later by a report of the UN Secretary General, U Thant, who called for urgent international action to save the environment.
According to the principles of sustainable development, reduction of the adverse environmental impact of the energy sector should be a priority for local and national governments. The signatories to the Kyoto and Johannesburg final documents made a commitment to increase the share of renewables in electricity generation to 12% by 2010 and to reduce CO_2 emissions by 8% compared to the base year, i.e. 1999. This is a huge task considering that, at present, energy from renewable sources represents only 5% of total consumption of primary energy.

Renewable energy technologies are now so advanced they can compete with conventional energy systems. RES are local and may therefore contribute to energy security by reducing the need to import fossil fuels; they can also create jobs, especially in small and medium-sized enterprises, and enhance regional development. **Renewable energy sources** are attractive to a growing number of local communities and small investors, as well as large international concerns (British Petroleum, Shell).

At present, oil-based fuels (petrol and diesel oil) are the basic energy source for vehicles. The forecasts may vary, but sooner or later these fuels will have to be replaced. Their adverse environmental impact on one hand and their limited resources on the other have prompted a search for alternative fuels.



EU regulations require that by 2010 emissions from vehicles should meet the present air quality criteria. Vehicle emission standards (Euro 3, Euro 4, Euro 5) are therefore becoming increasingly stringent and difficult to comply with. By 2008, vehicle manufacturers have to significantly reduce CO_2 emissions. Direct injection and improved engine design solutions have increased the chances of combustion engines as a viable solution for vehicles, provided that they run on fuels that will make it possible to reduce emissions of toxic exhaust gas components.

1. Outline history of biofuel and biocomponent use.

The history of Polish oilseed rape fuel began in the 1990s at the Radom Engineering University where an oilseed rape fuel production process was developed and tests with "Tarpan" cars running on rape were launched. Between 1993 and 1997, research in this area was continued at the Institute of Aviation where various Polish and foreign fuels were tested. Most Polish-made engines and some foreign engines were tested in laboratory conditions. The test with the Polonez Caro Diesel car, which ran more than 170 000 km on 100% pure oilseed rape fuel confirmed the suitability of Polish rape fuel.

Research on alternative fuels was also carried out by the Polish Armed Forces at the Tadeusz Kościuszko Army Academy in Wrocław, with colonel Mieczysław Struś (PhD Eng) in charge of the programme. Tanks and armoured vehicles running on ecological fuels were tested at an army training ground near Wrocław. Tests with T-72 tanks and BWP-1 armoured personnel carriers were a success, although further optimisation of physical and chemical fuel parameters was recommended for logistic reasons.

In 1994, the Industrial Institute of Agricultural Engineering [Przemysłowy Instytut Maszyn Rolniczych (PIMR)] in Poznań began research on the use of oilseed rape fuel in farm tractor engines. PIMR built and tested a small-scale rape tractor fuel production installation, known as "agro-refinery", which produced diesel oil for processing plants. In the installation developed by PIMR, rape fuel esterification takes about 30 minutes while gravity settling is a time-consuming process taking about 16 hours. In rural conditions, refineries with a capacity of 160-400 litres will be optimal for converting rape oil into tractor fuel. Therefore, in 1998, the Institute developed complete design documentation of a rape fuel installation with a capacity of 400 litres per day. It was estimated that the cost of the installation should not exceed PLN 40 thousand in small lot production conditions.

At present, biodiesel is a mixture of rape oil methyl ester and diesel oil mixed in various proportions, e.g. B20 and B5 contain 20% and 5% of the ester, respectively, etc., or a mixture of ethanol and diesel oil. World production of rape-based diesel, dominated by EU countries, is currently about 16 times smaller than the production of bioethanol (about 1.75 million m^3/year in 2004).

BIOETHANOL

During World War II, Germans used methyl alcohol (CH_3OH) as fuel. Methanol can be made from virtually anything: woodchips, branches, shrubs, all sorts of organic waste and hard coal. The burning of one litre of methanol yields just half of the energy released from a litre of conventional fuel, but its production is extremely cheap.

Since the mid 1970s, the USA, Germany and Sweden have been conducting government-sponsored research. The American company Vulcan Cincinnati developed and began to sell fuel containing 85-95% of methanol, higher alcohols and ether. However, the scientists were unable to prevent engine corrosion caused by contact with the alcohol and leading to rust clogging fuel filters, nozzles and the carburettor. Furthermore, methanol exhaust gas, although less toxic, smelled awfully. It turned out that the only acceptable use of this fuel is as an additive to petrol, in amounts of up to 10%.

In the 1980s, the use of ethyl alcohol for fuel production purposes began. European producers started adding 10% of ethanol to unleaded petrol. At present, the USA's annual production of this fuel, derived mainly from corn, is about 3.5 billion litres. However, the country where ethanol really caught on is Brazil, where more than a million specially-adapted cars currently run on alcohol produced from sugar cane and 12 billion litres of sugar cane based fuel is produced annually, which covers about 30% of the petrol demand. In the USA, the annual production of bioethanol fuel is 10 billion litres.

Raw materials for biofuel production.

- **sugar cane, fruits, cereals, rice, maize, potatoes, vegetables and other agricultural products** containing monosaccharides (fructose, glucose or saccharose) or polysaccharides (starch). As a result of fermentation of these saccharides, alcohols, and in particular ethanol and fusel oil (alcohols with longer carbon chains and esters), or ETBE (ethyl tertiary butyl ether) - $C_2H_5OC_4H_9$, are obtained.
- **grass, wood, straw, corn cobs, farm and food wastes and farm products containing cellulose**. They may also be converted into ethanol; however, technologies more advanced than fermentation are required. Cellulose may be gasified to give hydrogen, methane or other gases, which may then be used to synthesise liquid fuels such as biomethanol, DME (dimethyl ether) - CH_3OCH_3 and even synthetic petrol or diesel oil.
- **rape, sunflower, soya beans and other oil plants**, whose oil is converted into methyl esters used directly as fuel or mixed with diesel oil in various proportions.
- **organic waste**: from animal farms, crop fields, food processing plants, municipal wastewater treatment plants, landfills, etc.; all these types of waste may be converted into biogas (as a result of anaerobic digestion) or into liquid fuels (as a result of thermal decomposition).

The prospects for biofuels depend on many factors, such as development of other alternative fuels, agricultural policy, social advantages, price, improvement of rape ester properties. The form in which the fuel will be used (rape oil esters, rape oil blends in diesel oil, emulsions of esters in diesel oil or refinery-cracked oil) may be of great importance. Production processes will have to be modified to improve some of the properties of biodiesel, e.g. decrease

viscosity, improve low-temperature performance and stability during storage or decrease the number of sediment-forming components. Efficient and quick methods of process and product quality control need to be developed.

2. EU standards and Polish regulations concerning biofuel and biocomponent use.

The legal framework regulating the biofuel market in the European Union is included in **Directive 2003/30/EC on the promotion of the use of biofuels or other renewable fuels for transport,** a framework directive, leaving the Member States much freedom as concerns development of the relevant national regulations. Community law only governs certain key issues which must be implemented in national legislation. In addition to providing a general definition of the term "biofuels", Directive 2003/30/EC obliges the Member States to take measures aimed at gradually increasing the share of biofuels in overall fuel consumption for transport purposes.

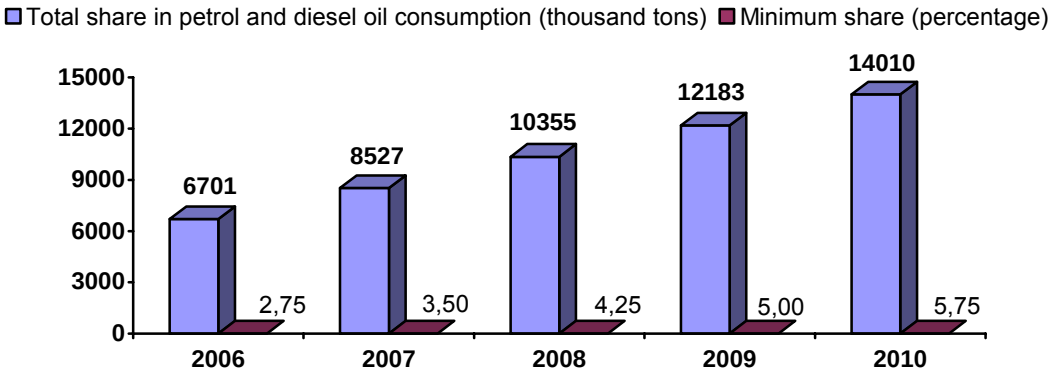


Figure 2. Minimum biofuel content in fuels according to the EU Directive.

The Directive sets for the end of 2005 a target of a 2% share of biofuels in the fuel market (calculated on the basis of energy content). It also requires that the share of biofuels in total fuel consumption in each Member State be 5.75% (calculated on the energy content) by 31 December 2010. In 2005, in most Member States the share of biofuels in the fuel market was only 1.4%; Germany and Sweden were the only Member States to achieve the target 2% share of biofuels in the fuel market.

Directive 2003/30/EC also obliges the Member States to develop measures ensuring promotion of biofuels. State aid may be granted to this end. In order to channel State aid for this purpose, Community regulations allow the Member States to introduce exemptions and reductions in excise duty and in energy tax on biofuels. They also allow support for biofuel-related research and development as well as for selected types of agricultural production.

Although Directive 2003/30/EC imposed an obligation on the Member States to develop biofuel promotion programmes, the programmes are subject to State aid control procedures, in accordance with Article 87 of the Treaty establishing the European Community. The programmes must be notified to the European Commission and approved by it before they are implemented.

Within the limits of European legislation, Member States implement various measures to strengthen the biofuel market. Taxation instruments, involving energy tax or excise duty

reductions and exemptions, are the most commonly used measures. Tax exemptions on cars with engines adapted to run on biofuels are another example.

Support for research and technological development in the form of pilot projects and research programmes on new biofuel blends is also very important. Member States also encourage some user groups to increase the share of biomass in fuel blends. This is the objective of the so called captive fleets programme, promoted i.a. by the European Commission. The demand for biofuels is boosted by encouraging public administration bodies and their subsidiaries to use higher concentrations of biomass in fuels. Support for agriculture through excise duty exemptions and an obligation to add biomass to liquid fuels is another method of biofuel promotion.

Two support mechanisms are particularly noteworthy, as they are the most often used by the EU Member States and form the core of the biofuel market support system. The first are excise duty reductions and exemptions. The second mechanism is the obligation to add specific quantities of biomass to liquid fuels.

Special tax arrangements apply to the production of biofuels and fuels containing biomass. In accordance with Article 2 (3) of Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity (OJ L 283, 31.10.2003), all raw materials used for producing liquid fuels, including biomass, which may be used as motor fuel or as an additive to liquid fuels, shall be taxed with excise duty.

According to Article 16 of Directive 2003/96/EC, in the case of biofuels, Member States may apply excise duty exemptions or reductions. However, they may do so on certain conditions. The duty reductions are considered State aid which may not be granted without prior approval by the European Commission. In each case, the Commission examines whether the aid would lead to unjustified disruption of free market mechanisms and whether it complies with the rules of granting State aid for environmental protection. Among issues considered in the course of the procedure are the benefits of producing energy from biomass instead of fossil fuel-based energy.

The Commission also examines whether State aid granted in the form of tax exemptions and reductions would not result in excessive benefits to biofuel manufacturers. State aid should merely compensate additional costs connected with the production of such fuels, and as such cannot generate additional profit for the manufacturers.

Another mechanism used by some EU Member States is the obligation to ensure a certain share of biofuels in the fuel placed on the market. This mechanism is also used by many states outside Europe, e.g. the USA and Brazil. It ensures demand for specific quantities of biomass and biofuels on the market. The mechanism benefits all those involved in the production of the fuel, i.e. both the farmers and those who process the raw materials. It may function along with tax exemptions/ reductions and with other forms of support.

It would be reasonable to introduce such a system in Poland. It would ensure a high level of security for investments in this sector. One should also have in mind that biofuels may be promoted by supporting agricultural production of biomass for fuel purposes.

According to EU legislation applicable to Poland, farmers who invest in the production of biomass for fuel purposes receive uniform direct subsidies per hectare of farmland (SAPS – simplified single area payment scheme) maintained in good agricultural condition. These payments are made by the Agency for Restructuring and Modernisation of Agriculture

[Agencja Restrukturyzacji i Modernizacji Rolnictwa (ARiMR)]; in 2005 the rate was PLN 225 per each hectare.

In addition, subsidies are granted for farmland area on which oil plants such as the rape, agrimony, sunflower and soya are grown. The subsidies are proportional to the crops area. Payments are made by the Agency for Restructuring and Modernisation of Agriculture; in 2005 the rate was PLN 282.35 per each hectare.

Subsidies for certain energy crops, such as willow or multiflora rose should also be mentioned. The Agency for Restructuring and Modernisation of Agriculture makes the payment on the basis of an administrative decision which it issues upon receipt of an appropriate application from the farmer. One of the conditions is that the farmer must have a contracting agreement with a firm which processes the raw material in question to produce fuel.

3. Trends in biofuel market development.

A decision to enter the biofuel sector should be based on the knowledge of current regulations as well as the trends in the relevant legislation.

A breakthrough in the promotion of biofuels in Poland requires the strengthening of their competitive position in respect to crude oil-derived fuels. This may be achieved by tax reductions or by direct support for biofuel production (subsidies for farmers growing e.g. rape for fuel purposes or income tax exemptions for biofuel manufacturers). Experience of European countries, particularly EU Member States, in the introduction of biofuels (particularly ETBE and methyl esters of rape oil) indicates that, in the short and medium term, tax reductions are the most effective method of ensuring biofuel competitiveness. In the European Union, tax reductions for biofuels are diversified. European Community authorities would rather see a uniform approach to taxation of all biofuels in the European Union.

Table 1. Tax and financial incentives provided by EU Member States to promote biofuel production.

State	Tax and financial incentives promoting biofuels
Austria	95% tax reduction on vegetable oil methyl ester (RME) used in pure form as motor fuel
Belgium	100% tax reduction on pilot biofuel production, for installations with capacities below 5 000 tons/year; the mechanism was in place in 1994-1996
Finland	Tax reduction for reformulated diesel oil (0.025 ECU/litre) and reformulated petrol (0.008 ECU/litre)
France	Tax reduction for vegetable oil esters added to diesel oil (0.35 ECU/litre) and for ETBE added to petrol (0.22 ECU/litre)
Germany	Exemption from excise duty on vegetable oil esters substituting diesel oil. The exemption applies to 100% ester fuel as well as ester/diesel oil blends.
Greece	No tax incentives
Ireland	No tax incentives
Italy	Tax exemption on 125 000 tons of vegetable oil esters per year, in place until 30 June 1995.
Spain	Tax exemption on experimental use of vegetable oil esters

The Netherlands	No tax incentives

The first trend, or policy axis, will be to stimulate demand for biofuels by privileged treatment and public procurement preferences for energy-efficient and environment friendly technologies. In addition, the Commission encourages the Member States to develop national regulations promoting the use of biofuel-rich fuel blends by selected public and private car fleets. Examples of such fleet owners include municipal or private city transport companies. Similar mechanisms may also be used with regard to fishing or leisure boat fleets.

The second axis will be to highlight the environmental benefits of biofuels to promote their use. The relevant measures will aim at diversifying incentives for biofuels depending on their impact on greenhouse gas emissions. The impact of energy crops on the soil and as well as local flora and fauna will also be taken into account.

The third axis will be to develop the production and distribution of biofuels. This trend is particularly important for Poland which has a significant biomass production and processing potential in rural areas, where labour costs are relatively low and resources are abundant. Development of biomass production for energy purposes could contribute to increased employment and economic development, which is in line with the Community cohesion policy. In such areas, farmers may be retrained to adapt their skills to the requirements of biofuel production.

The fourth axis concerns expanding feedstock supplies. The common agricultural policy reform will increase the financial attractiveness of energy crops. The sugar market reform, new principles of intervention on the wine market and additional subsidies for energy crops in the amount of euro 45 per hectare, currently being negotiated in the Council of the European Union, will further enhance the use of agricultural products for energy purposes. New principles related to wood production and use for energy purposes will also add to the expansion of feedstock supplies, particularly by encouraging the production of “second generation biomass”. Furthermore, measures in this area will include more efficient use of organic wastes for energy purposes.

The fifth axis will be to enhance trade opportunities. Measures will be taken to facilitate the import of specific quantities of biomass to the Community to supplement EU internal biomass production. Introduction of separate nomenclature codes for biofuels to improve control of biomass imports for energy purposes will also be considered.

Finally, measures aimed at encouraging research and technological development in the field of biofuels will be taken. They are to reduce the real cost of research by about 30%. The Seventh Framework Programme will support measures aimed at decreasing the unit costs of biofuels through the development of “second generation” biofuels, as well as measures improving biomass production technology (bio-refinery concept).

Development of the biofuel market is one of the strategic goals of the European Union energy policy. This will be of relevance to the development of this sector in Poland. Biofuels may prove to be profitable both for farmers producing biomass and firms processing biomass into liquid fuel components and biofuels. Regulations on the import of feedstock supplies from third countries will also be of importance. New national regulations in this field may be expected in 2006. They will determine the future of the biofuel sector in Poland. Taking into account Poland’s commitments towards the European Union, the sector is likely to experience a boom in the nearest future.

Energy crop area will depend on the national indicative targets concerning the share of biofuels in liquid fuels, set for specific years. For the national indicative targets of 0.5% and 1.5% to be achieved in 2005 and 2006, respectively, the estimated area of cereals for bioethanol production should have been about 56 thousand ha and 167 thousand ha, in 2005 and 2006, respectively, and the area of rape grown for the production of esters should have been about 34 thousand ha and 102 thousand ha, respectively.

Crop production for fuel purposes and the first stage of processing towards biofuels may be supported within the framework of existing agricultural programmes. Financial support mechanisms for the modernisation and construction of biocomponent installations are to be introduced within the framework of the National Development Plan.

All those concerned agree that there are no economic barriers limiting the expansion of biocomponents on the liquid fuel market, as regulations on excise duty rates and duty exemptions and reductions have been kept in place and modified as required. What worries potential investors is the lack of legal guarantees that the reductions and exemptions will be maintained in the long term, even though they have already been in place for more than a decade. The existing three-threshold solution promotes higher proportions of biocomponents in liquid fuels (particularly blends with a biocomponent content of more than 10%) and its attractiveness increased after the recent rise in oil prices. Firms adding biocomponents to liquid fuels are eligible for excise duty reduction calculated per litre of biocomponent, the rate depending on the percentage of biocomponents in liquid fuels, i.e. PLN 1.50 for fuels with biocomponent content of 2 - 5%; PLN 1.80 for fuels containing from 5% to10% of biocomponents and PLN 2.20 for fuels with biocomponent content exceeding 10%. Unfortunately, there is no clear answer nor documented evidence that could explain why, despite the fact that public funding has been mobilised to ensure profitability of blending biocomponents in liquid fuels, the share of biofuels has just reached its lowest point in 10 years instead of increasing as required by Poland's international obligations and as would be in the country's social and economic interest.
The producers are right when they say there is no demand for biocomponents. On the other hand, the opinion that fuel and biofuel producers and distributors do not exhibit market behaviour is probably a simplification. The above assessment was based on an analysis of existing regulations and their interpretation and on their ultimate impact in the form of the share of biocomponents in the liquid fuel market. At present, seven acts and five regulations of various ministers (Annex 4) govern the issue of biocomponents and biofuels For years, the existing legal framework has been allowing the use and sale of bioethanol as a valuable petrol component, in amounts of up to 5.0 % (by volume) of anhydrous alcohol, and/or about 7.0 % of bioethanol contained in ethyl tertiary butyl ether. The actual bioethanol content depends on technological, technical and other considerations and the decisions are taken by the petrol producer. On the other hand, the explanations provided by the Energy Department of the Ministry of Economy indicate clearly that the existing legal framework does not allow trading in petrol containing more than 5.0 % of bioethanol in the form of anhydrous alcohol, or in Biodiesel containing more than 20% of rape oil ethyl esters and methyl esters. Hence, the barrier to biofuels is not a result of a competence dispute, but of a 3-year delay in the introduction of regulations allowing trade in biofuels (including petrol-based biofuels and multi-component fuels). Most states which do not have their own mineral oil resources have solved this regulatory problem a long time ago and since then have recorded significant progress in promoting biofuels on the market. It turns out that the same is not possible in Poland. Therefore, I believe that the explanations provided are a very far reaching simplification. The statement that Poland lacks the technical knowledge required to draft its own regulations is completely unfounded. The original version of the Biofuel Act did not provide for the issuing of regulations on biofuel quality requirements. The Biofuel Act defined biofuels as "*pure esters constituting motor fuels, motor petrols containing more than 5% of*

bioethanol or more than 15 % of ethers and diesel oils containing more than 5 % of biocomponents and ***meeting the quality requirements for liquid fuels specified in separate standards.*** An identical clause was introduced to the Act of 10 January 2003 *on liquid fuel quality monitoring and control system.* **This was a very safe solution for car users, with acts of parliament setting the quality standards for biofuels on the same level as for conventional liquid fuels (**without the need to issue separate regulations**).** Unfortunately, on 23 January 2004 (23 days after the Biofuel Act entered into force) this provision became invalid and from this date onwards, biofuel quality may only be determined by government regulations.
The lack of clear legislation prevents trade in biofuels and rules out investment decisions. Banks treat investments in the construction of agro-refineries (ester installations) as high risk investments. As a result, the process of building adequate feedstock supply capacity is delayed, and if the assumption that the fuel market will eventually need about 700 – 1 000 thousand tons of esters per year (this is equivalent to an annual demand for 2.0 – 3.0 million tons of rape) is true, then reaching this capacity may take more than ten years. According to many experts, with whom I agree, the supply of raw materials for the production of bioethanol in Poland is sufficient and the existing bioethanol production capacity can exceeds the future (2010) national demand for renewable fuels created by Directive 2003/30/EC on the promotion of the use of biofuels or other renewable fuels for transport. Production and/or storage of biocomponents is an activity governed by the Act of 2 July 2004 on the freedom of economic activity and as such requires registration in the register of entrepreneurs producing or storing biocomponents. Registration is based on trust in the potential biocomponents producer, who submits an application containing basic company information as well as a declaration on the place of production and the type and quantity of biocomponents to be produced. Production of biocomponents involves handling of ethyl alcohol (on which excise duty is charged when it is intended for non-fuel purposes) or methyl alcohol (highly toxic) and fuels; therefore, the production and distribution of these products is subject to special fiscal monitoring.

So far, several dozen entrepreneurs producing and storing biocomponents (including a few entrepreneurs who only store bioethanol) have been registered. In total, they have declared the capacity to produce **511.2 million litres** of bioethanol per year. The raw material for the production of bioethanol, i.e. dehydrated ethyl alcohol, is agricultural ethyl alcohol which in Poland is produced mainly by small farm distilleries with average annual capacities of 1 - 2 million litres. In Poland, about **300 entrepreneurs** produce agricultural ethyl alcohol, while a similar number of licensed entrepreneurs do not engage in production due to insufficient demand. In recent years, production volume has been ranging from **190 to 230 million litres** of pure alcohol, while the production capacity is about 600 million litres of alcohol per year. In addition, 16 entrepreneurs producing and storing esters (including two entrepreneurs who only store esters) have been registered. The declared ester production capacity is **239.41 million litres** per year. The first registered biodiesel production installation was built in Trzebinia Refinery (PKN Orlen Group), and its process start-up took place in December 2004. Its annual production capacity is 100 thousand tons (113.6 million litres) of rape oil methyl esters and may be increased. In late 2005, Kompania Spirytusowa Wratislavia Polmos S.A. in Wrocław approved the process design of an installation for producing 150 thousand tons/year of higher fatty acid esters.

Fulfilment of the international obligations described above urgently requires brave decisions capable of changing the attitude towards renewable fuels and measures showing that biofuels are safe and cost-effective. The prices of liquid fuels containing “bio” additives should be lower than those of so- called standard fuels. Such an approach would be justified by the fact that public support in the form of tax breaks is granted for the production of biofuels and that their energy content is lower. In my opinion, a package of measures

required for the mobilization of the existing renewable transport fuels potential should be developed in the context of the work on an emergency plan for the oil market and should include the following:

a) fast-tracking the drafting and implementation of the missing regulations of the Minister of Economy and Labour concerning the quality of, and quality control methods for, esters as well as petrols and diesel oils containing over 5% and over 20% of biocomponents, respectively;
b) fast-tracking the development and implementation of the *2007-2013 long-term programme for the promotion of biofuels and other renewable fuels*;
c) initiation (by the Ministry of Economy and the fuel sector) of measures aimed at placing three-component (multi-component) fuels on the market; for example, in Sweden, a significant percentage of the public transport fleet runs on B-85 fuel (about 80 - 85% of bioethanol, between 10 and 20% of petrol and 1-3% of stabilizers) (this, however, requires minor engine design modifications) and on E 95 (95% of bioethanol);
d) initiation of work on *"agricultural fuel*" to place on the market diesel oil containing about 10% of bioethanol, 20 – 30% of esters and 60 – 70% of so-called standard diesel oil. Existing Polish technologies and proposals for manufacturer standards may be useful in this context. Agricultural fuel does not require any engine or vehicle design modifications.
e) assessment of the possibility of introducing legislation (similar to laws already in place in many US states) which would:

- oblige Polish state and public transport operators to buy vehicles designed to run on fuels containing more than 5% of biocomponents (particularly public buses and company cars);
- introduce an obligation to run these vehicles on biofuels (petrol containing at least 8-10% of bioethanol and diesel oil containing at least 30% of esters) for which their engines have been designed;

f) analysis of the legal feasibility of linking excise duty reductions on liquid fuels containing biocomponents with the principle that fuel price should be proportional to its energy content (this would be justified in the context of State aid being given and the lower energy content of biofuels);
g) analysis of the legal feasibility of introducing charges on fuel manufacturers for selling fuels which lead to increased greenhouse gas emissions. A similar rule is already in place in the case of electricity, whereby producers are obliged to generate a certain percentage of electricity from renewable sources. Non-compliance results in severe penalty charges;
h) securing financial support for the construction of agro-refineries, i.e. ester installations (and eventually bioethanol installations); considering their significance for national energy security and environmental protection, they should be supported in a similar way as in other EU Member States and be given due attention in the National Development Plan for 2007 -2013,
i) initiation and prompt finalisation of legislative work required for full implementation of Directive 2003/30/EC.

The current political situation in Poland allows to predict that by 2007 biomass-derived renewable fuels will play a significant role on the liquid fuel market. Poland has the feedstock supply and processing potential to ensure that by 2010 renewable fuels, including biocomponents, will constitute at least 5.75% of the liquid fuel market.

Current proposals on the national biofuel policy and on biofuel market regulation are included in three parliamentary drafts and one government draft of the new biofuel act:

- Act on biocomponents and liquid biofuels – government draft

- Act on biofuels, renewable fuels and principles of their promotion – draft of the Law and Justice [Prawo i Sprawiedliwość] Parliamentary Club
- Act on the organisation of the liquid biofuel market – draft of the Parliamentary Club of the Self Defense of the Republic of Poland [Samoobrona RP]
- Act on the promotion of biofuels or other renewable fuels – draft of the Parliamentary Club of the Democratic Left Alliance (SLD).

The parliamentary drafts define the basic rules concerning biofuel sales. The PiS draft stipulates that biofuels may only be sold from separate, appropriately marked pumps. In addition, the parliamentary drafts contain proposals concerning quality control of biocomponents available on the market. All three drafts propose that the Trade Inspection be in charge of quality control.

The drafts include detailed time schedules for increasing the consumption of biofuels or other renewable fuels in transport. For example, according to the SLD draft, entities placing fuels on the market shall ensure that the share of biocomponents in fuels placed on the market is at least 1.5% by the end of 2006. From 1 January 2010 onwards, the share of biofuels is to be at least 5.75%. The drafts also include proposals on the regulation of biocomponent production and storage. For example, according to the Self Defense draft, biocomponent production and storage will need to be registered with the Minister of Agriculture.

The government draft biofuel act proposes to introduce an obligation to add ethanol or rape esters to all fuels. Each litre of petrol would contain 4 to 5% of ethanol, and each litre of diesel oil would contain 4 to 5% of esters. The government describes the EU target for 2010 (5.75% share of biofuels in liquid fuels, calculated on the basis of energy content) as “feasible”.

Since 2004, the tax exemption and reduction system has been shifting towards the model prevailing in the European Union and, with due consideration for definitions included in the Act of 2 October 2003 on biocomponents added to liquid fuels and liquid biofuels and in Directive 2003/30/EC of 8 May 2003 on the promotion of the use of biofuels or other renewable fuels for transport.

On 1 May 2004, the Regulation of the Minister of Finance of 26 April 2004 r *on excise duty exemptions* (Dz.U. [Law Gazette] No 97, item 966, as amended) came into force. In accordance with the definition included in the Act of 2 October 2003 *on biocomponents added to liquid fuels and liquid biofuels*, excise duty exemption was broadened to include rape oil methyl esters, in addition to bioethanol and ethyl tertiary butyl ether. According to the cited definition, biocomponents include ester and bioethanol, including bioethanol contained in ethyl tertiary butyl ether or in ethyl tertiary amyl ether and pure esters used as motor fuels. The exemption covers biocomponents intended for use in liquid fuels and liquid biofuels, made of agricultural products, by-products and wastes which meet the relevant quality standards.

The Regulation also regulates eligibility for excise duty exemptions in return for adding specific proportions of biocomponents to liquid fuels.

Currently, following changes introduced by the Regulation of the Minister of Finance of 18 November 2004 amending the regulation on excise duty exemptions (Dz.U. No 248, item 2492), the following products are exempted from excise duty :

- liquid fuels containing from 2% to 5% of biocomponents – in the amount of PLN 1.5 per litre of biocomponents added to these fuels,

- liquid biofuels containing more than 5% to 10% of biocomponents – in the amount of PLN 1.8 per litre of biocomponents added to these fuels,
- liquid biofuels containing more than 10% of biocomponents added to these fuels – in the amount of PLN 2.2 per litre of biocomponents added to these fuels; however, the exemption shall not exceed the full excise duty on the sale of these fuels.

The Regulation of the Minister of Finance of 18 November 2004 amending the regulation on excise duty exemptions sets the threshold of eligibility for exemption at 2% of biocomponents in liquid fuels, instead of the previously applicable 4.5%. The new 2% biocomponents content threshold has been in force since 7 December 2004.

The Ministry of Economy wants to exempt specific quantities of biofuels produced by farmers for their own needs (for example, the League of Polish Families [Liga Polskich Rodzin – LPR] wants to allow farmers to produce biodiesel or pure rape oil for fuel purposes in the amount of 100 litres per hectare per month). A similar privilege would also be granted to the public transport fleet (excise duty free fuel would only be available in in-house filling stations closed to the general public).

Critics of this idea argue that the state will suffer a loss if it does not impose a fuel tribute on farmers and that a gap would be created, allowing to place large amounts of excise free fuel on the market. Roman Kluska, former CEO of OPTIMUS, now a farmer and promoter of in-house production of biofuels, argues that, in a similar fashion, legal production of up to 100 litres of wine per year has been possible for years and this apparently has not led to the development of a black market with any noticeable impact on wine importers and producers, or the budget. Anyway, the state lacks the resources to control the farmers. Most countries use similar tax incentives to promote the use of biofuels in public administration cars and the public transport fleet.