

# PROMOTING BIOFUELS IN EUROPE



Securing a cleaner future for transport

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The European Commission's Directorate-General for Energy and Transport develops and implements policy in these closely linked areas. The 2000 Green Paper entitled 'Towards a European strategy for the security of energy supply' analysed Europe's structural weaknesses: energy consumption is rising, while the EU is becoming increasingly dependent on external sources of energy. At the same time, to respect its commitments under the Kyoto Protocol, the EU must reduce its production of greenhouse gases. The Green Paper proposes a strategy to diversify energy imports, to reduce energy consumption in Europe through improved energy efficiency, and to increase the use of renewable energy sources. Promoting the use of biofuels for transport – one of the biggest consumers of energy in Europe – will make a contribution to meeting the goals set out in the Green Paper.

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## INTRODUCING THE EU BIOFUELS DIRECTIVE

**T**he biofuels directive <sup>(1)</sup> is one component of an active European energy policy that seeks to optimise energy use by safeguarding the energy supplies needed to fuel Europe's socioeconomic growth and to promote sustainability. Renewable energy sources and energy efficiency both play a role in this. The EU has adopted a series of directives to promote renewable energy sources and to encourage energy efficiency. These directives set legislative frameworks for Member State action to meet a range of energy objectives in sectors such as heating, electricity and transport. The biofuels directive, explained here, is one such directive.

The biofuels directive concerns energy used for transport. Adopted in 2003, it aims to promote the substitution of conventional transport fuels – diesel and petrol derived from oil – by biofuels derived from agricultural crops, notably biodiesel and bioethanol. To achieve this, the directive, accompanied by the energy taxation directive <sup>(2)</sup>, sets indicative targets for biofuel substitution and then gives a legal framework for fiscal and other national measures to promote biofuels. Biofuels serve European energy policy in a number of areas. As they are easy to produce in Europe they contribute to the diversification of energy sources, and thus, to the security of supply. In addition, because of their non-fossil origin, biofuels are better for the environment and they help Europe meet climate change commitments.

The biofuels directive sets indicative targets for the biofuel share of all transport fuels at 2 % by 2005, and 5.75 % by 2010. Member States have to set their own targets for biofuel substitution that take account of the overall European targets.

Achieving the biofuel targets will affect many other policy areas, such as agriculture, fiscal policy, international trade and employment. This requires great care in designing measures to promote biofuels, as unfavourable outcomes might arise in a different sector. Recognising this complexity, the directive establishes regular reporting requirements from the Member States to the Commission in order to judge progress and identify good and not-so-good practice.

The biofuels directive tackles the transport sector, a difficult field for policy because it is heavily dependent on a fossil fuel, oil, where fuel substitution is hard to achieve, and also because we, as citizens, have learned to love our cars for the freedom and mobility they bring. In addition, it is proving a difficult task to persuade industry to move freight transport off the road and onto rail and ships. Yet current trends for road passenger and freight transport are unsustainable. The biofuels directive helps us tackle these difficult issues.

<sup>(1)</sup> Directive 2003/30/EC of the European Parliament and the Council of 8 May 2003 on the promotion of the use of biofuels or other renewable fuels for transport (OJ L 123, 17.5.2003, p. 42).

<sup>(2)</sup> Directive 2003/96/EC of the Council of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity (OJ L 283, 31.10.2003, p. 51).



## CLEANER TRANSPORT – THE WIDER CONTEXT

Europe leads the world in the development of diversified renewable energy sources – the result of a sustained effort at European, national and local level over a period of 25 years or more. Recognising that renewable energy sources (RES) are under-exploited in Europe, the 1997 White Paper, 'Energy for the future: Renewable sources of energy' <sup>(3)</sup>, gave a clear political signal and an impetus by putting forward an indicative target – increasing the contribution of renewable energy sources from 6 % to reach 12 % of European gross energy consumption by 2010.

### The risks of dependence

The 2000 Green Paper <sup>(4)</sup> on the security of energy supply raised concerns about Europe's dependence on energy imports. Europe currently imports 50 % of its total energy needs – making our social and economic well-being vulnerable to events elsewhere in the world. And this dependence is growing – so future generations will be even more at risk of supply disruption. Transport is in an even more precarious situation as it relies heavily on oil – 80 % of which is imported. The Green Paper forecasts that passenger

transport in EU-15 will rise by 19 % between 1998 and 2010, and goods transport by 38 % over the same period. Growth in the new Member States will be even faster as their economies rise to reach European norms. Dependence on oil brings severe risks of social and economic disruption if supplies falter. The Green Paper therefore identifies indigenous, diversified renewable energy sources as a key component of Europe's energy strategy, with biofuels as an attractive option. The Green Paper put forward a target of 20 % substitution of conventional fuels by alternatives such as biofuels, natural gas and hydrogen, by 2020.

### A climate of commitment

In 1997, the international Kyoto Protocol on greenhouse gas emissions was signed. As Europe produces around 14 % of the greenhouse gases that contribute to global warming, the EU is determined to confront the causes of climate change. At Kyoto, the EU committed itself to an 8 % reduction in annual greenhouse gas emissions by 2010 compared with the 1990 level.

<sup>(3)</sup> European Commission 1997 White Paper for a Community strategy and action plan, 'Energy for the future: Renewable sources of energy', COM(97) 599, final.

<sup>(4)</sup> European Commission 2000 Green Paper, 'Towards a European strategy for the security of energy supply', COM(2000) 769, final.

Transport fuels account for 32 % of total EU energy consumption and road traffic is forecast to increase massively – so increased use of substitute fuels is vital to achieve the 12 % target for renewable energy sources. Transport overall produces 28 % of Europe’s carbon dioxide emissions and road transport will account for 90 % of the growth in these emissions until 2010 – so implementing substitute fuels that reduce CO<sub>2</sub> emissions is vital to meet the Kyoto Protocol commitments.

The White Paper on European transport policy (5), adopted in 2001, highlighted the need for a new regulatory framework to encourage substitute transport fuels. Calling for tax harmonisation for conventional fuels that would allow the real costs, including the cost of harm to the environment, to be included, the White Paper proposed a rapid adoption of tax exemptions for substitute fuels.

## Driving changes in behaviour

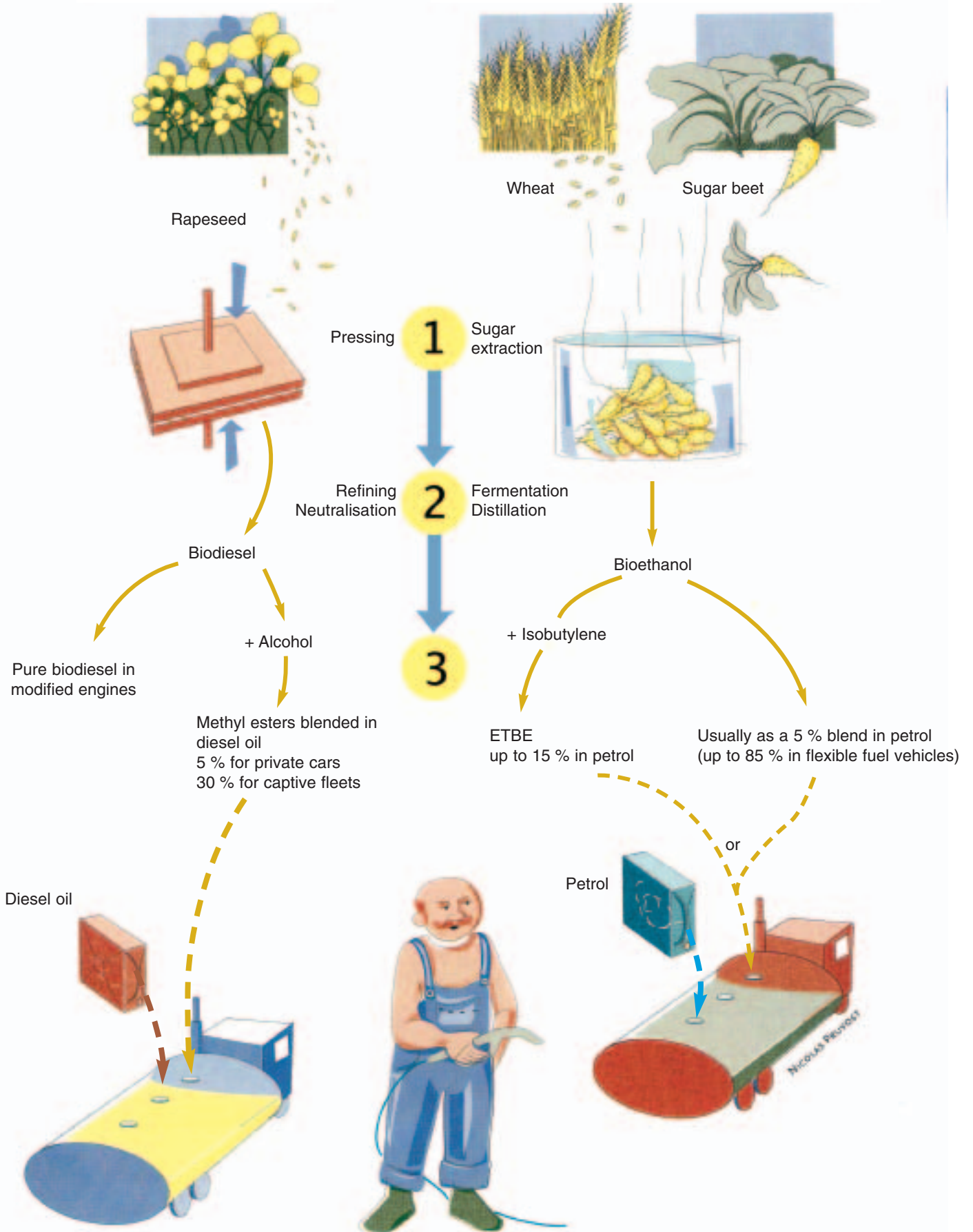
The context described here derives from Europe’s sustainable development strategy. In this strategy, transport plays a leading role and presents some of the most difficult problems. The pattern of road freight and car use in Europe is unsustainable: it pollutes cities and affects health; it congests roads and leads to loss of productivity. Simply put, we drive too much and we do not pay the full cost of driving – a car’s running costs do not include the costs of cleaning monuments, building hospitals or fighting climate change. These are external costs – they are paid by society as a whole and will be paid also by future generations. However, cars and lorries have important social and economic benefits and thus a variety of approaches are needed that encourage alternatives to the car and lorry on one hand, while promoting alternative fuels on the other. Therefore, as well as limiting car use, it is also important to make car use cleaner – to reduce its negative impact on the environment and the economy. Promoting the use of biofuels is one way to do this.

(5) European Commission 2001 White Paper, 'European transport policy for 2010: time to decide', COM(2001) 370, final.



## Biodiesel

## Bioethanol



## Main biofuels production processes and uses

Other raw materials (such as sunflower for biodiesel) and production methods (such as biodiesel from waste cooking oil) also exist. Adapted from a drawing by Nicolas Pruvost for the revue "Systèmes Solaires". Courtesy of the publisher.



## WHAT ARE BIOFUELS?

**B**iofuels are liquid or gaseous fuels made from plant matter and residues, such as agricultural crops, municipal wastes and agricultural and forestry by-products. Biofuels can substitute conventional fuels in vehicle engines – either totally or partially in a blend. The major types of biofuels and their conversion technologies are described below and illustrated in the production process diagram.

**Bioethanol** is mainly produced by fermentation from grains rich in sugar or starch, for example cereal crops, sugar beet and sorghum plants. It is blended with conventional petrol, usually as a 5 % additive, and can be used in modern spark-ignition engines without modification. Modified engines, such as those used in so-called ‘flexible fuel vehicles’, can run on 85 % ethanol blends as well as pure bioethanol and conventional petrol.

**ETBE** <sup>(6)</sup> is produced from bioethanol by reaction with isobutylene. ETBE is used as a blend, up to 15 %, with conventional petrol. It is less volatile than ethanol but requires an additional production process step. Bioethanol and ETBE share the advantage of being high-octane products.

**Biodiesel** is mainly produced from oil crops, such as rapeseed and sunflower, although waste oils from cooking and animal fats can also be used. The extracted oils are converted by transesterification to produce biodiesel (methyl esters). Biodiesel is used in compression-ignition diesel engines, usually as a 5 %

blend in cars, up to a 30 % blend in ‘captive fleets’ such as city buses, and also in its pure form often in modified engines.

**Biogas** results from the anaerobic fermentation of organic matter to produce a mixture of methane (up to 60 %) and carbon dioxide. Organic wastes such as livestock manure, food-processing residues, as well as municipal sewage sludge, are used as raw material to produce biogas in dedicated reactors. Biogas can also be recovered as landfill gas from urban waste landfill sites. Its use in transport is currently limited. Biogas can be used in vehicles adapted to run on natural gas.

**Biofuels from woody material:** Bioethanol is currently produced from energy crops that are rich in sugars and starches. However, plants are mainly composed of lignin and cellulose, not starches. It is difficult to convert cellulose to bioethanol, but current research aims to solve this problem. One option, which is currently in the demonstration phase, is to develop an efficient lignocellulosic enzymatic fermentation conversion process. Another is to convert the biomass into so-called synthesis gas, which can then be catalytically converted into synthetic diesel or alcohol type biofuels. These processes would have important advantages. They would allow a wider range of raw materials for biofuels production, such as grasses, trees and many forms of agricultural residues; and they would significantly improve life cycle energy efficiency and further reduce greenhouse gas emissions.

<sup>(6)</sup> Ethyl-tertiary-butyl-ether (ETBE).

## The many benefits of biofuels

Biofuels have two important features that favour their rapid, wider take-up. First, biofuel blends are used in modern car engines without modifications – so for the consumer there is a smooth transition to using biofuel. Second, they can be made widely available through the existing distribution system, from the same petrol stations that provide conventional fuels – so investment in new infrastructure is avoided. These two features are vital advantages for the rapid penetration of biofuels into the passenger transport market.

As biofuels are sourced from plants and trees they are renewable and contribute to Europe's 12 % renewable energy sources target. They are also roughly 'carbon neutral' over their life cycles. The greenhouse gases emitted from a biofuel-powered car are balanced by the absorption of greenhouse gases during the growth of the organic source material, although there are some emissions from the chain of biofuels production. So overall, present-day biofuels over their life cycle typically produce approximately two thirds less greenhouse gas emissions than conventional transport fuels. As 28 % of European greenhouse gas emissions are due to transport, the emission reductions achievable from using biofuels go a long way towards Europe's commitments under the Kyoto Protocol.

Biofuels provide more energy than is needed for their production, approximately twice more in the case of bioethanol from sugar beet and three times more for biodiesel from rapeseed oil. Their energy balance is thus substantially positive.

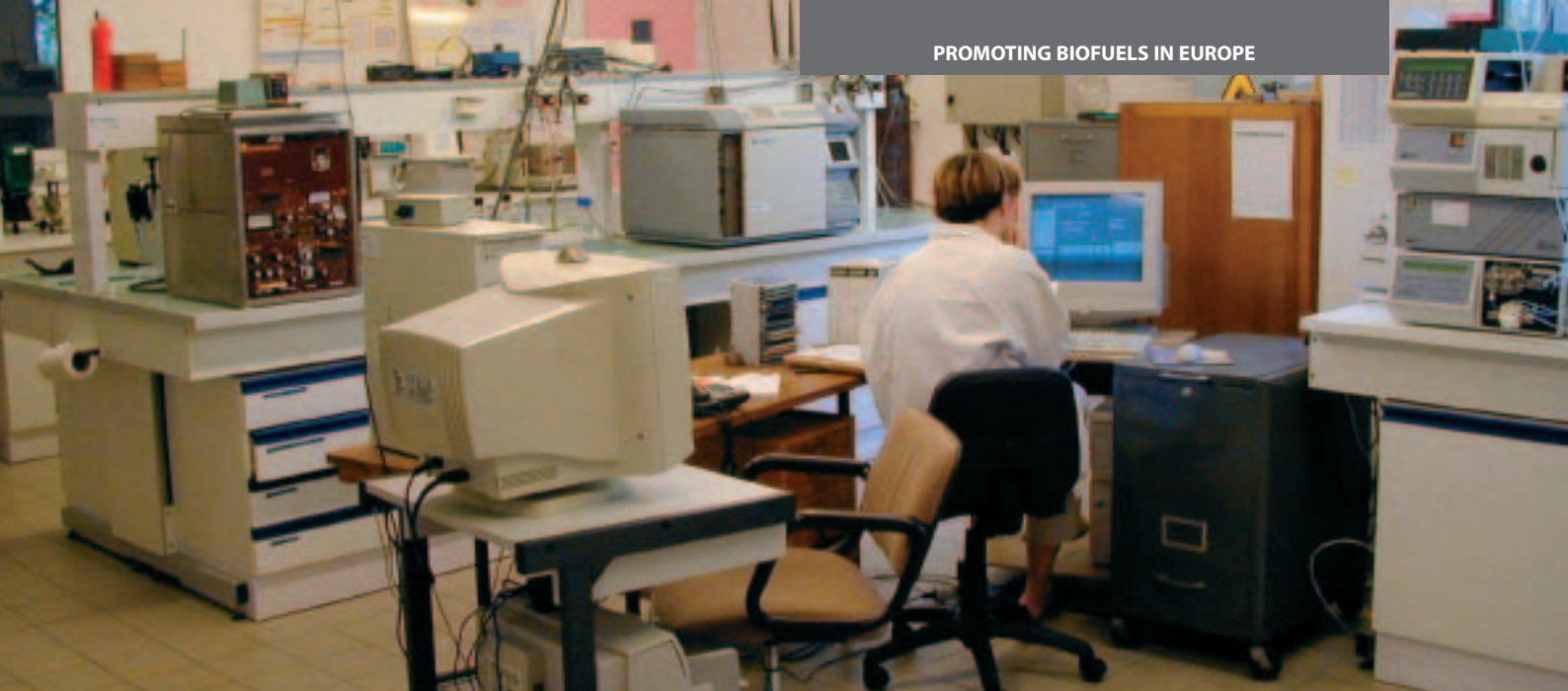
Unproductive agricultural land could produce up to 5 % of Europe's transport fuel needs, and forest, grasslands and waste could supply much more. In addition, demand for biofuels would diversify Europe's energy supply chain. Through indigenous supply biofuels contribute to improving the security of energy supply in the vulnerable transport sector. Even when biofuels are imported, they can contribute to security of supply by diversifying the places from which imports come.

The broad implementation of biofuels would have positive impacts in several related EU policy areas. In agriculture and forestry, a strong demand for biofuels would promote innovative energy products and land-use patterns, as well as pulling unproductive and set-aside land into production. For employment, the impact of an indigenous biofuels market is very large. It is estimated that a 1 % biofuel contribution to transport fuel consumption would create between 45 000 and 75 000 new jobs – mainly in rural areas<sup>(7)</sup>. Further, as the impact on agriculture and employment would be greatest in less-developed regions, demand for biofuels would aid European policies on cohesion – particularly in the new Member States with their large agricultural resources.

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<sup>(7)</sup> COM(2001) 547, final, 27.11.2001, Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions on alternative fuels for road transportation and on a set of measures to promote the use of biofuels.





## BIOFUELS – THE JOURNEY SO FAR

**B**iofuels have been around for a long time. The first diesel engine was demonstrated at the 1900 World Exhibition in Paris – running on pure peanut oil. However, the low cost and easy availability of crude oil led to petrol and diesel becoming the transport fuels of the 20th century.

As part of its strategy to promote renewable energy, the EU has been supporting research on biofuels for the last two decades. This research, which continues today, covers topics such as cleaner and more cost-effective conversion technologies, optimising engine technology for biofuels, and socioeconomic issues. Many demonstration projects have been supported by the EU research and technological development programmes while dissemination activities have been undertaken under the Altener programme, now integrated into the 'Intelligent energy – Europe' 2003–06 programme. These projects are often targeted at the local level, encouraging biofuels in public transport, for example.

Biofuels are sold in Europe today as blends with conventional fuels, often under a 'green' label or brand from the major oil companies – however, quantities are small and for private cars the blending is normally limited to 5%. Higher blends are used in the public sector; many European cities now use biofuels for their 'captive fleets' such as public transport, school buses and local authority cars. Biofuels currently contribute less than 1% of total European transport fuel consumption – but this contribution has risen progressively over the past decade. The primary aim of the biofuels directive is to create the framework conditions to accelerate the take-up of biofuels.



## Who makes them in Europe?

Most biofuels in commercial production in Europe today are based on sugar beet, wheat and rapeseed, which are converted to bioethanol/ETBE and biodiesel. Total biofuel production in EU-25 grew by 28 % in 2003.

Biodiesel production for 2003 in EU-25 was 1 504 000 tonnes from nine countries (see table). Germany led production followed by France and Italy. All these countries increased production during 2003, in particular Germany and Italy where the impact of legislation favourable to biodiesel is helping to encourage take-up.

EU-25 bioethanol production for 2003 was 446 140 tonnes. Only five countries produced bioethanol. Spain is the leading bioethanol producer followed by Poland, France, Sweden and the Czech Republic. The use of bioethanol as a direct blend in petrol is increasing. At present, France, Spain and Poland convert most or all their bioethanol production into ETBE; Sweden and the Czech Republic use their bioethanol production directly.

In other Member States, biofuel production for transport is at an experimental stage with pilot projects in the agricultural and production sector, complemented by use of biofuels in captive fleets in the public sector.

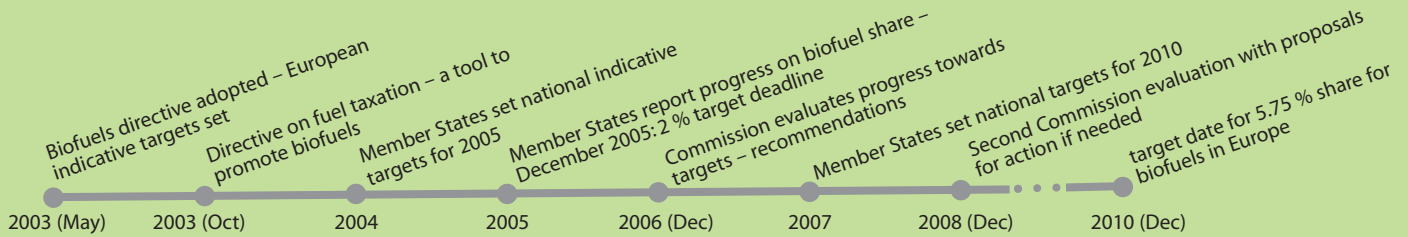
## Biofuels in the wider world

World production of biofuels for transport is led by Brazil and the United States, both concentrating on bioethanol (for biodiesel, Europe is the leading producer). Brazilian production of bioethanol began in 1975, using sugar cane as the raw material, and since then Brazil has remained the world's largest producer. Brazil's bioethanol production in 2003 was 9.9 million tonnes – over 20 times European production. All petrol sold in Brazil contains around 25 % bioethanol. The United States has used bioethanol produced from maize in fuel blends since the 1980s. Annual production is over 8 million tonnes. In the United States, bioethanol is used as a 10 % blend with conventional fuel. The high production levels in Brazil and the United States arise from their early adoption of biofuels – largely driven by the desire to reduce import dependence and make use of the potential of the agricultural sector.

### **EU-25 biofuel production in 2003** <sup>(8)</sup>

COUNTRY	BIODIESEL (TONNES)	BIOETHANOL (TONNES)
CZECH REPUBLIC	70 000	5 000
DENMARK	41 000	-
GERMANY	715 000	-
SPAIN	6 000	180 000
FRANCE	357 000	77 200
ITALY	273 000	-
AUSTRIA	32 000	-
POLAND	-	131 640
SWEDEN	1 000	52 300
UNITED KINGDOM	9 000	-
<b>TOTAL (EU-25)</b>	<b>1 504 000</b>	<b>446 140</b>

<sup>(8)</sup> Figures taken from EurObserver, 2004 European barometer of renewable energies (<http://www.energies-renouvelables.org/>).



## THE EU DIRECTIVE ON BIOFUELS – WHAT IT SAYS AND WHAT IT DOES

**T**he EU biofuels directive <sup>(9)</sup> promotes the wider use of biofuels and other renewable transport fuels. It does this in order to help Europe meet its strategy and commitments on reducing greenhouse gas emissions, improving the security of energy supplies and increasing the use of renewable energy sources. The directive does this through several provisions, directed at the Member States, which allow each national administration the flexibility to make the technological, financial and social choices most appropriate to their national context.

### Setting realistic targets

The directive sets a European target of 5.75 % substitution of conventional transport fuels with biofuels by December 2010, with an interim target of 2 % substitution by December 2005. Taking these European targets into account, the Member States must set their own national indicative targets and use these to steer national policies and measures to build a minimum share for biofuels on their domestic markets.

Each Member State's situation is different. There are variations in climate, land use, and the degree to which biomass that could be used for biofuels is already in use for other energy purposes. With this in mind, the directive recognises that flexibility is needed and calls

for the Member States to set individual targets that reflect their national context. Where, due to particular national considerations, the target departs from what is proposed in the directive, the Member State should justify this with clear reasons.

### Taking appropriate measures

Biofuels need financial support. Among the support measures available to Member States, the main one is fiscal. The companion directive on the taxation of energy products contains specific provisions <sup>(10)</sup> for reducing tax rates on energy from biomass and allowing for tax differentiation as a promotional measure. Other measures can include the promotion of biofuels in public transport, support to research and technological development, and information campaigns on the benefits and availability of biofuels. The directive does not set limits on the different ways that Member States may choose to implement its objectives and to promote biofuels. However it requires them to ensure that measures to promote a given biofuel type are selected and designed with the whole life cycle of the particular biofuel in mind, taking account the overall carbon balance and other impacts, and giving priority to promoting those fuels that are environmentally cost-effective. In addition, issues of competition, the internal market and security of supply must guide national choices.

<sup>(9)</sup> Directive 2003/30/EC of 8 May 2003 of the European Parliament and the Council on the promotion of the use of biofuels or other renewable fuels for transport (OJ L 123, 17.5.2003, p. 42).

<sup>(10)</sup> Article 16 of Directive 2003/96/EC of 27 October 2003 of the Council restructuring the Community framework for the taxation of energy products and electricity (OJ L 283, 31.10.2003, p. 51).

## Taxing matters

The price the consumer pays for fuel is mainly determined by national taxation policy – national taxes and excise duties make up the major part of the prices listed at petrol stations throughout Europe. A simple approach is to reduce taxes on biofuels relative to conventional fuels. This simple approach has different impacts by country, depending on the level of fuel taxes. The directive on the taxation of energy products gives Member States a legal framework making it easy for them to differentiate taxation between biofuels and conventional fuels, while meeting the constraints of the internal market. Reducing the relative tax burden on biofuels does not only encourage consumer take-up – it is also important for biofuel producers. Biofuel production costs are currently at least twice those of conventional fuels so reducing the burden on producers will encourage investment in biofuel production. At least seven Member States have used this possibility and have partly or completely detaxed biofuels: Austria, France, Germany, Italy, Spain, Sweden and the United Kingdom.

## Monitoring progress towards the 2010 target

To monitor progress towards the biofuel targets, the directive requires Member States to report yearly on their biofuel promotional measures and the share of biofuels on their national markets. In addition they should report on other national initiatives for energy from biomass and on other alternative transport fuels. Every two years, the European Commission is charged with producing an evaluation report on progress towards the biofuel targets. This report will use the good and not-so-good practice, identified in Member States' efforts, to give an overview of biofuel promotion and its impacts. In particular the report will cover: the cost-effectiveness of promotional measures; the environmental and economic impacts of wider biofuel take-up; the impact on climate and greenhouse gas emissions; and the sustainability of energy crops used for biofuels. In this, attention will be given to the whole life cycle perspective of biofuels to identify the most promising promotional measures for the future. On the basis of the findings in this report, the Commission can propose changes to the system of targets, including mandatory targets if it seems that national targets will be missed without good reason.



### **France – the biofuels pioneer**

*Biofuels are nothing new for France – rather a case of déjà vu. French experiments with biofuels in the late 19th century led to growing biofuel production that in 1936 reached twice the levels of today – but competition from lower cost petroleum fuels caused the demise of this pioneering biofuel sector. However, successive oil crises, and more recently reforms to agricultural policy, have kept French enthusiasm alive. Over the past decade France has led Europe both in bioethanol and biodiesel production, a position only ceded recently.*

*With large agricultural resources, French interest in biofuels is unsurprising – a reflection of the particular national context. Unlike other leading biofuel-producing countries, France produces both bioethanol and biodiesel in significant quantities. A clear government strategy and early participation of stakeholders from agriculture and industry ensured support for biofuel production facilities throughout France where there are currently 13 bioethanol plants, four biodiesel plants and three refineries producing ETBE. Lower tax rates are also applied to biofuels and these have encouraged the continuous growth of the sector. Biodiesel is blended at 5 % with conventional diesel for private cars and higher blends are used in the public sector.*

*Partenaires Diester <sup>(1)</sup> is a grouping of 30 French cities that run their public transport on 'Diester', a brand name for a 30 % biodiesel blend. Launched in 1994, Partenaires Diester is supported by agricultural associations, car manufacturers and petroleum companies. In the member cities the captive fleets, such as buses, waste collection trucks and utility vehicles, run on the Diester blend. Today over 4 000 vehicles are fuelled in this way and they have covered more than 200 million kilometres. The aim of Partenaires Diester is to promote biofuels, and in particular higher blends of biodiesel because of their environmental benefits. Group membership was recently opened to private companies with large fleets, who have shown great interest in switching to biofuel blends – a result of the high public profile that Partenaires Diester has built.*

*France has been taking initiatives to build a biofuels sector for several decades, and a clear national strategy with long-term support measures has been vital to the achievements so far.*

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<sup>(1)</sup> See <http://www.villesdiester.asso.fr/>

## Winning consumer acceptance

If car manufacturers are to recommend biofuels to their customers, and if these customers are to choose biofuels whenever they fill up at a petrol station – then they must have confidence in the performance and benefits of biofuels. Creating a demand for biofuels among consumers is an important component of biofuel promotion.

For these reasons biofuels must meet the technical and quality standards that give confidence in engine performance and reliability. The aim is to meet current technical standards, including emission standards and standards on engine wear. The directive charges the Commission and standardisation bodies with monitoring these standards, and acting to adapt and develop them where necessary to ensure consumer and industry confidence in biofuels. A recent directive on fuel quality <sup>(12)</sup> takes the first steps in this direction – establishing a review in 2005 that will specifically consider biofuels and modify European standards appropriately.

## In the longer term

In those Member States where biofuels are most successful, this seems to have been achieved through proactive fiscal and promotional measures, irrespective of specific national circumstances or resource availability. With this in mind, the directive keeps the option of mandatory blending open for the longer term to ensure that targets are met and that the costs of promotion, through reduced tax revenues and State aid, are borne fairly by all Member States. Again with the future in mind, the directive emphasises that directing resources into the promotion of existing biofuels must not act to exclude other renewable technologies, such as biomass conversion from lignocellulosic material.

## Austria – setting the standards

*Encouraged by promising research into alternative fuels, Austria acquired its first biodiesel pilot plants in 1987, with several production plants appearing only a year later in 1988. These first biodiesel plants were small-scale units established by farmers' cooperatives. They were followed by large industrial production facilities in the early 1990s. This rapid growth in biodiesel activity was supported by early action on technical standards – the first biodiesel fuel standard in the world was Austrian. This gave important assurance to the diesel engine industry that 'biofuels mean business' and led quickly to diesel engine tractors obtaining warranties for biodiesel use. In addition, Austria gives tax exemptions for biofuels, both at 100 % substitution for biodiesel and for specified blends. Using pure biodiesel as a fuel is encouraged in Austria and prices are around 4 % cheaper than fossil diesel – another factor that has promoted take-up.*

*While much Austrian biodiesel is based on rapeseed oil there are other, innovative sources – recycling of frying oil from restaurants is one of these. Every year, several thousand tonnes of used frying oil are collected from restaurants and households throughout Austria. This waste oil is then recycled into biodiesel. An important success factor for recycling frying oil is the logistics system for collection that was developed in Austria – collection logistics must ensure that the energy and carbon balances over the life cycle of the fuel are sustainable. After successful pilot trials, this fuel now powers public transport in the city of Graz – as a 100 % substitute, not a blend. In addition, bus manufacturers now give full warranties for buses using this type of biodiesel.*

*Austrian know-how on biodiesel is also exported. Europe's largest biodiesel plant will shortly be built on Teesside in the north of England; to be followed by a second, similarly sized plant a year later. The plant will use continuous flow production technology developed in Austria and licensed to the Teesside facility.*

<sup>(12)</sup>Directive 2003/17/EC of 3 March 2003 of the European Parliament and the Council amending Directive 98/70/EC relating to the quality of petrol and diesel fuels (OJ L 76, 22.3.2003, p. 10).



## STEERING FUTURE POLICY DEVELOPMENTS



**T**he basis for the biofuels directive is the promotion of biofuels across Europe. As it is a horizontal issue, it has impacts across many policy areas and is dependent on individual national contexts such as agriculture, fiscal policy and renewable energy priorities. It is for this reason that the directive provides an overall target and a framework for action – rather than imposing specific actions.

European policy on biofuels will continue to develop as lessons are drawn from Member States' experiences, which they will provide to the Commission through their regular reports. Policy development is seen already in the recent decision of the EU to allow a EUR 45 per hectare support for energy crops under the common agricultural policy, in addition to the existing possibility of energy crop production on set-aside land. For the future, new crops may be favoured needing policy support; cost-effective lignocellulose conversion techniques may bring new opportunities; biofuels may drive new land-use patterns that demand policy changes. At all stages, the involvement of stakeholders such as biofuel producers, fuel supply companies, vehicle manufacturers, public authorities and consumer representatives is vital. The Commission will continue to keep these questions under review as it develops its biofuels policy over the years to come.

### **Stockholm – building momentum for biofuels**

*The city of Stockholm has a long tradition of using clean fuel technologies. Since 1991, the city has bought or given subsidies for around 750 vehicles powered by biofuels – both bioethanol and biogas produced within Sweden or imported. At present this represents over half of the municipal fleet. Stockholm's strategy is not simply to use captive fleets, whether publicly owned or outsourced, as a showcase – rather it aims to use the converted fleets to build a network of vehicle manufacturers, fuel suppliers and refuelling stations as a platform to support wider take-up in the public and private sectors.*

*For example, while waste collection is outsourced to private sector contractors with their own vehicles, the city administration requires an increasing percentage of biogas-fuelled vehicles when tendering – and also co-finances the extra costs. Similarly, a framework agreement for clean-vehicle procurement, signed with manufacturers, gives confidence to public procurement officers to choose clean vehicles and extends this to common procurement initiatives with private-sector fleet buyers. The city administration is now targeting this business fleet sector, which buys 70 % of the cars in Stockholm. It does this by encouraging biofuel-refuelling points in business districts; ensuring test vehicles are available at local suppliers and providing subsidies for the extra costs.*

*Nationwide, Sweden was the first Member State to support flexible fuel vehicles that can run on either conventional fuel or an 85 % bioethanol blend that gives a 70 % emissions reduction – at present there are around 8 000 flexible fuel vehicles on Sweden's roads and they are supported by free parking and lower taxes.*



## Further information

EU policies on renewable energy (including the May 2004 communication 'The share of renewable energy in the EU' and its associated Commission staff working document on 'Country profiles – overview of renewable energy sources in the enlarged EU') are explained at:

**[http://europa.eu.int/comm/energy/res/documents/index\\_en.htm](http://europa.eu.int/comm/energy/res/documents/index_en.htm)**

Information on bio-energy in the EU can be found at:

**[http://europa.eu.int/comm/energy/res/sectors/bioenergy\\_en.htm](http://europa.eu.int/comm/energy/res/sectors/bioenergy_en.htm)** and

**[http://europa.eu.int/comm/energy/res/legislation/biofuels\\_en.htm](http://europa.eu.int/comm/energy/res/legislation/biofuels_en.htm)**

The Green Paper 'Towards a European strategy for the security of energy supply', together with related documents may be downloaded from:

**[http://europa.eu.int/comm/energy\\_transport/en/lpi\\_lv\\_en1.html](http://europa.eu.int/comm/energy_transport/en/lpi_lv_en1.html)**

The White Paper 'European transport policy for 2010: time to decide' can be downloaded from:

**[http://europa.eu.int/comm/energy\\_transport/en/lb\\_en.html](http://europa.eu.int/comm/energy_transport/en/lb_en.html)**

Statistics on European energy and transport may be accessed from:

**[http://europa.eu.int/comm/dgs/energy\\_transport/figures/index\\_en.htm](http://europa.eu.int/comm/dgs/energy_transport/figures/index_en.htm)**

Other publications from the EC Directorate-General for Energy and Transport are available from:

**[http://europa.eu.int/comm/dgs/energy\\_transport/publication/index\\_en.htm](http://europa.eu.int/comm/dgs/energy_transport/publication/index_en.htm)**

Information on recent international developments can be found at 'The International Conference for Renewable Energies, Bonn, 1–4 June 2004',

**<http://www.renewables2004.de>**

General information on the international context for renewable sources of energy is available from the International Energy Agency at:

**<http://www.iea.org>**

This brochure explains the EU directive on the promotion of biofuels or other renewable fuels for transport. The current types of biofuels are summarised and the directive is set in the wider context of European and international commitments and objectives on security of energy supply, greenhouse gas emissions and renewable energy sources. The development of biofuels so far, within Europe and the world, is described. The directive's targets for biofuel substitution for conventional fuels are presented and the possible support measures, including fiscal exemptions and setting technical standards are summarised, as are the reporting requirements from the Members States.

