Current situation and prospects for biodiesel and vegetable oils as fuels: From niche products to market players

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Introduction

In December 1990 when UFOP was founded, biodiesel was an unknown product. With its inter-professional structure, the association had placed its reliance on this alternative fuel from the very beginning. Right from the beginning, UFOP realised the importance of biodiesel as an alternative fuel and structured its work accordingly. In those days was a need to develop new markets, following the lost soya panel in the GATT (now WTO) and the implementation of compulsive set-aside to reduce grain surpluses and consolidate the EU budget in the first stage of reforming joint agricultural policy. From a very early stage, Germany and France had seen a new commercial alternative in rapeseed cultivation on set-aside land to produce diesel, albeit pursuing different strategies. France consistently pursued an admixture of biodiesel and petroleum diesel, starting with a pilot project, which resulted in a production capacity of about 250,000 t in 1995. Germany did not pursue this strategy, which is specified by petroleum taxation frameworks. Instead the introduction of biodiesel as a pure fuel to the market was "tolerated" in the absence of national regulations ratified by the EU Commission. Market introduction was rendered more difficult due to consumers' almost complete unawareness of biodiesel and doubts concerning its suitability for use in conventional diesel engines in those days. Thus the initial biodiesel turnover was relatively low. It was not until September 1995 that the first industrial biodiesel facility went into operation in Leer in North Germany. However, the price difference between biodiesel and petroleum diesel was still too small to trigger a rise in demand. Nevertheless, by issuing an approval for all diesel passenger cars, Volkswagen Corporation was the first car manufacturer to set the basis for a customer base at filling stations, which finally broke the "chicken-and-egg" cycle.

General statutory conditions

The first surge in biodiesel demand and subsequent investment boom led to the introduction of an environmental tax in 2000 in three stages, each comprising an increment of three cents per litre. Although biodiesel was the winner of the ecological tax reform, it was not yet anchored in petroleum taxation laws.

By passing an amendment to the petroleum taxation law dated 1st January 2004 and concerning tax exemption for biofuels, Germany created a legally binding regulation for biofuels. Marketing mechanisms and production capacity expansions for biodiesel had been based on a protocol declaration by Germany to the EU Commission. Increases in biodiesel production capacity led to a requirement for legalizing tax exemption for the production of biofuels in Germany.

The new EU guidelines for promoting biofuels (2003/30/EC) and the energy taxation (2003/96/EG) provided an incentive to develop biofuels as strategic energy supply elements on the basis of target levels. It also provided the authorization required for national tax exemption of biofuels. The target levels specified by the EU's Action Plan, beginning at 2 % in 2005 and gradually increasing to a calorific value of to 5.75 % by the end of 2010 are very ambitious in view of the raw materials required for this purpose.

Germany's request for a national subsidy in the form of exempting biofuels from petroleum taxes was approved by the EU Commission on 18th February 2004 as an interim measure from 1st January 2004 to 31st December, 2009. The Commission had examined the request on the basis of a cooperative framework for government subsidies toward environmental protection. Exemption is based on Article 87, Paragraph 3 (c) of an EC agreement, which provides for subsidies to promote and develop certain economic sectors as long as this does not conflict with common EU interests or trade terms.

To fulfil prerequisites for obtaining full petroleum tax exemption for biofuels at that time, Germany was able to show that production costs for tax exempt biofuels minus excise duty would not lie below conventional fuels' market price plus excise duty. Following notification, the EU Commission recognized a need to consider not only production costs, but also the added cost of biofuel consumption (use as pure fuel) resulting from a lower energy content.

This cost factor does not apply to admixtures to diesel (max. 5 % according to DIN EN 590) or petrol (max. 5 % according to DIN EN 228) at the petroleum industry level. For biodiesel and bioethanol, the Commission concluded that national exemption from petroleum tax does not lead to over-compensation. The Commission recognized the measures specified by the national petroleum tax legislation for annual checks of over-compensation as part of reporting to parliament. The Commission established that subsidies are restricted to compensating the difference between the cost of producing a biofuel and its market price. This situation has been changed by increases in the price of crude oil in 2004 and especially in 2005.

In the German government's first over-compensation report dated 21st June, 2005 (publication 15/5816) to the lower house of the German parliament, the government concluded that market access for biodiesel also entailed a price incentive (refer to the example of natural gas) and accordingly recommended its consideration during agreements on partial taxation proposals.

The enforcement of the petroleum tax law amendment dated 1st January 2004, followed by the EU Commission's announcement of this measure, triggered a real biodiesel investment boom in Germany and - with the participation of the petroleum industry - led to the emergence of a significant commercial demand sector.

Over-compensation Calculation

The following table has been taken from the report published by the German Federal Government and lists the factors used to examine over-compensation of biodiesel and each of the ascertained costs in detail:

Price in cent/L	Biodiesel used as Pure fuel	Additive
Price of rapeseed oil price, ex oil mill	49	49
Refining	4	4
Esterification minus glycerin credit	7	7
Mixing costs	-	3
Logistics	8	8
Extra technical expenses	3	-
Extra consumption	5	-
Sum (without purchase tax)	**76**	**71**
Average price for diesel 2004	**81**	**81**
Over-compensation	**5**	**10**

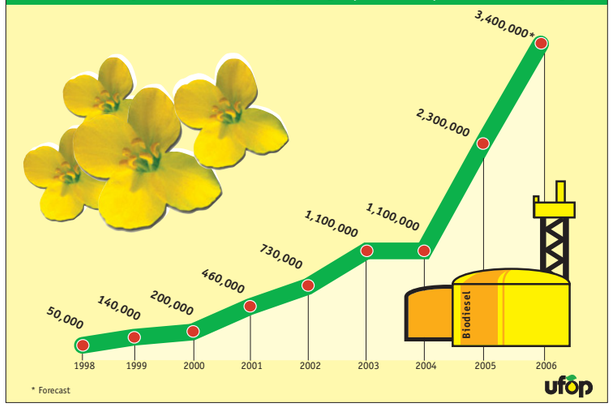
Source: German Bundestag (Parliament) 15/5816

Developments in production and turnover

Biodiesel production capacity reached 265.000 t in 2000, and is expected to increase tenfold to 2.3 - 2.6 million tons by the end of 2006. Taking into account facilities currently in planning, biodiesel production could reach 3 - 4 million tons by the end of 2007. In recent years, 400 – 500 million Euros were invested to expand biodiesel production capacity. Germany is the world's leader in producing biodiesel as well as developing related plant technologies and automotive concepts of operation with biodiesel as a pure fuel. Not only material-related specifications but also increasingly strict emission standards need to be fulfilled as prerequisites for approval. DaimlerChrysler Corporation now also approves commercial vehicles for exhaust-gas class EURO 5 in conjunction with a special configuration (see www.ufop.de).

Oil-mill capacities are also being extended from currently 5.5 million t to 7.5 million tons by the end of 2007. Further oil mills intended for the integration of biodiesel plants are currently in planning. A lasting supply of rapeseed oil as raw material is a decisive strategic element for ensuring the competitiveness of biodiesel facilities, in order to avoid that

Biodiesel production capacity (in tons) in Germany



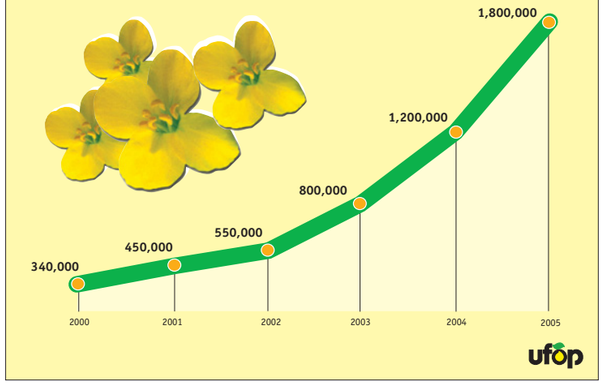
high vegetable oil prices or a shortage of rapeseed oil threaten a closure of facilities. Sufficient rapeseed oil stocks should avoid a repeat of the bankruptcy of a biodiesel facility in Schwarzheide in 2003.

The UFOP considers it as important for rapeseed oil to closely meet raw material quality requirements according to DIN EN 14214 in terms of oxidation stability and CFPP value. Additions of flow improver were examined intensively for interaction exclusively with rapeseed oil methyl ester as part of a project by the Quality Management Work Group (www.agqm-biodiesel.de).

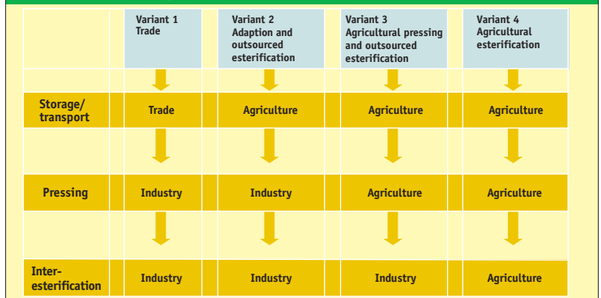
Notable investments estimated at 60 to 70 million Euros have also been made in small pressing facilities for obtaining rapeseed oil. In the last three years, the number of decentral pressing facilities rose sharply from 98 to about 300 with a grinding capacity of 0.4 to 0.5 million tons. Rapeseed oil is manufactured mainly for the use as direct fuel or as a raw material for the production of biodiesel. The UFOP expects cooperation between biodiesel manufacturers to intensify especially if fuels based on vegetable oil and intended for agriculture / forestry remain exempt from petroleum tax in the long-term. Usage of rapeseed-oil fuel is currently be governed by a preliminary standard, E DIN V 51605. This standard was developed with financial support from the UFOP and will become a definitive, national standard by mid-2006.

The rise in biodiesel capacity increased sales of biodiesel to an all time high of 1.8 million tons in 2005. About 1.5 million tons are estimated to be derived from domestic production and 300,000 - 400,000 t from imports. Reliable statistical data are not available, as biofuels have not yet been included in relevant petroleum statistics. Although biofuels are subject to the same reporting obligations, there is still a need for establishing an appropriate reporting system, which is currently discussed by the responsible departments (federal ministries of research, economics / technology, environment / nature conservation / reactor safety, national defence) and the biofuel industry.

Biodiesel sales (in tons) in Germany



Biodiesel/rapeseed-oil fuel in agriculture and forestry Rapeseed cultivation (base area, fallow area, energy-crop premium)



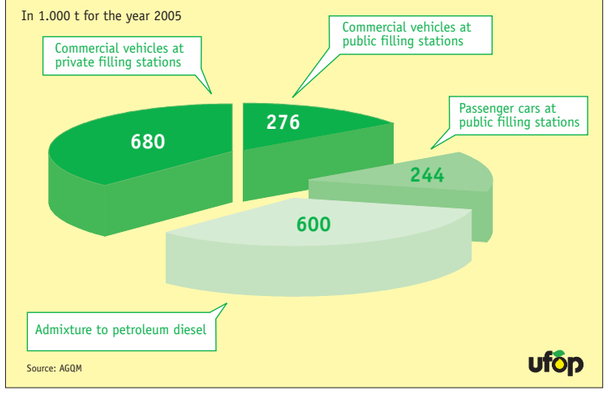
Source: TLL

Today, more than 500 medium-sized, non-affiliated enterprises dealing in transport fuel offer biodiesel at about 1900 public filling stations (every ninth one), thus providing a near comprehensive coverage. According to a recent survey (01/06) by the Quality Management Work Group, investments by operators to establish or convert public filling stations totalled some 8 million Euros in 2005 alone and have reached about 35 million Euros since 1996. For these companies, biodiesel has turned into a significant additional source of income on a very competitive fuel market with a turnover of about 520,000 t (approximately 420,000 t in 2004).

In 2005, about 1 million tons of biodiesel were sold as pure fuel (including sales via public filling stations) directly to forwarding agencies, public regional transport companies and the agricultural sector in combination with rapeseed-oil fuel whose use is spreading rapidly. Potential sales in the agricultural and forestry sectors are estimated at 300,000 - 400,000 t, taking into consideration the existing regulation on refunding agricultural diesel (limited to 10,000 litres).

About 600,000 t of biodiesel are added to diesel fuel in proportions of up to 5% according to DIN EN 590 at the petroleum industry level.

Utilization of bio-diesel according to user group



Effects on the agricultural sector

The cultivation of raw materials for the manufacturing of biodiesel requires an area of 1 million hectares in 2005 in Germany. The maximum possible cultivation area is estimated at 1.6 to 1.8 million hectares. Some 400,000 hectares are needed for producing rapeseed oil for the food industry, and about 100,000 hectares are required for oleo-chemicals and lubricants. The potentially extra area available for producing biodiesel is estimated at 0.3 – 0.5 million hectares in Germany.

Developments in capacity and accompanying rises in demand for raw materials significantly influenced cultivation trends in Germany. The German rapeseed area is expected to reach 1.4 million hectares, which would mean that rapeseed cultivation could double within the space of 15 years. This production trend has contributed considerably toward mitigating problems of grain surpluses and consequently lowered the costs of measures like government intervention.

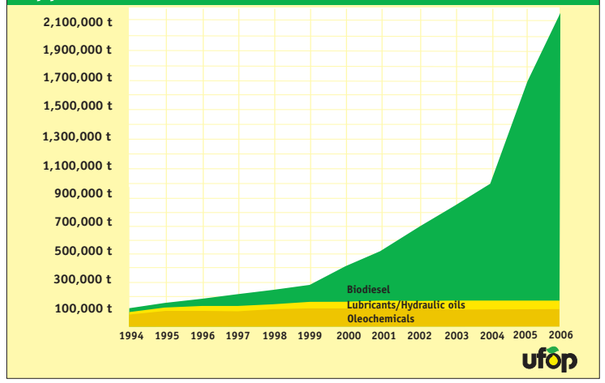
The cultivation of regenerative raw materials in 2005 covered about 1.32 million hectares, approximately 1 million of this were used for rapeseed (set-aside area: 322,000 hectares; cultivation with energy-crop premium: 122,000 hectares). Rapeseed has proven to be a particularly profitable alternative crop to sugar beet in grain crop sequences for farming enterprises in the former East Germany. At a rapeseed manufacturing price of 200 to 210 Euro/t during harvest 2005 and a yield of approximately 3,8 million tons, this agricultural production sector achieved a gross turnover of about 0.76 billion Euros. Steady increases in the rapeseed area accompanied by rising manufacturing prices have thus significantly contributed to offset the effects of the 2nd-level GAP reform (reduction in subsidies for oil-seed cultivation areas in three stages, aligning them with those for grains).

Cultivation of regenerative raw materials (in hectares) in Germany

	2003		2004			2005			
Raw material	**Base area**	**Fallow area**	**Base area**	**Fallow area**	**Energy crop area**	**Base area**	**Fallow area**	**Energy crop area**	**Energy crop area**
	Germany								Abroad
Starch	125,000	0	125,000	0	0	125,000	0		
Sugar	7,000	0	7,000	0	0	7,000	0		
Rapeseed oil	340,000	328,753	424,000	210,000	80,800	561,665	322,000	121,926	130,669
Sunflower oil	15,000	3,983		750	0		1,900		
Grain[1)]			0	3,400	31,500		43,534	118,531	
Linseed oil	5,000	365	3,000	100	0	0	0		
Fibre plants	2,800	0	2,000	0	0	1,500	75		
Medicinal plants	4,000	693	4,000	400	0	4,000	182		
Other	0	5,051	0	350	0		2,811	2,320	
Sum	498,800	338,047	565,000	215,000	112,300	719,165	370,502	242,777	130,669
Total	**836,847**		**893,300**			**1,322,444**			

Source: BLE, UFOP
[1)] Including CCM, silo maize

Raw material (rapeseed oil) requirement of non-food applications



Given the estimated 1.4 million hectares available for the cultivation of rapeseed for biodiesel production, Germany has got the raw-material potential required to fulfil the target specified by the EU action campaign for 2010: Coverage of at least 5.75% of the diesel market with biodiesel (approximately 2 million tons).

The rapid increase in German biodiesel production capacity, projected to reach more than 3 million tons by 2007, resulted in meeting the 2010 target for the diesel market already in 2005. To ensure a continued acquisition of raw materials from the EU and other regions, and consequent utilization of production capacities, locations for new facilities are being planned along navigable inland waterways and harbours (for instance: Regensburg, Höchst, Mainz, Brunsbüttel, Rostock, Halle, Neuss, Magdeburg).

The increase in biodiesel production capacity is leading to a simultaneous increase in processing capacity for rapeseed and soft seeds (as mentioned earlier) and a strengthening of Germany's position as the most significant EU region processing these oilseeds. Not only traditionally trade companies are involved in this process (ADM, Cargill and Bunge), butoil mills are also integrated into biodiesel production concepts. This is leading to a stronger regional association between raw materials and biodiesel production facilities especially in the former East Germany. Accompanied by positive developments in manufacturing/market prices, this is likely to results in increased competition for rapeseed as a raw material.

Potentials in terms of area and quantity

Potential availability of raw materials for producing biodiesel is limited. In the 25 member countries of the EU, 19.2 million tons of oilseeds were harvested from about 7 million hectares in 2004 (rapeseed: 15.1 million tons; sunflower: 4.1 million tons), corresponding to an oil quantity of about 8 million tons. Measured against the diesel demand of the EU 25 in 2010 (165 million tons), about 11 million tons of biodiesel would be required after accounting for the calorific value. This comparison demonstrates that the target share of 5.75% for 2010 cannot be achieved solely with European raw materials. Enforcement of an EU-wide admixture requirement (Austria, Netherlands, Great Britain) logically increases the potential for imports of vegetable oils and biodiesel.

EU guideline for promoting biofuels
EU Commission's action schedule

Biodiesel in Germany	**2005**	**2010**
Target proportion	**2 %**	**5.75 %**
Diesel consumption[1]	**30.1 Mio. t**	**30.8 Mio. t**
Biodiesel requirement[2]	**0.70 Mio. t**	**2.06 Mio. t**
Production capacity[3]	**1.50 Mio. t**	**2.00 Mio. t**
Cultivation area[4]	**1.07 Mio. ha (0.94 Mio. ha)**	**1.43 Mio. ha (1.25 Mio. ha)**

Source: D. Bockey, UFOP
[1] Petroleum Trade Association (MWV)
[2] Base: Diesel calorific value: 43 MJ/kg, Biodiesel calorific value: 37 MJ/kg
[3] Estimated proportions
[4] Base: Production capacity; Biodiesel yield 1.4 t/ha (1.6 t/ha)

EU action schedule for biofuels
EU-25

	2005	**2010**
Target proportion	**2 %**	**5.75 %**
Diesel consumption[1]	**158.6 Mio. t**	**165.0 Mio. t[4]**
Biodiesel requirement[2]	**3.69 Mio. t**	**11.0 Mio. t**
Cultivation area[3]	**2.63 Mio. ha**	**7.88 Mio. ha**
Petrol consumtion[1]	**124.8 Mio. t**	**113.6 Mio. t[4]**
Ethanol requirement[2]	**3.7 Mio. t**	**9.7 Mio. t**
Cultivation area[3]	**1.85 Mio. ha**	**4.84 Mio. ha**
Total cultivation area	**4.48 Mio. ha**	**12.72 Mio. ha**

Source: D. Bockey, UFOP
[1] EUROSTAT (2002)
[2] Base: Diesel calorific value: 43 MJ/kg, Biodiesel calorific value: 37 MJ/kg
Standard petrol calorific value: 40 MJ/kg, Ethanol calorific value: 27 MJ/kg
[3] Biodiesel yield: 1.4 t/ha, Bioethanol yield: 2 t/ha
[4] Assumption: 9 % decrease in petrol consumption, 4 % increase in diesel

However, the EU guideline for promoting biofuels does not specify quantities corresponding to the market share of each fuel type. This "gap" can be filled with the production of bioethanol. Compared with biodiesel produced from oilseeds, bioethanol can be produced from a greater variety of raw materials. Taking into account current conversion technology and existing reserves of biomass, the resulting theoretical availability of bioethanol amounts to approximately 20 million tons in the EU 25 and 6.3 million tons in Germany (source: LAB). The latter, based on current consumption forecasts by the Petroleum Association, implies a substitution potential of about 29% in the case of petrol, corresponding to a national petrol consumption level of 22.0 million tons in 2010.

With a view to further developments, examinations are currently being conducted to determine whether lignocellulose obtained from biomass (e.g. grain straw) can serve as a source of raw material. A saccharification of lignocellulose would notably increase the potential for producing bioethanol on the basis of domestic biomass. At present, the European Commission is sponsoring 20 research groups in this area; intensive research is also underway in the US.

In summary, it can be established that the production of raw materials and biofuels in Germany is now a diverse sector characterized by steady growth. The demand for rapeseed as a raw material for producing biodiesel has influenced price and cultivation trends for oilseeds in Germany and increasingly across the EU in particularly in the last few years. Other EU member states are currently also expanding plant production capacities. Similar to Germany, these states' cultivation areas are also expected to experience a shift in utilization from grain to oilseed production. At the same time, production of grain as a raw material for bioethanol also poses a sector with a large potential turnover. Germany and the EU as a whole can potentially provide a considerable amount of raw materials for producing significant quantities of bioethanol as an alternative fuel, taking Brazil as an example. However, the previous German government's fuel and research strategy focused on a production of synthetic fuels from biomass, a variant not yet evaluated sufficiently in terms of effects on structure and aspects remote from the market. A modified biofuel strategy as an element of long-term national policy is needed in this case.

Animal foodstuff refinement

By-products of biodiesel and bioethanol manufacture are mash, DDGS, rapeseed grist and rapeseed cake, all providing valuable protein feed. Although these by-products reduce the dependency on imports of soya grist, they also increase price pressure for proteins on feed markets. Accordingly, high-grade protein feed remains available to the entire refinement sector in the long-term at relatively low cost in competition with soya grist (not accounting for fluctuations in currency exchange rates). The proportion of protein feed in raw material is about 50% in the case of bioethanol and about 60 % in the case of biodiesel.

Price pressures are inevitable in view of the capacity expansions described above – in the US and Brazil, too, sales pressure are likely to increase as a consequence of increasing biodiesel production. Soya beans have got only an oil content of about 26 % compared with rapeseed of 40 % – 43 %. A fermentative use of rapeseed cake and rapeseed grist at biogas facilities is therefore being discussed intensively. At the same time, a notable proportion is recovered as fertilizer, particularly in the form of phosphorous. The amended regenerative energy law plays an important role in maximizing the energy yield of entire plants. The bonus of 6 cents/kWh for regenerative raw materials should be granted at least for rapeseed cake with a higher residual oil content (10 % to 14 %) obtained from decentral facilities.

Ruling parties' policy – coalition agreement

According to the coalition agreement, tax exemption is to be replaced by an admixture requirement. The following consequences can be anticipated if this intention is carried out exactly as declared:

a) The market for pure fuels (mentioned earlier) would collapse almost immediately, following diverse attempts by professional groups in the agricultural sector (Association of German Farmers, Association for Promotion of Oil and Protein Plants, farmers' state associations) to expedite market introduction.

b) Long-term developed increased cooperation with the automotive industry, primarily to obtain approvals for the use of pure fuels and also to achieve a consensus on ecological balancing of biofuel paths (study by the Association for Research on Combustion Engines and Association for Promotion of Oil and Protein Plants: future CO2-neutral techniques of achieving mobility with biofuels - a situation report), would be rendered useless. Germany has assumed a leading role - also internationally - in the use of biodiesel and rapeseed oil as pure fuels. Perspectives for the use of rapeseed oil as a fuel are extremely promising. The announcement by one of the world's largest manufacturers of agricultural machines (John Deere) to examine automotive prerequisites for release may be an important step toward self-sufficiency in the agricultural sector. Supported in part by federal and state funds in recent years, this development would suddenly become prone to failure if the use of biodiesel and rapeseed oil as pure fuels were discontinued.

c) An admixture requirement in the absence of an alternative market increases biofuel manufacturers' unilateral dependency on the petroleum industry and import pressure.

Basic requirements

When determining general conditions for sponsorship at national and EU level in future, the ruling parties and federal government need to attach equal importance to climate protection and a reduction in dependence on energy imports, as pursued by the EU sponsorship guideline (refer to the current discussion of natural gas). The step-by-step introduction of biofuels must be accompanied by a clear commitment to these two objectives. In the US, safeguarding of energy supply has become a matter of national security. The introduction of a moderate and carefully formulated admixture requirement is an important political signal that the strategic orientation of energy supply in the fuel sector will not be decided solely by the petroleum industry. Policy makers have exercised their protective authority here. Although it is basically appreciated that DaimlerChrysler was the first vehicle manufacturer to set about fulfilling automotive prerequisites for a use of B10 and E10 (10% biodiesel or bioethanol in diesel / petrol), this entails a tremendous "flow" practically implying a doubling of the bioethanol and biodiesel quantities listed in Table ”EU action schedule for biofuels EU-25” on page 9. The standards applicable to petrol (DIN EN 228) and diesel (DIN EN 590) need to be modified prior to market introduction. Whereas in the case of petrol, this is possible without a need for elaborate automotive tests, a notable amount of research is required in the case of diesel.

The raw-material composition of biodiesel might influence combustion quality (emissions deposits); furthermore, interactions in fuel mixtures need to be investigated (additives, effects on CFPP value etc.). Noteworthy here is that manufacturers of injection pumps reached a worldwide agreement in June 2004 to approve a maximum biodiesel proportion of 5% in diesel fuel. The petroleum, biodiesel and automotive industries will need to take the necessary measures to eliminate problems of fuel quality. Also possible as indicated by investigations already in the early 1990s is a direct use by the petroleum industry of vegetable oils in refining processes or acquisition of "biodiesel" manufactured on the basis of hydration instead of interesterification. This produces alkanes which might best meet the petroleum industry's quality specifications. Extensive research is urgently needed here.

In its 2004 research report titled Perspectives for Germany and addressing long-term developments, the previous German government concludes that, in the area of fuels, increases in the efficiency of diesel and petrol engines as well as innovative aspects will play a key role until 2020. In particular biofuels such as biodiesel will be used as additives in future.

A point of criticism here is that existent deficiencies in research on biofuels as well as inadequate attendant research in the public sector inhibit development and optimized use of biomass potentials. Although a large number of universities are engaged in automotive research jointly with the automobile industry, in reality fuel quality development is almost exclusively a domain of the petroleum industry and does not involve the public sector.

In view of environmental and tax-related resolutions for promoting biofuels, policy makers need to call for transparent attendant research as an aid in making strategic decisions in the future. The Association for Promotion of Oil and Protein Plants and the Association of German Farmers see a need for establishing independent research, e.g. by creatinginterdisciplinary research and learning centres or extending an existent institution like the German Research Centre for Agriculture in Braunschweig. Such a research facility would also serve as a coordination and competence centre for research required for biofuels of the 1st and 2nd generations. Brazil's bioethanol strategy, in particular, demonstrates the required measures within energy supply policy to reduce dependence on crude oil imports and foreign exchange reserves (foreign trade balance). The petroleum and automotive industries are close partners of policy makers and the bioethanol industry. By introducing Flexible-Fuel-Vehicles (FFV) to the market, Volkswagen Corporation has provided the automotive option of buying petrol instead of bioethanol whenever required. At the beginning of January 2006, rising demand for ethanol caused the price of sugar to surge from 9 to 16 cents per pound. On a restraining note, however, the production and processing of the required biomass must account for socio-economic aspects as defined in the objectives of Agenda 21.

In terms of added-value, the development of an economic sector also needs to serve public welfare and the interests of as many raw material suppliers as possible. This raises the issue of a certification system like the one already implemented for wood production (FSC seal).

Measures needed to create a national and European biofuel market

The production of suitable raw materials to produce biofuels offers significant potential for added-value for the agricultural sector. Tax exemption and the resulting losses in earnings from petroleum tax are compensated to a notable degree by the effects of added-value, according to a study by Germany's ifo institute.[1] The compensatory effect does not occur in the case of imported biofuels and raw materials. On the contrary, there is a danger that national incentive will create production effects elsewhere, resulting in notable competitive discrepancy, socio-economic repercussions and negative consequences for the environment (refer to the import of bioethanol from Brazil and palm oil from Malaysia/Indonesia).

At the EU level, all strategies for future introduction of biofuels to the market should also consider the issues of import regulation to avoid trade conflicts, as well as specifications of binding, minimum quantities (refer to the action plan) and criteria for long-term economy (refer to the proposal by the UNEP and DaimlerChrysler)[2]:

1. To be considered is the introduction of import quotas distributed among the various member states according to corresponding shares of the fuel market. The imported quantities are subject to monitoring by tax authorities. Every member state must also be committed to use imported bioethanol, for instance, in accordance with the state's fuel consumption and target quantities. These quantities must be agreed at the EU level. Trade conflicts can be avoided in this manner, because exporting countries would also profit from the gradual increases in biofuel consumption to attain target quantities. To be assessed here is a need for allowing imports of raw materials to ease supply shortages by manufacturers of biofuel in the EU. The import quotas must be based on the EU's existing production capacities to prevent a influx of imports; the supply of biofuels must be developed step-by-step.

Quotas for admixtures, in turn determining market access levels, should take into account the minimum quantities specified in the EU action plan to ensure a rise in domestic EU demand for biofuels, thus correspondingly influencing quotas for import quantities.

2. As a prerequisite, imported biofuel (biodiesel) must fulfil minimum quality requirements for biofuel (EN 14214) and be declared appropriately. This must be linked to conditions for approving and issuing customs tariff numbers for biodiesel. Note: Action is urgent here, Brazil is rumoured to have already submitted a request for a customs tariff number to the World Consumer Council (WCC) based on the ASTM standard developed in the US. This standard does not meet the strict quality requirements of EN 14214, which serves as a basis for approving the use of pure fuels and governs admixtures to diesel fuel (refer to the 10th Federal Emission Protection Law).

3. Another requirement is EU-wide introduction of an admixture regulation without any tax exemption to create a European biofuel market. The EU Commission's biomass action plan already includes this basic objective for biofuels. In view of limited budgets and an expected drop in earnings from petroleum tax, the EU Commission should take the initiative toward EU-wide harmonization, as national frameworks for promoting biofuels will otherwise digress even further. Target levels for 2005 announced to the Commission already indicate the variable political priorities assigned to biofuels by various member states. Taking into account the relatively low initial proportions, the resultant added cost for end users is expected to be similarly low. This needs to be considered in the EU Commission's report to the European parliament, which is due at the end of 2006. Special importance also needs to be attached to communication with consumers. So far, the EU Commission has not taken any meaningful measures in this area, although member states already possess numerous networks, which could be used to fulfil this task with the EU Commission's help. The importance of this issue needs to be conveyed in order to lay the foundations for a lasting future energy supply.

Meeting target quantities in 2005 according to guideline 2003/30/EC (proportion of biofuel in total fuel consumption)

EU member state	Market share %	EU member state	Market share %
Belgium	2[a]	Spain	2
Denmark	0	Estonia	0
Germany	2	Latvia	2
Finland	0.1	Lithuania	2
France	2	Malta	0.2
Greece	0.7	Poland	n.a.[a]
Great Britain	0.3	Czech Republic	2.6 *
Ireland	0.1	Hungary	0.6
Italy	n.a.[a]	Slovenia	n.a.[a]
Netherlands	1.2	Slovakia	2
Austria	2.5	Cyprus	n.a.
Portugal	1.2	Luxembourg	n.a.[a]
Sweden	3	EU-25	1.4

[a] An official report has yet to be submitted to the Commision, * Incremental rise to 2.9 % by 2009
Source: EU-Commission, Version: 03/2005

General, tax-related policies considered necessary by the Association for Promotion of Oil and Protein Plants and Association of German Farmers for advancing the biofuel market:

1. Introduction of an admixture regulation without tax exemption for biofuels - compliant with EU legislation - at the level of the petroleum industry or bonded warehouses corresponding to target proportions of biofuels according to the EU sponsorship guideline.

2. Check for over-compensation resulting from tax exemption for biofuels in accordance with applicable petroleum taxation laws. The introduction of a minimum tax rate compensates losses in petroleum tax and eases the market, especially in the case of imported biofuels (side effects). Conversely, introduction of a national minimum tax rate harmonizes tax exemption at the EU level. Linked to this is the expectation that sharp increases in capacity - especially in the case of biodiesel - will make the export of biofuels to other member states an interesting economic alternative too.

3. Long-term maintenance of full tax exemption for the agricultural and forestry sectors to compensate increases in fuel prices and competitive differences resulting from tax exemption for diesel in other member states. If the current applicable regulation on agricultural diesel is retained (10,000 litre limit), the resulting total requirement is expected to be 300,000 to 400,000 t. To prevent their misuse, biofuels intended for the agricultural or forestry sector must be appropriately labelled before being released to the free market (refer to heating oil).

4. To ensure equal competitive conditions, manufacturers of biofuel must declare their raw material types and quantities. Over-compensation is determined on the basis of the selected

1) ifo study titled "General economic assessment of rapeseed cultivation for biodiesel production in Germany", Munich, March 2002
2) Magdeburg environmental forum: DaimlerChrysler and UNEP emphasize the importance of biofuels

raw materials and their current prices. Calculations of over-compensation are thus based on actually employed raw materials and prices. The duty to notify must be extended appropriately and will permit a more objective determination of actually achieved climate protection effects. In situations involving a use of raw-material mixtures, the rapeseed oil price used as a basis in the German government's first report to evaluate over-compensation for biofuels leads to a competitive disadvantage for enterprises which exclusively use rapeseed oil as a raw material. The extra cost of administration is estimated as low. In the case of imports, a similar procedure should be adapted for bonded warehouses, analysis of fatty-acid composition proving unproblematic in the case of biodiesel. To be determined is whether a quarterly or semi-annual check for over-compensation also makes sense from the fiscal point of view.

The outcome is an avoidance of unfair competition attributable to raw materials (side effects) i.e. a maintenance of equal competitive conditions for domestically produced biofuels based on various raw materials and corresponding imports. Furthermore, it would not prove consistent if - despite rising proportions of imported vegetable oil - over-compensation were calculated on the basis of expensive rapeseed oil.

Checks for over-compensation must always be performed carefully, as fuel markets are extremely volatile. If the price of fossil fuels takes a downward turn, partial taxation in the wake of an over-compensation check can make a use of biofuels in pure or mixed form unprofitable. Accordingly, the admixture regulation and continued use of biodiesel as a pure fuel for the agricultural and forestry sectors serve as a kind of safety net for national and European biofuel production.

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