



**COUNCIL OF
THE EUROPEAN UNION**

**Brussels, 10 February 2006 (13.02)
(OR. fr)**

6153/06

**AGRI 33
ENER 36
ENV 67**

COVER NOTE

from:	Secretary-General of the European Commission, signed by Mr Jordi AYET PUIGARNAU, Director
date of receipt:	10 February 2006
to:	Mr Javier SOLANA, Secretary-General/High Representative
Subject:	Communication from the Commission - An EU Strategy for Biofuels

Delegations will find attached Commission document COM(2006) 34 final.

Encl.: COM(2006) 34 final



COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 8.2.2006
COM(2006) 34 final

COMMUNICATION FROM THE COMMISSION

An EU Strategy for Biofuels

{SEC(2006) 142}

TABLE OF CONTENTS

1.	INTRODUCTION.....	3
2.	REALISING THE POTENTIAL OF BIOFUELS – A STRATEGIC APPROACH	4
2.1.	First-generation biofuels	5
2.2.	Second-generation biofuels and beyond	5
2.3.	Biofuels in developing countries.....	6
3.	THE BIOFUEL STRATEGY – SEVEN POLICY AXES	7
3.1.	Stimulating demand for biofuels.....	7
3.2.	Capturing environmental benefits	9
3.3.	Developing the production and distribution of biofuels	10
3.4.	Expanding feedstock supplies	11
3.5.	Enhancing trade opportunities.....	13
3.6.	Supporting developing countries.....	14
3.7.	Supporting research and development	16
	Annex 1: Biofuels Glossary	18
	Annex 2: Biofuels progress at national level	19
	Annex 3: Policies promoting biofuels in non-EU countries	20
	Annex 4: Biofuels market situation.....	22
	Annex 5: Trade in biofuels.....	25

1. INTRODUCTION

In the EU, transport is responsible for an estimated 21% of all greenhouse gas emissions that are contributing to global warming, and the percentage is rising. In order to meet sustainability goals, in particular the reduction of greenhouse gas emissions agreed under the Kyoto Protocol, it is therefore essential to find ways of reducing emissions from transport.

This is not the only challenge. Nearly all the energy used in the EU transport sector comes from oil. Known oil reserves are limited in quantity and restricted to a few world regions. New reserves exist, but will mostly be more difficult to exploit. Securing energy supplies for the future is therefore not only a question of reducing import dependency, but calls for a wide range of policy initiatives, including diversification of sources and technologies¹.

In the EU a range of actions is already being taken. Vehicle manufacturers are developing new models that are cleaner and more fuel efficient, as well as working on new concepts. Efforts are also being made to improve public transport and encourage the use of environmentally-friendly modes of transport where possible². Further endeavours are needed to make reductions in the amount of energy used for transport.

Developing countries face similar and even greater challenges with respect to transport energy: rising oil prices are badly affecting their balance of payments; reliance on imported fossil fuels implies vulnerability and they too are faced with the challenge of reducing greenhouse gas emissions.

The central importance of energy policy in helping the EU meet the challenges of globalisation was confirmed by the Union's heads of state and government at the informal Hampton Court summit in October 2005 where the Commission was requested to prepare proposals for the development of a reinvigorated European Energy Policy. One important element of such an approach would be means to address Europe's over-dependency on imported oil and gas and to develop a coherent approach, based on a robust economic, environmental and social impact analysis, on how to progressively reduce this dependency.

This communication looks at the role biofuels could play in this context. Processed from biomass, a renewable resource, biofuels are a direct substitute for fossil fuels in transport and can readily be integrated into fuel supply systems. Biofuels can be used as an alternative fuel for transport, as can other alternatives (see 2.1) and thus help prepare the way for further advanced developments, such as hydrogen.

Although most biofuels are still more costly than fossil fuels their use is increasing in countries around the world. Encouraged by policy measures, global production of biofuels is now estimated to be over 35 billion litres.

The EU is supporting biofuels with the objectives of reducing greenhouse gas emissions, boosting the decarbonisation of transport fuels, diversifying fuel supply sources and developing long-term replacements for fossil oil. The development of biofuel production is expected to offer new opportunities to diversify income and employment in rural areas.

¹ As emphasised in the Green Paper "Towards a European Strategy for the Security of Energy Supply" COM(2000) 769 final.

² See the White Paper on the European transport policy for 2010, COM(2001) 370 final.

In the context of the review of the Biofuels Directive³ that the Commission is due to carry out by the end of 2006, attention will be paid to the issue of cost-effectiveness, the level of ambition after 2010, and to assessing and monitoring the full environmental impact of biofuels.

The production of biofuels from suitable feedstocks could also generate economic and environmental benefits in a number of developing countries, create additional employment, reduce energy import bills and open up potential export markets. In particular, the production of bioethanol could offer a feasible alternative for some sugar-producing countries affected by the reform of the EU sugar regime.

This Communication complements the Biomass Action Plan⁴ and is accompanied by an Impact Assessment which presents different policy options. Based on this assessment the Communication recommends a regulated market-based approach, corresponding to the Impact Assessment's option 2, which reflects current knowledge and seeks to prepare the way for future developments. This option in particular favours a balanced approach in trade negotiations concerning biofuels, the use of available instruments in agricultural, rural development and cohesion policy, and the development of a coherent assistance package for developing countries. While existing technologies do not at present offer cost-competitive solutions for the EU, the benefits of encouraging the development of biofuels should outweigh the cost. In this context, the development of second generation biofuels, in which research and development has an important role, could further contribute to their cost-effectiveness. In view of the complex, cross-cutting and dynamic character of the issues, the approach taken is a strategic one, the impact of which will be carefully monitored. As the biofuels market evolves, appropriate modifications will be discussed and incorporated into the strategy.

2. REALISING THE POTENTIAL OF BIOFUELS – A STRATEGIC APPROACH

The recent Biomass Action Plan has already described various actions that will be taken to encourage the use of all kinds of biomass for renewable energy production. This Communication now sets out **An EU Strategy for Biofuels** with three aims:

- to further promote biofuels in the EU and developing countries, ensure that their production and use is globally positive for the environment and that they contribute to the objectives of the Lisbon Strategy taking into account competitiveness considerations;
- to prepare for the large-scale use of biofuels by improving their cost-competitiveness through the optimised cultivation of dedicated feedstocks, research into “second generation” biofuels, and support for market penetration by scaling up demonstration projects and removing non-technical barriers;
- to explore the opportunities for developing countries – including those affected by the reform of the EU sugar regime – for the production of biofuel feedstocks and biofuels, and to set out the role the EU could play in supporting the development of sustainable biofuel production.

³ Directive 2003/30/EC of 8 May 2003 on the promotion of the use of biofuels or other renewable fuels for transport (OJ L 123, 17.5.2003).

⁴ COM(2005) 628, adopted on 7 December 2005.

2.1. First-generation biofuels

First-generation biofuels can be used in low-percentage blends with conventional fuels in most vehicles now and can be distributed through the existing infrastructure. Some diesel vehicles can run on 100% biodiesel (B100) and “flex-fuel” vehicles are already available in many countries around the world. Replacing a percentage of diesel or petrol with biofuels is therefore the simplest way for the transport sector to make an immediate contribution to the Kyoto targets, particularly given that the benefits would apply to the entire vehicle fleet. Developing a substitute for diesel is of particular importance in the European context given that the EU is currently a net importer of diesel, while it exports petrol.

However, even using the most modern technologies, the cost of EU-produced biofuels will make it difficult for them to compete with fossil fuels. With the technologies currently available, EU-produced biodiesel breaks even at oil prices around €60 per barrel, while bioethanol becomes competitive with oil prices of about €90 per barrel.

Biofuels can be used as an alternative fuel for transport, as can other alternatives such as liquid natural gas (LNG), compressed natural gas (CNG), liquefied petroleum gas (LPG) and hydrogen. Nevertheless, encouraging the use of currently available biofuels may be seen as an intermediate step to reduce greenhouse gas emissions, to diversify transport energy sources, and to prepare the EU economy for other alternatives in the transport sector which are not yet mature. By actively embracing the global trend towards biofuels and by ensuring their sustainable production, the EU can exploit and export its experience and knowledge, while engaging in research to ensure that we remain in the vanguard of technical developments. A clear strategy for the EU will also promote lower production costs.

The supply of feedstocks is crucial to the success of the biofuel strategy. Some of the provisions of the Common Agricultural Policy will therefore be reviewed and adapted if necessary. The expected increase in the world trade in biofuels will also contribute to stability of supply in the EU and other parts of the world.

The construction of plants to produce alternative fuels, the introduction of new engine types and the adaptation of the fuel distribution system entail long-term investments, which need stable prospects for market demand. This implies that supply-side measures need to be complemented by an effective market-based incentive system. In the medium-term, additional investment will be necessary to bring new technologies and feedstocks into use. Forestry and waste materials will play an increasing role if “second-generation” processes can be made to work effectively in commercial terms.

To derive the greatest benefit from current and future opportunities, the Commission is committed to encouraging the first-generation biofuels market, which will be complemented by new technologies as they come on-stream.

2.2. Second-generation biofuels and beyond

One of the most promising second-generation biofuel technologies – ligno-cellulosic processing – is already well advanced. Three pilot plants have been established in the EU, in Sweden, Spain and Denmark. Other technologies to convert biomass to liquid biofuels (BtL) include Fischer-Tropsch biodiesel and bio-DME (dimethyl ether). Demonstration plants are in operation in Germany and Sweden.

Synthetic natural gas (SNG) can be produced from fossil as well as renewable resources. Renewable SNG has significant advantages for CO₂ reduction and could be a decisive step in the development of other gaseous fuels.

The CARS 21 High Level Group⁵ has identified second-generation biofuels as particularly promising and has recommended that their development should be given substantial support. The Group also concluded that further policy developments should take into account and reflect the differing climate change benefits of different biofuel technologies and production processes.

To prepare for the large-scale use of cost-competitive biofuels, continued research and development is needed to make the new technologies successful. The European Biofuels Technology Platform and other Technology platforms can play a vital role in achieving this. Work should also be encouraged on the development of dedicated feedstocks and to increase the range of raw materials that can be used to make biofuels.

Partnership among all the relevant stakeholders will be necessary to promote best practices and facilitate long-term private sector investments. In this respect, the European Investment Bank could assist in the development and scaling-up of economically viable projects and technologies.

Development will be monitored at EU level with the aim of providing support at the appropriate time for the upgrading of demonstration projects to commercial-scale operations. At the same time, guarantees must be given as to the environmental benefits of all new processes and any non-technical barriers to their acceptance will have to be removed.

Advanced biofuel technologies could also provide a stepping stone to renewably-produced hydrogen, which offers the prospect of virtually emission-free transport. However, hydrogen fuel cells require new engine technology as well as a big investment in plants to produce the hydrogen and a new distribution system. In this context, the sustainability of hydrogen has to be carefully assessed. Any shift to hydrogen-based transport would therefore call for a major decision, embedded in a large-scale, long-term strategy.

2.3. Biofuels in developing countries

Biomass productivity is highest in tropical environments and the production costs of biofuels, notably ethanol, are comparatively low in a number of developing countries. Bioethanol produced from sugar cane is currently competitive with fossil fuels in Brazil which is the world's leading producer of bioethanol. Moreover, the fossil energy input for producing ethanol from sugar cane is lower than for ethanol produced in Europe, so the corresponding emission reductions are greater. For biodiesel, the EU is currently the principal producer and there is no significant trade. Developing countries such as Malaysia, Indonesia and the Philippines, that currently produce biodiesel for their domestic markets, could well develop export potential.

In general, the production of biofuels could provide an opportunity to diversify agricultural activity, reduce dependence on fossil fuels (mainly oil) and contribute to economic growth in

⁵ The CARS21 High Level Group was set up by Vice-President Verheugen to consider the competitiveness challenges facing the European automotive industry. It adopted its report on 12 December 2005: <http://www.europa.eu.int/comm/enterprise/automotive/pagesbackground/competitiveness/cars21finalreport.pdf>.

a sustainable manner. But the differentiated picture among developing countries has to be recognised, while concerns exist regarding environmental, economic and social issues.

The varying prospects for biofuels production and use in developing countries are related to the types of feedstock produced and to a range of economic factors. For the domestic development of biofuels, the price of oil on the world market is an important determinant. Other factors that play a role are (i) the potential scale of production; (ii) the size of the national or regional market; (iii) the infrastructure investments needed; (iv) the supportiveness of the policy regime; (v) the options for exports (EU, USA, Japan, China) and (vi) the market price of the feedstocks to be used for biofuel production.

In countries where a large-scale expansion of feedstock production is likely to take place, environmental concerns relate to pressures on eco-sensitive areas, like rainforests. There are also concerns regarding the effect on soil fertility, water availability and quality, and pesticide use. Social effects concern potential dislocation of communities and competition between biofuel and food production. These concerns need specific investigation and quantification and, if necessary, should be addressed through strong regulatory frameworks. EU development policy will aim to help suitable developing countries capture the benefits offered by biofuels, while addressing these concerns in an appropriate way.

3. THE BIOFUEL STRATEGY – SEVEN POLICY AXES

This chapter describes the seven policy axes, under which are grouped the measures the Commission will take to promote the production and use of biofuels.

3.1. Stimulating demand for biofuels

The Commission will

- bring forward a report in 2006 with a view to a possible revision of the Biofuels Directive. This report will *inter alia* address the issues of setting national targets for the market share of biofuels, using biofuel obligations and ensuring sustainable production;
- encourage Member States to give favourable treatment to second-generation biofuels in biofuels obligations;
- encourage the Council and European Parliament to give speedy approval to its recently adopted legislative proposal to promote public procurement of clean and efficient vehicles, including those using high blends of biofuels.

In 2001, the Commission adopted a communication accompanied by legislative proposals on alternative fuels for road transport, identifying three main fuels (biofuels, natural gas and hydrogen) with a potential for development.⁶ The legal proposals were adopted, in amended form, in 2003.

⁶ Communication on alternative fuels for road transportation and on a set of measures to promote the use of biofuels; COM(2001) 547.

The **Biofuels Directive**⁷ sets “reference values” of a 2% market share for biofuels in 2005 and a 5.75% share in 2010. To implement the directive, many Member States are relying on fuel tax exemptions, facilitated by the **Energy Taxation Directive**.⁸ A number have recently turned to biofuel obligations, requiring fuel supply companies to incorporate a given percentage of biofuels in the fuel they place on the national market.

The 2005 target share of 2% biofuels was not achieved. With the objectives set by the Member States, the share of biofuels would have attained, at most, only 1.4%. The Commission has launched infringement proceedings in seven cases where Member States adopted low targets without due justification.

In 2006, the Commission will bring forward a **report** on the implementation of the Biofuels Directive with a view to a possible revision. This report will *inter alia* address the issues of:

- national targets for the market share of biofuels,
- using biofuel obligations,
- requiring that, only biofuels whose production in the EU and third countries complies with minimum sustainability standards will count towards the targets.

Any system of certificates would need to apply in a non-discriminatory way to both domestically produced and imported biofuels and comply with WTO provisions.

Biofuel **obligations** seem a promising way of overcoming difficulties with tax exemptions. They would also make it easier to give favourable treatment to biofuels with greater greenhouse gas savings, which the Commission would like to encourage.

The **Energy Taxation Directive** makes it possible for Member States to grant tax reductions/exemptions in favour of biofuels, under certain conditions. These tax concessions are considered as state aids, which may not be implemented without prior authorisation by the Commission. The Commission’s assessment has the aim of avoiding undue distortions of competition and is based on the Community guidelines on state aid for environmental protection⁹. These guidelines take into account the beneficial effects that energy produced from biomass may have compared with energy from fossil fuels.

The assessment also aims to ensure that no over-compensation occurs, which is also required by the Energy Taxation Directive. As production costs vary, especially for bioethanol, the Commission is investigating to what extent instruments can be refined to take this into account while respecting international trade rules..

The compatibility between biofuel supply obligations (in their various possible forms) and tax incentives will have to be carefully assessed. It can be expected that obligations would take away the need for fiscal support and permit a reduction in the levels of state aid, in line with the polluter pays principle and the Commission’s state aid action plan, which focuses on less but better aid.

⁷ Directive 2003/30/EC of 8 May 2003 on the promotion of the use of biofuels or other renewable fuels for transport (OJ L 123, 17.5.2003).

⁸ 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).

⁹ OJ C 37, 3.2.2001, p. 3, in particular section E.3.3.

Moreover, a framework for **incentives** linked to the environmental performance of individual fuels should be established. This would encourage and promote the use of market-driven and demand-side measures for biofuels. Suitable policy measures could include, for example, the encouragement of environmental systems for vehicle users, eco-labelling, price differentiation through emission charges and product levies, environmental quality promotion through educating and informing both consumers and producers, tradable permits, environmental performance bonds, funds and environmental risk assessment in banking procedures.

Fertile markets for the development of biofuel use are offered by publicly and privately-owned vehicle fleets, and by farm and heavy goods vehicles, where tax exemptions or reductions have proved particularly successful in encouraging the use of high-blend biofuels. At farm level, small-scale processors and seed press systems are now available that can produce biodiesel economically from farm waste or oilseed crops. City and privately-operated bus fleets generally have dedicated fuel supplies, so can switch quite easily to biofuels. Another area where the demand for biofuels could be further stimulated is that concerning fishing fleets and vessels which offers a potential market for the use of biodiesel.

For the public sector, the Commission will continue to encourage the use of biofuels in these specific areas. It has tabled a proposal for a Directive of the European Parliament and of the Council on the promotion of clean road transport vehicles¹⁰, including those using high blends of biofuels.

3.2. Capturing environmental benefits

The Commission will

- examine how biofuel use can count towards the CO₂ emission reduction targets for car fleets;
- explore and, where appropriate, propose measures to ensure optimal greenhouse gas benefits from biofuels;
- work to ensure the sustainability of biofuel feedstock cultivation in the EU and third countries;
- examine the issues of limits on the content of ethanol, ether and other oxygenates in petrol; limits on the vapour content of petrol; and limits on the biodiesel content of diesel.

The Commission is examining the scope for biofuel use to count towards CO₂ emission targets for car fleets, building on the agreement by carmakers to reduce emissions from new cars in the framework of an integrated approach. On the basis of the CARS21 report¹¹, the Commission is currently examining the various options for this approach.

To capture the potential environmental benefits, a biofuel strategy has to focus on (1) optimising greenhouse gas benefits for the expenditure made, (2) avoiding environmental damage linked to the production of biofuels and their feedstocks, (3) ensuring that the use of biofuels does not give rise to environmental or technical problems.

¹⁰ COM(2005) 634.

¹¹ See footnote 5.

- (1) Currently, incentives for biofuels do not take into account the actual greenhouse gas benefits of the different biofuels and their production pathways. Linking greenhouse gas benefits to encouraging the provisions of biofuels would help to increase their benefits and send a clear signal to the industry of the importance of further improving production pathways in this respect. It would also allow market-based signals to be sent to fuel and feedstock producers, to further reduce carbon emissions in the transport sector. To be effective, such a mechanism must apply to both domestic and imported products in a non-discriminatory way and comply fully with WTO provisions. A multinational approach could also be explored, linked to the existing Clean Development Mechanism, which would guarantee the involvement of trade partners. Incentives covered by the Biofuels Directive will be reviewed in the course of 2006.
- (2) It is essential that appropriate minimum environmental standards apply to **feedstock production** for biofuels, adapted to local conditions in the EU and third countries. In particular, some concerns have been raised over the use of set-aside land because of the potential impact on biodiversity and soil, and over the growing of biofuels in environmentally vulnerable areas. Addressing these concerns requires attention to where energy crops would fit within rotations generally, the avoidance of negative effects on biodiversity, water pollution, soil degradation, and the disruption of habitats and species in areas of high nature value. Sustainability criteria for EU production should, however, not be limited to energy crops, but should cover all agricultural land, as required by cross-compliance rules established under the 2003 CAP reform. These criteria should also take into account the advantages of energy crop cultivation in crop rotation systems and in marginal areas. Such criteria and standards would need to comply with WTO provisions, be effective and not over-bureaucratic.
- (3) In use, different types of biofuels give rise to different environmental and technical issues. The **Fuel Quality Directive**¹² establishes specifications for petrol and diesel, for environmental and health reasons, e.g. limits on the content of ethanol, ether and other oxygenates in petrol. It also limits the vapour pressure of petrol. Standard EN590 sets further limits for technical reasons, and states that diesel must contain no more than 5% biodiesel by volume (4.6% in energy terms). These limits put constraints on the increased use of biofuels.

The Commission has announced that it will review the quantitative limits on ethanol, ethers and biodiesel in 2006.

3.3. Developing the production and distribution of biofuels

The Commission will

- encourage Member States and regions to take into account the benefits of biofuels and other bioenergy when preparing their national reference frameworks and operational plans under cohesion policy and rural development policy;

¹² Directive 98/70/EC of 13 October 1998 relating to the quality of petrol and diesel fuels (OJ L 350, 28.12.1998), as amended by Directive 2003/17/EC of 3 March 2003 (OJ L 76, 22.3.2003).

- propose setting up a specific ad hoc group to consider biomass including biofuels opportunities within national rural development programmes;
- ask the relevant industries to explain the technical justification for practices that act as barriers to the introduction of biofuels and monitor the behaviour of these industries to ensure that there is no discrimination against biofuels.

Many of the regions assisted by the Structural and Cohesion Funds, particularly in rural regions in central and eastern Europe, have the potential to use biomass to generate economic growth and employment. Low labour costs and high resource availability can give these regions a comparative advantage in the production of biofuel feedstocks. Supporting the development of renewable and alternative energy sources such as biomass, including biofuels, is therefore an important objective for **cohesion policy**¹³. Support can be given, for example, for the retraining of farmers, the provision of equipment for biomass producers and for investment in facilities to produce biofuels.

The Commission encourages Member States and regions, when preparing their National Strategic Reference Frameworks and operational programmes, to ensure that the potential benefits of biofuels have been thoroughly taken into account.

Investment on or near farms, for example in biomass processing, as well as the mobilisation of unused biomass by forest holders, can also be supported by **rural development** policy. The Commission has proposed Community strategic guidelines for rural development which emphasise renewable energy, including biofuels. It is also proposing a specific ad hoc group to consider biomass and biofuel opportunities within national rural development programmes.

Like fuel tax exemptions, other forms of official support for biofuel production and use must obviously conform to provisions on **State aid**.

The Commission will ask the industries concerned to explain the technical justification for **barriers** to the introduction of biofuels and will seek the views of other interested parties. It will monitor the behaviour of the relevant industries to ensure that there is no discrimination against biofuels.

When assessing the impact of policies and programmes to support the production and distribution of biofuels, the Commission will take into account their possible effect on traditional ethanol, food, forestry and oil markets.

3.4. Expanding feedstock supplies

The Commission will

- make sugar production for bioethanol eligible for both the non-food regime on set-aside land and the energy crop premium;
- assess the opportunities for additional processing of cereals from existing intervention stocks into biofuels, to contribute to reducing the amount of cereals exported with refunds;

¹³ as set out in the Commission's communication "Cohesion policy in support of growth and jobs", COM(2005) 299.

- assess the implementation of the energy crop scheme by the end of 2006;
- monitor the impact of biofuel demand on commodity and by-product prices, their availability for competing industries and the impact on food supply and prices, in the EU and in developing countries;
- finance a campaign to inform farmers and forest holders about the properties of energy crops and the opportunities they offer;
- bring forward a Forestry Action Plan, in which the energy use of forest material will play an important part;
- review how animal by-products legislation could be amended in order to facilitate the authorisation and approval of alternative processes for the production of biofuels;
- implement the mechanism proposed to clarify standards for the secondary use of waste materials.

The ongoing process of **CAP reform** started in 1992 has reduced price support and helped to increase the competitiveness of EU agricultural production for all possible outlets: food, animal feed and non-food use, including biofuels. This is particularly important for cereals, which are currently one of the major feedstocks for EU bioethanol production. The **decoupling** of income support from production introduced by the 2003 CAP reform will help to further facilitate the supply of energy crops. In particular, crops that were eligible for direct payments only under the non-food regime on set-aside areas may now be cultivated on any area without loss of income support.

The **set-aside** obligation, which was introduced with the 1992 reform as a tool to balance the cereals market, has been integrated into the new single payment scheme. Set-aside land can normally not be used for any type of production, but the cultivation of non-food crops (including energy crops) is authorised if the use of the biomass is guaranteed either by a contract or by the farmer.

Political agreement has recently been reached on a major reform of the Common Market Organisation for **sugar**. Sugar beet grown for bioethanol will continue to be exempt from quotas. The Commission will pursue its proposition to make sugar beet grown for bioethanol eligible for both the non-food regime on set-aside land and the energy crop premium. This will provide new outlets for sugar beet in the EU.

Under its market policies, the Commission has made use of the possibility to sell alcohol from the distillation of wine out of **intervention stocks** for energy purposes. However, this certainly cannot be seen as a sustainable source for biofuel production. In 2005, for the first time, a tender for rye from intervention stocks was opened specifically for bioethanol production. The Commission will assess the opportunities for additional processing of cereals from existing intervention stocks into biofuels, to contribute to reducing the amount of cereals exported with refunds.

In addition, a special **aid for energy crops** was introduced by the 2003 CAP reform. A premium of €45 per ha is available, with a maximum guaranteed area of 1.5 million hectares as the budgetary ceiling. If applications should exceed the ceiling, the premium will be reduced proportionally. This energy crop scheme is subject to a Commission report by

31 December 2006 and appropriate proposals, taking into account the implementation of the biofuel targets.

Biofuels are currently produced almost entirely from crops that can also be used for food purposes. Concerns have been voiced that, as global biofuel demand grows, the availability of food at an affordable price could be endangered in developing countries. Biofuels also compete for raw material with other industries. In view of these concerns, the Commission will closely monitor the impact of biofuel demand.

The Commission is considering financing a **campaign to inform** farmers and forest holders about the properties of energy crops, mobilising the unused potential of forest-based energy and the opportunities they offer.

The Commission is preparing a **forestry action plan** to be adopted in 2006, in which energy uses of forest material will play an important role. This will be particularly important for the production of second generation biofuels.

Organic waste from the paper industry, animal fats and by-products, recycled cooking oils and many other sources are underused as an energy resource. The Commission recently adopted a thematic strategy for the prevention and recycling of waste¹⁴ and a proposal for new waste framework legislation¹⁵. In this the Commission proposed a mechanism to clarify standards for the secondary use of waste materials, for instance in biofuel production.

3.5. Enhancing trade opportunities

The Commission will

- assess the advantages, disadvantages and legal implications of putting forward a proposal for separate nomenclature codes for biofuels;
- maintain market access conditions for imported bioethanol that are no less favourable than those provided by the trade agreements currently in force, maintain in particular, a comparable level of preferential access for ACP countries and take into account the problem of preference erosion;
- pursue a balanced approach in ongoing and future trade negotiations with ethanol-producing countries and regions – the EU will respect the interests of both domestic producers and EU trading partners, in the context of the rising demand for biofuels;
- propose amendments to the “biodiesel standard” to facilitate the use of a wider range of vegetable oils for biodiesel production, and allow ethanol to replace methanol in biodiesel production.

As there is no specific customs classification for biofuels, the exact amount of imported ethanol, oilseeds and vegetable oil ultimately used in the transport sector cannot be quantified.

¹⁴ COM(2005) 666.

¹⁵ COM(2005) 667.

The Commission will assess the advantages and disadvantages, as well as the legal implications, of putting forward a proposal for **separate nomenclature codes** for biofuels.¹⁶

Currently, bioethanol under tariff code 2207 enters duty-free under the following preferential trade arrangements:

- the Everything But Arms initiative (EBA) for Least Developed Countries,
- the Cotonou Agreement with African, Caribbean and Pacific (ACP) countries,
- the new “GSP plus” incentive scheme (special incentive arrangement for sustainable development and good governance),
- some bilateral preferential agreements, notably the Euro-Mediterranean Agreement.

Two ongoing negotiations will have an impact on further market opening for bioethanol:

- At multilateral level, the Doha Round (DDA): Bioethanol will be subject to tariff cuts following negotiations on agricultural market access. Market access for bioethanol is also being discussed in the negotiations on trade and environment, whereas the market access negotiations for industrial products are also relevant for some sorts of biofuels.
- At regional level, the free trade agreement between the EU and the Mercosur (Argentina, Brazil, Paraguay and Uruguay).

Sugar and bioethanol are Brazil’s main offensive interests and are therefore essential elements of these negotiations.

Given the rising demand for biofuels, the Commission is seeking the appropriate development of both EU domestic production and enhanced import opportunities for biofuels and their feedstocks and to develop their economic viability. In order to meet the interests of domestic producers and EU trading partners alike, the Commission will pursue a **balanced approach** in ongoing bilateral and multilateral trade negotiations with ethanol producing countries. As far as current trade is concerned, the Commission will maintain market access conditions for imported bioethanol that are no less favourable than those provided by the trade agreements now in force.

Concerning biodiesel, an amendment of **standard EN 14214** could facilitate the use of a wider range of vegetable oils, to the extent feasible without significant ill-effects on fuel performance and respecting the sustainability standards.

3.6. Supporting developing countries

The Commission will

- ensure that accompanying measures for Sugar Protocol countries affected by the EU sugar reform can be used to support the development of bioethanol production;

¹⁶ This assessment will have to specify whether the focus should be on CN codes (internal EU) or on international HS codes. Creating a new HS code requires international negotiation, while a new CN code may be appropriate for EU statistical purposes.

- develop a coherent Biofuels Assistance Package that can be used in developing countries that have a potential for biofuels;
- examine how the EU can best assist the development of national biofuel platforms and regional biofuel action plans that are environmentally and economically sustainable.

The European Union's internal efforts to promote renewable energy go hand in hand with its willingness to strengthen international co-operation in this area, particularly with developing countries.

The proposal by the Commission for accompanying measures for Sugar Protocol countries affected by the **EU sugar reform** is an important cooperation initiative. The accompanying measures will support restructuring or diversification in the affected countries, on the basis of their strategies to face the consequences of the reform. Within this framework, the EU could support the development of the ethanol sector, based on thorough country-specific studies.

Other cooperation frameworks include the **European Union Energy Initiative** and the **Johannesburg Renewable Energy Coalition (JREC)**. The EU Energy Initiative focuses on policy dialogue, in parallel with specific partnerships and actions on access to energy and poverty alleviation. Renewable energy is a major focal area of the Initiative, which has established the EU Energy Facility (budget €220 million). This will become operational in 2006 and will act as a catalyst for concrete investments in energy services for those living under the poverty line. The JREC is a broad platform where governments are working together to strengthen renewables. The JREC Patient Capital Initiative follows up on a commitment by JREC member countries to identify and bridge financing gaps for renewable energy business developers and SMEs, particularly in developing countries.

To further develop synergies between the different instruments available to promote biofuels in development policy, the Commission will develop a coherent Biofuels Assistance Package that will use the current range of instruments to support aspects of biofuel development, in countries and regions where biofuels offer a good option for sustainable poverty reduction. In doing so, the Commission will assess how it can best help strengthen smallholder involvement in biofuel production: in their relation to other actors in the chain, through dissemination of information and exchange of best practice and in favouring South-South exchanges, through twinning and business-to-business relations and facilitating private sector investment, e.g. through the involvement of the European Investment Bank.

The EU will ensure that measures proposed for biofuel development are fully coherent with its development policy and with national and sectoral development policies.

In many developing countries policies and strategies for biofuels will need to be developed, taking into account national potential, national, regional and international market prospects, technical standards, infrastructure and other economic, social and environmental aspects. The development of **national biofuel platforms**, bringing together all relevant stakeholders from private and public sectors appears to be a key step in this process. At regional level, economies of scale and technological standardisation increase the chances for biofuel development. Regional **biofuel action plans**, developed by regional organisations and aiming at regional market development, can be instrumental in biofuel development. The EU will investigate how best it can assist in both these aspects. Moreover, it will assist in the

mitigation of environmental risks through case-specific investigations and support to the development of the effective regulatory framework.

3.7. Supporting research and development

The Commission will

- In the 7th Framework Programme continue its support for the development of biofuels and strengthening the competitiveness of the biofuel industry;
- Give a high priority to research into the “bio-refinery” concept – finding valuable uses for all parts of the plant – and into second-generation biofuels;
- Continue to encourage the development of an industry-led “Biofuel technology platform” and mobilise other relevant technology platforms;
- Support the implementation of the Strategic Research Agendas prepared by these technology platforms.

Research and technological development in the field of biofuels is expected to result in costs falling by an average of 30% beyond 2010. Community-funded research has already been instrumental in the development and growth of the EU biofuels industry. For example, the EUROBIODIESEL project launched in 1992 demonstrated the technical and economic feasibility of producing and using biodiesel without significant technical problems in tractors, buses and cars. The recently launched Integrated Projects RENEW and NILE are key actions in the development of second-generation biofuels aiming at pilot plant scale production.

The industry-led European **Biofuels Technology Platform** aims at providing and implementing a common European vision and strategy for the production and use of biofuels, in particular for transport applications. Major European biofuels stakeholders are represented, including the agricultural and forestry sectors, food industry, biofuels industry, oil companies and fuel distributors, car manufacturers and research institutes. Other technology platforms, such as Plants for the Future, Forestry-based Sector and Sustainable Chemistry, will also increase the knowledge base for biofuel production. Actions at European level (ERA-NET) in the field of biomass will further increase the cost-effectiveness of RTD funding through programme coordination and the initiation of joint activities at national and regional level.

The proposal for the Seventh Framework Programme (2007–2013) gives priority to biofuel research to further strengthen the competitiveness of the EU biofuel industry. In the **Cooperation Specific Programme** research activities will concentrate mainly on two themes (i) “Energy”, aiming at bringing down the unit cost of fuels by improving conventional technologies and developing second-generation biofuels (e.g. Fischer-Tropsch biodiesel, lignocellulosic ethanol, bio-dimethylether) and (ii) “Food, agriculture and biotechnology”, applying life sciences and biotechnology to improving biomass production systems. The concept of **biorefineries**, aiming at the integral use of the biomass and maximising the cost-effectiveness of the final products, will be a key focus in both themes.

Other relevant activities include support for the **market introduction** and dissemination of proven biofuel technologies through the “Intelligent Energy – Europe” programme (part of the Competitiveness and Innovation Framework Programme), **capacity building** for scaling-

up and demonstration, as well as **international cooperation** with developed and developing countries to further exploit mutual benefits and technology transfer.

ANNEX 1

Biofuels Glossary

Biofuel	Liquid or gaseous fuel for transport produced from biomass
Biomass	Biodegradable fraction of products, waste and residues from agriculture (including vegetal and animal substances), forestry and related industries, as well as the biodegradable fraction of industrial and municipal waste
Synthetic biofuels	Synthetic hydrocarbons or mixtures of synthetic hydrocarbons produced from biomass, e.g. SynGas produced from gasification of forestry biomass or SynDiesel
Liquid biofuels	
Bioethanol	Ethanol produced from biomass and/or the biodegradable fraction of waste, for use as biofuel E5 contains 5% ethanol and 95% petrol E85 contains 85% ethanol and 15% petrol
Biodiesel	A methyl-ester produced from vegetable oil, animal oil or recycled fats and oils of diesel quality, for use as biofuel (PME, RME, FAME) B5 is a blend of petroleum-based diesel (95%) and biodiesel (5%) B30 is a blend of petroleum-based diesel (70%) and biodiesel (30%) B100 is non-blended biodiesel
Biomethanol	Methanol produced from biomass, for use as biofuel
Bio-ETBE	Ethyl-Tertio-Butyl-Ether produced from bioethanol. ETBE is used as a fuel additive to increase the octane rating and reduce knocking. The percentage volume of bio-ETBE calculated as biofuel is 47%.
Bio-MTBE	Methyl-Tertio-Butyl-Ether produced from biomethanol. MTBE is used as a fuel additive to increase the octane rating and reduce knocking. The percentage volume of bio-MTBE calculated as biofuel is 36%.
BtL	Biomass to liquid
Pure vegetable oil	Oil produced from oil plants through pressing, extraction or comparable procedures, crude or refined but chemically unmodified, which can be used as biofuel when compatible with the type of engine involved and the corresponding emission requirements.
Gaseous biofuels	
Bio-DME	Dimethylether produced from biomass, for use as biofuel
Biogas	A fuel gas produced from biomass and/or the biodegradable fraction of waste, which can be purified to natural gas quality for use as biofuel or woodgas.
Biohydrogen	Hydrogen produced from biomass and/or the biodegradable fraction of waste for use as biofuel.
Other renewable fuels	
	Renewable fuels other than biofuels which originate from renewable energy sources as defined in Directive 2001/77/EC and are used for transport purposes

ANNEX 2

Biofuels: progress at national level

Member State	Market share 2003	National indicative target for 2005	Targeted increase, 2003–2005
AT	0.06%	2.5%	+2.44%
BE	0	2%	+2%
CY	0	1%	+1%
CZ	1.12%	3.7% (2006)	+ 1.72% (assuming linear path)
DK	0	0%	+0%
EE	0	not yet reported	not yet reported
FI	0.1%	0.1%	+0%
FR	0.68	2%	+1.32%
DE	1.18%	2%	+0.82%
GR	0	0.7%	+0.7%
HU	0	0.4–0.6%	+0.4–0.6%
IE	0	0.06%	+0.06%
IT	0.5%	1%	+0.5%
LA	0.21%	2%	+1.79%
LI	0 (assumed)	2%	+2%
LU	0 (assumed)	not yet reported	not yet reported
MT	0	0.3%	+0.3%
NL	0.03%	2% (2006)	+0% (promotional measures will come into force from January 2006)
PL	0.49%	0.5%	+0.01%
PT	0	2%	+2%
SK	0.14%	2%	+1.86%
SI	0 (assumed)	not yet reported	not yet reported
ES	0.76%	2%	+1.24%
SV	1.33%	3%	+1.67%
UK	0.03%	0.3%	+0.27%

EU25

0.6%

1.4%

+0.8%

Sources:

2003: national reports under the biofuels directive except Belgium (Eurostat figure for 2002), and Italy (EurObserv'ER)

2005: national reports under the Biofuels Directive. The EU25 figure assumes linear development for CZ, 0 for NL and 0 for the three states that have not yet reported a target.

ANNEX 3

Policies Promoting Biofuels in non-EU countries

Rising oil prices, pressure to reduce CO₂ emissions, and the desire to increase energy self-sufficiency, conserve valuable foreign exchange and create employment are motivating countries around the world to enact policy measures in support of biofuels.

Like the EU, a number of countries have set short- and long-term **targets** for the percentage or quantity of biofuels to be incorporated into conventional fuel. In certain countries a percentage blend is **mandatory** in all or part of the country. In Brazil, which has the world's most developed biofuels industry, a 25% blend is mandatory. Canada has a 3.5% target for the incorporation of bioethanol by 2010 but has a mandatory level of 5% for Ontario, to be achieved by 2007.

A number of countries give **tax credits or incentives** to biofuel producers or feedstock growers, and waive the excise and/or fuel tax, making the fuel cheaper to buy than conventional petrol or diesel. In some cases government-owned vehicles are required to use biofuels. From January 2006 India will introduce a biodiesel purchasing policy, obliging public sector oil companies to buy oil produced from jatropha, pongamia and other oil plants and sell it in a 5% blend, rising to 20% in 2020.

In Brazil and Thailand there are **tax exemptions for vehicles** able to run on biofuels. Thailand is also supporting the development of domestically-produced "green" vehicles.

Many countries have grant and **loan programmes** for the construction of processing plants or the development of feedstock. In Australia, seven new projects have recently received Government backing.

Brazil's example is best known and has served as inspiration for a number of other, mainly sugar-producing, countries. Brazil has become the world's largest producer and consumer of ethanol, largely thanks to the targeted subsidies under the Proalcool programme.

The Proalcool programme was launched in 1975 as a response to the oil price shocks of 1973/74 and as a means to develop a use for surplus sugar production. It provided incentives for ethanol producers, as well as price subsidies for consumers through tax reductions. Initially, the programme was very successful: in 1986, 90% of all new cars sold ran solely on ethanol, while ethanol production costs and prices gradually decreased due to economies of scale and gains in yield.

In Brazil all petrol is still sold with an ethanol component of 20–26%. In economic terms, investments in agriculture and industry for the production of transport ethanol in the period 1975–89 has been estimated at close to US\$ 5 bn, triggering benefits in terms of import savings with a value of over US\$ 52 bn for the period 1975–2002. Although the programme lost some of its impact in the 1990s due to a slump in world oil prices and the phasing-out of government incentives, it is seeing a resurgence related to current high oil prices, the competitiveness of ethanol as a transport fuel and the emergence of new export markets.

There are currently no subsidies for ethanol production and the product is very competitive on the domestic market: hydrated ethanol is sold for 60–70% of the price of gasohol (a blend of 90% petrol and 10% ethanol) at the pump. The Brazilian government continues to pay close

attention to the biofuels sector, however, by encouraging the sugar cane industry and the provision of “flexible-fuel” vehicles. In addition, new legislation on biodiesel was implemented in January 2004.

The world’s second largest producer of bioethanol, the **United States**, has seen an exponential rise in production initiatives over the last year thanks to a series of tax measures and incentives.

In 2004 the Energy Tax Act was reworked and renamed the Volumetric Ethanol Excise Tax Credit (VEETC), meaning that the tax exemption now applies to all levels of blending. VEETC extended the existing ethanol tax incentive to the end of 2010 at a rate of \$0.51 per gallon. It also improved the “small ethanol producer tax credit”, which allows a 10 cent per gallon tax credit for facilities with a capacity of less than 30 million gallons per year. VEETC also introduced a tax credit of \$1 per gallon for biodiesel if made from new oil or \$0.50 per gallon if made from recycled oil.

Other federal tax incentives include income tax deduction for alcohol-fuelled vehicles and an alternative-fuels production tax credit. The American Jobs Creation Act of 2004 (Public Law 108-357) provides tax incentives for alcohol and biodiesel fuels, available to blenders/retailers beginning in January 2005. The credits are \$0.51 per gallon of ethanol at 190 proof or greater, \$1.00 per gallon of agri-biodiesel, and \$0.50 per gallon of waste-grease biodiesel. If the fuel is used in a mixture, the credit amounts to \$0.05 per percentage point ethanol or agri-biodiesel used or \$0.01 per percentage point of waste-grease biodiesel.

In 2005, as part of its new energy bill, the United States introduced a “renewable fuels standard” (RFS), with a target rising from 4 billion gallons in 2006 to 7.5 billion gallons by 2012. The industry is confident of meeting this target and expects eventually to achieve a 10% market penetration.

A Bioethanol Bill, which would require the blending of bioethanol into commercial gasoline, was recently approved by the House of Representatives. Under the bill, all commercial motor fuels would be required to have a 5% blend of bioethanol within two years of the act coming into force. After another two years, the required blend would go up to 10%.

ANNEX 4

Biofuels Market Situation

Today, bioethanol is the world's main biofuel. Biodiesel, which until recently was produced almost solely in the EU, is now gaining a foothold in many regions across the world. Biogas comes a poor third and has so far made a breakthrough only in Sweden.

According to EurObservER, the EU's production of biofuels amounted to 2.4 million tonnes in 2004: 0.5 million tonnes of bioethanol and 1.9 million tonnes of biodiesel. This is an increase of more than 25% compared with the previous year and production capacities are increasing rapidly.

For bioethanol, more than 1 million tonnes are expected by the end of 2005 and capacity is likely to treble by the end of 2007. For biodiesel, the estimated 66 production sites across the EU are scheduled to expand to 75–80 plants by the end of 2005. For mid-2006 an increase in total EU25 biodiesel production capacity to 3.8 – 4.1 million tonnes is expected.

Table 1: EU Production of liquid biofuels

	Bioethanol			Biodiesel		
	2002	2003	2004	2002	2003	2004
	1000 t			1000 t		
Czech Rep.	5			69	70	60
Denmark				10	41	70
Germany			20	450	715	1035
Spain	177	160	194		6	13
France	91	82	102	366	357	348
Italy				210	273	320
Lithuania						5
Austria				25	32	57
Poland	66	60	36			
Slovak Rep.						15
Sweden	50	52	52	1	1	1
UK				3	9	9
from interv. stocks		70	87			
EU25	388	425	491	1134	1504	1933

source: EurObservER 2005

In 2004 world production of **bioethanol** for fuel use was around 30 billion litres. This represents around 2% of global petrol use. Production is set to increase by around 11% in 2005. The table¹⁷ below shows ethanol production by world region.

Brazil has long been the world's leading producer of bioethanol. The sugarcane area is constantly being extended, in order to meet growing domestic and export demand. With around 1 million flex-fuel¹⁸ cars expected to be on Brazil's roads by the end of 2005, the availability of bioethanol for export could be reduced, at least in the short term. In the **United**

¹⁷ It should be noted that not all ethanol production is for biofuels. At present, accurate figures for worldwide fuel ethanol production are not available.

¹⁸ Flex-fuel cars can run on any combination of gasoline and bioethanol.

States bioethanol output is expanding at an unprecedented rate and now nearly matches that of Brazil. Canada is a world leader in developing second-generation bioethanol.

Table 2: World ethanol production (fuel and other uses)

Ethanol production	2005 bio litres*	2004 bio litres
Brazil	16.7	14.6
United States	16.6	14.3
European Union	3.0	2.6
Asia	6.6	6.4
China	3.8	3.7
India	1.7	1.7
Africa	0.6	0.6
World	46.0	41.3

* F.O. Licht's estimate

In 2004 the **European Union**, with production of almost 0.5 million tonnes, is estimated to have produced 10% of the world's bioethanol. The leading EU producers were Spain and France. The leading consumer was Sweden, with about 80% of the quantities imported, mostly from Brazil.

In **Asia**, Thailand is currently building over a dozen ethanol plants that will use sugar cane and rice husks. Thailand's ethanol production capacity could rise to 1.5 billion litres a year. Pakistan, the world's largest exporter of molasses, is launching a domestic bioethanol programme to absorb some of the country's estimated 400 000 tonne production capacity, following the withdrawal of its special duty free access under Regulation (EC) No 2501/2001, which allowed it to export ethanol duty-free to the EU. Bioethanol expansion in India was slowed by a shortage of feedstock, caused by a drought affecting sugar cane production. Forced to import large quantities of ethanol from Brazil last year, India's domestic production should be back on track this year. It produces more than 1.5 billion litres of ethanol annually, of which only a quarter is used for fuel purposes.

A rapidly growing demand for sugar in the Far East means that increased ethanol production has to be balanced against a tight world sugar market and strong export potential. **China's** ethanol industry comprises over 200 production facilities in 11 provinces, capable of producing more than 10 million tonnes of ethanol each year. As food security is a great concern to China, they have also made investments in Brazil, from where they are likely to import considerable quantities of ethanol in the future, as will **Japan**.

A number of **ACP** sugar-producing countries are planning to diversify into bioethanol, but whether many of them will be able to produce at sufficiently low cost to be competitive is uncertain. However, the potential for biofuel production is not limited only to countries that grow sugar cane. **Nigeria** is considering the use of cassava, of which it is the world's leading producer. Other feedstocks, such as sweet sorghum (for bioethanol) and jatropha (for biodiesel), require lower fertiliser input, are more resistant to drought and can be grown in any region of the world. However, yield volatility may reduce their long-term profitability.

The **EU** is the world's leading region for the production and consumption of **biodiesel**. EU25 production increased to almost 2 million tonnes in 2004, with Germany the main producer, followed by France and Italy.

Around the world, many other countries have now launched biodiesel programmes, using a wide range of different feedstocks, from cassava to used cooking oil.

The **United States'** National Biodiesel Board anticipates that 75 million gallons of biodiesel will be produced in 2005, or three times as much as in 2004. A federal tax incentive, state legislation and a diesel shortage are all contributing to a rise in demand. In **Brazil** a 2% biodiesel blend will become mandatory in 2008. In addition to developing soya, investments are also being made to develop production from castorseed, in particular in the poorer semi-arid north-east of the country.

Malaysia, the world's biggest producer of palm oil, is developing a biodiesel industry, as are Indonesia and the Philippines. The first two countries will also supply palm oil to new plants in Singapore, from where biodiesel will be exported. The obligation in **India** to mix 5% biodiesel with normal diesel is expected to create an immediate demand of 2.5 million tonnes of biodiesel, which may increase to 16 million tonnes if the mix is to achieve the target of 20% in 2020.

Fiji is keen to replace 10% of its diesel fuel imports with coconut oil from local copra production.

Some **ACP countries** are exploring biofuels options with the help of EU Member States. One example is a partnership between a Danish laboratory and the University of Dar es Salaam, Tanzania, which is carrying out fundamental research into the production of ethanol from lignocellulosic waste materials. The production of bioethanol from agricultural waste in the developing world can be envisaged with no danger that this would detract from food production. Feasibility studies are also being carried out on using cotton oil as biodiesel in Brazil and West Africa.

Production of **biogas** has increased significantly, but it is used mainly for combined power and heat generation. Although in Europe more than 500 000 gas-fuelled vehicles have been sold in recent years, they mainly run on fossil gas. However, biogas as a transport fuel is used in some countries and Sweden has about 50 biogas refuelling stations.

ANNEX 5

Trade in Biofuels

1. Biodiesel

Biodiesel imports into the EU are subject to an *ad valorem* duty of 6.5%. However, there is no significant external trade, since the EU is by far the world's biggest producer. Although technical traits are reported to be less favourable than for rapeseed oil, biodiesel generated from imported soya and palm oil can be mixed in low percentages with rapeseed biodiesel without major problems.

2. Bioethanol – current trade

There is currently no specific customs classification for bioethanol for biofuel production. This product is traded under code 2207, which covers both denatured (CN 2207 20) and undenatured alcohol (CN 2207 10). Both denatured and undenatured alcohol can then be used for biofuel production. It is not possible to establish from trade data whether or not imported alcohol is used in the fuel ethanol sector in the EU.

An import duty of €19.2/hl is levied on undenatured alcohol, while an import duty of €10.2/hl applies to denatured alcohol.

Table I

Imports under code 2207 (in hl)			
	Av. 1999–2001	Av. 2002–04	% of total (02–04)
Undenatured alcohol	1 167 935	2 383 239	93%
Denatured alcohol	279 904	180 988	7%
Total	1 447 839	2 564 226	100%

Source: Eurostat Comext database, EU25 since 1999 CN (simulated) – Statistical regime 4 – extracted on 29 July 2005.

Overall imports of alcohol under code 2207 averaged 2 564 226 hl over the 2002–04 period, up from 1 447 839 hl over 1999–2001. Over 93% came under code 2207 10 (undenatured alcohol).

The principal trade trends are summarised in Table II:

Table II

Total imports of alcohol under code 2207 (in hl) by duty enjoyed by the exporting countries					
	2002	2003	2004	Av. 2002–04	% of total
Reduced duty	227 285	182 940	288 364	232 863	9%
Duty-free	980 693	2 027 632	1 709 282	1 572 536	61%
MFN	657 011	494 771	1 124 699	758 827	30%
TOTAL	1 864 989	2 705 344	3 122 345	2 564 226	100%

Source: Eurostat Comext database, EU25 since 1999 CN (simulated) – Statistical regime 4 – extracted on 29 July 2005.

- a) average imports of bioethanol increased by 77% over 2002–2004 compared to the previous three-year period (1999–2001), when they totalled 1 447 839 hl;
- b) over that period 70% of these imports were traded under preferential conditions, of which almost 61% were duty-free, while 9% benefited from some type of duty reduction;
- c) 30% of EU trade under code 2207 takes place under MFN (most favoured nation) conditions.

With respect to the largest exporting countries:

- a) over the 2002–2004 period, Pakistan was the largest duty-free exporter with an average of 501 745 hl, followed, at a distance, by Guatemala with 223 782 hl;
- b) Brazil is the only country capable of exporting large quantities as MFN, with an average of 649 640 hl over the same period, with the second MFN exporter, the USA, on only 20 109 hl;
- c) one country – Ukraine – accounts for the vast majority of imports at reduced duty, with 107 711 hl over the 2002–04 period. Egypt came second with over 43 000 hl.

In addition, recent trends in trade flows may require further consideration, given that increasing amounts of imports take place under headings other than 2207 (for instance under heading 3824 when bioethanol is blended with petrol, attracting a normal customs duty of around 6%). Bioethanol is also imported, blended in ETBE.

3. Preferential imports of bioethanol into the EU

The EU's preferential trade basically comes under two regimes: the Generalised System of Preferences (including, among others, the Everything But Arms (EBA) initiative) and the Cotonou Agreement. The main preferences accorded under each regime are summarised in Table III and described in detail in the following sections.

Table III

Import conditions under code 2207 under EU's main preferential agreements					
	GSP normal		GSP+	EBA	Cotonou
Duty reduction	15% up to 31.12.2005	0% as of 1.1.2006	100%	100%	100%
Quantitative restrictions	NO		NO	NO	NO
Beneficiaries	All GSP beneficiaries if not graduated.		Bolivia, Colombia, Costa Rica, Ecuador, Guatemala, Honduras, Panama, Peru, El Salvador, Venezuela, Georgia, Sri Lanka, Mongolia and Moldova	LDCs	ACPs

3.1. GSP

Council Regulation (Regulation (EC) No 2501/2001), in force until 31 December 2005, classified denatured and undenatured alcohol under code 2207 as a sensitive product. According to Article 7(4) of the Regulation, imports of this alcohol from all GSP beneficiary countries qualified for a 15% reduction on the MFN duty¹⁹.

Under the special drugs regime established by Council Regulation (EC) No 2501/2001, which was in force from the early nineties until repealed on 30 June 2005, exports from a number of countries (Bolivia, Colombia, Costa Rica, Ecuador, Guatemala, Honduras, Nicaragua, Panama, Peru, Pakistan, El Salvador and Venezuela) qualified for duty-free access under code 2207.

The new GSP Regulation (Council Regulation (EC) No 980/2005 of 27 July 2005), which applies from 1 January 2006 to 31 December 2008, no longer provides for any tariff reduction for either denatured or undenatured alcohol under code 2207 (still classified as a sensitive product). This Regulation put in place a special incentive arrangement for sustainable development and good governance (the new GSP+ incentive scheme), which has been in force on a provisional basis since 1 July 2005 and applies on a permanent basis from 1 January 2006 to 31 December 2008. This new incentive arrangement grants unlimited and duty-free access (suspension of Common Customs Tariff duties) to denatured or undenatured alcohol under code 2207. It includes all the countries that already benefited from the previous drugs scheme, with the exception of Pakistan, which is subject to the full MFN duty.

The new incentive arrangement now also includes Georgia, Sri Lanka, Mongolia and Moldova, which have not so far exported bioethanol to the EU.

¹⁹ Article 7(4) of Council Regulation (EC) No 2501/2001 of 10.12.2001.

Moreover, a special arrangement for the least developed countries (the EBA initiative) under the new GSP Regulation offers unlimited duty-free access to denatured or undenatured alcohol under code 2207.

3.2. Cotonou Agreement

Under the Cotonou Agreement, ACP countries qualify for duty-free access for denatured and undenatured alcohol under code 2207 with the sole exception of South Africa. Under Regulation (EC) 2501/2001, South Africa enjoys a 15% reduction in customs duties. From 1 January 2006 it has to pay full MFN duty.

3.3. Other countries with preferential arrangements

Egypt currently has unlimited duty-free access to the EU under the Euro-Mediterranean Agreement. Before that, it qualified for a 15% reduction under the GSP scheme.

Norway, which ranks among the top ten exporters with a total of 89 375 hl under code 2207 in 2004, has been granted duty-free access to the EU under the system of tariff rate quotas (TRQs) since the mid-nineties. In 2005 the TRQ will total 164 000 hl for exports under code 2207 10 (up from 134 000 hl the previous year) and 14 340 hl under code 2207 20, up from 3 340 hl.

4. Trade analysis – ethanol

Table IV sums up trade under the various preferential arrangements.

Table IV

Imports under preferential conditions 2002 – 2004 (in hl)					
by duty regime enjoyed by the exporting country					
	2002	2003	2004	Av. 2002–04	% of total trade 2002–04
GSP normal	227 285	182 940	288 364	232 863	9%
GSP+	553 156	1 569 005	1 412 896	1 178 352	47.5%
ACP	291 055	268 784	154 663	238 167	9%
EBA	30 018	86 247	18 956	45 074	1.5%
Others	106 464	103 597	122 768	110 943	4%
Total preferential	1 207 978	2 210 573	1 997 646	1 805 399	70%
Total MFN	657 011	494 771	1 124 699	758 827	30%
Grand total	1 864 989	2 705 344	3 122 345	2 564 226	100%

Source: Eurostat Comext database, EU25 since 1999 CN (simulated) – Statistical regime 4 – extracted on 29 July 2005.

4.1. GSP

Trade data for 2001–2004 show a dramatic increase in bioethanol exports from the countries benefiting from the special drugs regime in previous years. Although these countries have benefited from the same regime since the 1990s, the unlimited duty-free access enjoyed under this scheme at a moment of rising demand for alcohol under code 2207 can be considered the single most important factor underlying the doubling of bioethanol exports from these countries to the EU. All major exporters under code 2207 over the last three years benefit from this scheme: Pakistan, Guatemala, Peru, Bolivia, Ecuador, Nicaragua and Panama.

Altogether, exports of ethanol from the GSP-plus beneficiaries totalled 1 412 896 hl in 2004: practically all duty-free exports to the EU and 46% of all exports under code 2207 to the EU over the 2002–2004 period.

Thanks to its lower production costs, Pakistan took a big lead over the other GSP beneficiaries with 1 008 656 hl in 2004 (the second largest exporter in the world) followed, at a distance, by Guatemala with over 250 000 hl.

Under the new GSP, the exclusion of Pakistan from the list of countries having unlimited duty-free access to the EU market will remove from the market one of the most aggressive and competitive producers. All the other direct competitors under the GSP drugs regime will continue to enjoy duty-free access to the EU market and might be expected to fill the gap left by Pakistan, as they have relatively low production costs too.

Nevertheless, at US\$14.52/hl, Pakistan has production costs closer to Brazil's, which, with production costs of US\$13.55/hl, still manages to export substantial quantities to the EU despite paying the full MFN duty. Pakistan might therefore be expected to continue to be able to export significant quantities of ethanol to the EU, albeit not at the same pace as before, thus utilising the increased production capacity built over the last couple of years.

By contrast, the 15% reduction offered by the normal GSP regime provided access for approximately 9% of exports of the same product to the EU market. Unlike the obvious favourable impact of the GSP drugs regime, the impact of the 15% duty reduction is more difficult to assess. The two largest exporting countries benefiting from this reduction are Ukraine and South Africa. In the case of Ukraine, the introduction of the 15% reduction coincided with a dramatic increase in exports over the 2002–2004 period. For South Africa, on the other hand, the last two years showed exports stable at approximately 50 000 hl, following a dramatic decrease over the 2000–2001 period. Under these conditions, it is difficult to predict the impact of the removal of the 15% import duty reduction, although it seems fair to say that even such a small reduction seemed to provide a competitive advantage over the countries paying full duty.

4.2. EBA

So far, exports of bioethanol to the EU from countries benefiting from the special arrangement for the least developed countries (the EBA initiative) under the GSP (EC) Regulation No 980/2005 have been negligible and have come primarily from one country – the Democratic Republic of Congo – which already qualified for duty-free access as an ACP country. At the moment, the Democratic Republic of Congo is the only LDC with sizeable, though erratic, exports of alcohol to the EU under code 2207 since 1999. In 2004 exports totalled 18 956 hl after peaking at 86 246 hl the year before.

It is fair to recognise, however, that the EBA dates back to only 2001 and some of the countries which did not have duty-free access under other earlier regimes (notably

Bangladesh, Laos, Cambodia, Afghanistan and Nepal) might find new ways of access to the EU in the medium or longer term.

New opportunities might emerge in these countries – which generally do not produce (or are not very competitive at producing) sugar cane or any other raw material for bioethanol production from their own resources – in the form of processing molasses imported from their competitive, sugar-producing neighbours. This might be the case with Cambodia, which could use raw material from Thailand, or with Bangladesh and Nepal, which might process raw material from India. At the moment it is difficult to quantify future potential production from these countries, but investments are known to have been made in some of them, for example Bangladesh.

In this respect, it is important to stress that under Council Regulation (EC) No 980/2005, imports are subject to the GSP rules of origin including regional cumulation. The Commission services are currently considering the reform of GSP rules of origin in line with the orientations contained in the Commission's Communication COM(2005) 100 of 16 March 2005 on "The rules of origin in preferential trade arrangements: Orientations for the future". This aims at simplification and appropriate relaxation of the rules. *Inter alia*, it favours the principle of using a value-added method for the determination of origin.

4.3. Cotonou Agreement

- On the whole, ACP exports to the EU under code 2207 have so far been limited. Over the last couple of years, however, they have been fairly stable at 238 167 hl, despite a low of 154 663 hl in 2004 (excluding South Africa: 48 728 hl).

Swaziland and Zimbabwe are by far the leading exporters with an average of 85 562 hl and 120 261 hl, respectively, over the 2002–04 period. A number of ACP countries are likely to consider bioethanol production as an alternative to sugar production as part of the restructuring resulting from the EU sugar reform. However, bioethanol production from sugar cane might remain relatively low and limited only to countries where sugar production is competitive, such as Swaziland and Zimbabwe, which have production costs close to Brazil's and India's and which are already exporting substantial quantities to the EU under code 2207.