Biodiesel 2009/2010

Report on the Current Situation and Prospects – Abstract from the UFOP Annual Report

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Biodiesel 2009/2010

Even though the economic situation in Germany has improved subsequent to the latest financial crisis, and although exports currently drive economic developments, the biodiesel economy both in Germany as well as the remainder of the European Union has been unable to profit from this. With its scrap scheme, the Federal Government was able to bridge the slump in demand for personal vehicles, allowing car manufacturers to now service the unexpected level of new foreign demand for vehicles without any significant employee reductions. However, the situation on the fuel manufacturing side is completely different. In particular, the economic crisis was felt when it came to sales of diesel fuels. According to figures provided by the Mineral Oil Economic Association, approximately 20.2 million tons of diesel fuel were sold in 2009, representing a reduction of around 0.3 million tons (./. 3.2 percent) compared with 2008. The Association sees the primary reason for this in the environmental reward for scrap vehicles within the context of Economic Package 2 which resulted in a further "dieselification" of the private vehicle market. This explains why diesel fuel consumption fell a mere 0.4 percent during 2009. In the view of the UFOP, the improved economic situation should, during 2010, again result in an increase in diesel sales and an associated increase in biodiesel as an additive component (B7), since this economic recovery will also affect the shipping trades.

Despite this outlook, the situation within the German biodiesel industry has not improved. On the contrary, the time period covered by this report was characterized by an unexpected level of consolidation within the German biodiesel industry. This is due not merely to the fact that at around 50 percent, the biodiesel capacity in Germany was once again significantly underutilized, but also to the fact that this lead to biodiesel manufacturers either filing for bankruptcy or reorganizing several production facilities into new corporate structures. Let us use the example of the entry of the Swiss raw materials dealer, Gelncore, into Biopetrol Industries. This financial restructuring created the foundation for the continuation of the Biopetrol Corporation. Another example is the takeover of the biodiesel facility and refinery of G.A.T.E. Global Alternative Energy GmbH at the Wittenberg plant by Louis Dreyfus Commodities Wittenberg GmbH. Apparently, a diversification, particularly in light of the international raw materials procurement situation, is imperative in order to ensure competitiveness of the home biodie-sel industry in view of the increasing excess capacity in European biodiesel production. Investment decisions, including federally supported investment help for facilities designed with the sole object of the reesterification of vegetable oils and the sale of biodiesel and glycerin, and resulting from an increase in the number of international mergers, coupled with the raw materials markets on the one hand, as well as the biodiesel sales markets on the other, are difficult to reach in a competitive market – particularly since the tax relief on biodiesel as the sole energy source has, politically at least, become a "runout model" with the introduction of the biofuel quota law in 2006. As long ago as 2003, the energy tax guideline with its condition of an annual over compensation provision, in principle foresaw that the tax credit would merely assume a promoting function as an instrument of market introduction. The anticipated returns on investment at the beginning of 2000 might have resulted in possibly excessively hasty investment decisions, both domestic as well as foreign with a view to the German market. However, the EU Commission has currently initiated a renewal of the energy tax guidelines, which could result in an improvement in the position of biofuels or fuels containing biofuels as an additive should the greenhouse gas balance for the associated fuel be used as a tax differentiation. On 06/23/2010. Commission member Semela, who is responsible for tax-related issued, introduced his concepts regarding a restructuring of the energy tax guidelines (2003/96/EG) to the remaining commission members for discussion, but did not receive their approval. Therefore, there will be no presentation of draft guidelines in the autumn of 2010. The underlying objective of the new guidelines is to create incentives for CO_2 reductions in those private sectors which are currently exempt from the European Trading Scheme, ETS (this also includes agriculture and forestry), by expanding the energy tax by a CO_2-related component. It should, however, be noted that any alteration of the energy tax guidelines will undoubtedly be a long and difficult process, particularly since the member nations can only unanimously approve such a resolution. Despite this, the biofuel economy would be well advised to table associated discussions as part of the political debate.

Market Situation for Biodiesel – Regressive Trend Continues

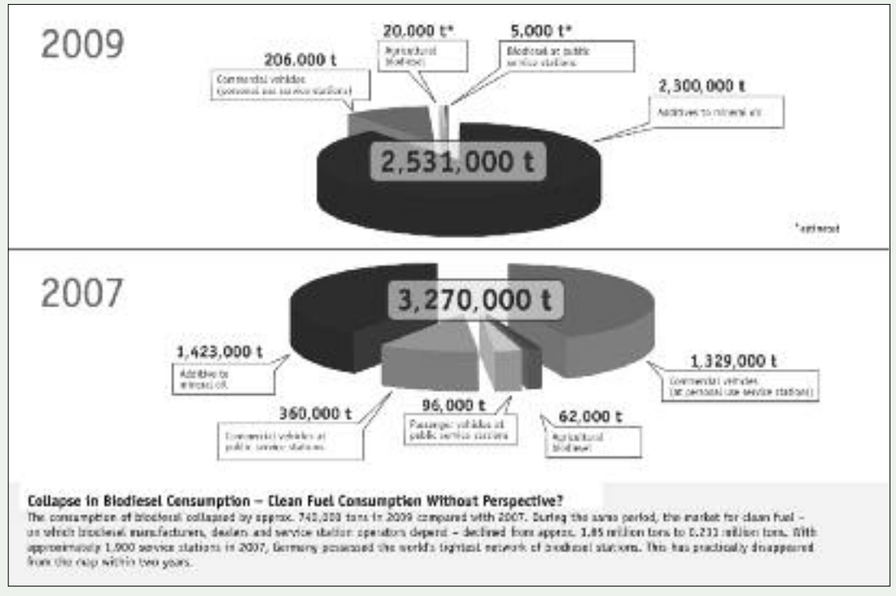
During 2009, the depression in clean fuel marketing was unable to be halted by the increase in the additive component from 5 to 7 percent by volume introduced in February, 2009 (modification of the 10. BImSchV). While biodiesel distribution increased by approx. 670,000 tones (refer to Table 1) compared to 2008, this was offset by the significant slump in marketing biodiesel as a clean fuel which occurred in 2007. At this time, the level dropped from 1.082 million tons to only about 241,000 tons during the 2009 calendar year. This represents a reduction of approx. 78 percent. During the same period, vegetable oil fuel marketing dropped from just under 400,000 to a mere 100,000 tons. Compared with 2007 and 2008 and analogous to the decline in clean fuel marketing, this represents an equally dramatic decline. Marketing of biodiesel and vegetable oil will continue with this declining trend during 2010. 2010 estimati-

Table 1: Domestic Biofuel Consumption, 2007 – 2009, in 1,000 Tons

	2007	2008	2009	2010[2]	Changes 2009 to 2008
Biodiesel additive	1,423.3	1,612.8	2,276.3	2,239.3	+ 663.5 + 41.1 %
B100	1,821.3	1,082.5	240.6	300.0	- 841.8 - 77.8 %
Total for biodiesel	3,244.6	2,695.3	2,516.9	2,539.3	- 178.4 - 6.6 %
Vegetable oil VOIL	755.8	401.4	100.0	65.5	- 301.4 - 75.1 %
Total biodiesel + VOIL	**4,000.4**	**3,096.7**	**2,616.9**	**2,604.8**	**- 479.8** - 15.5 %
Diesel fuels	29,058.8	29,905.6	30,936.2		+ 1,030.60 + 3.4 %
Of which, additive share	4.9 %	5.4 %	7.4 %		
Diesel fuels + B100 + VOIL	**31,635.9**	**31,389.4**	**31,276.8**		**- 112.6 - 0.4 %**
Of which, biodiesel + VOIL	12.6 %	9.9 %	8.4 %		

[2] Forecast Source: BAFA

Graph 1: Breakdown of Biodiesel Employment by User Groups



Source: AGQM based on information provided by the BAFA and on our own estimates

ons for biodiesel distribution as an additive lie in the range of approx. 2.2 million tons and, for clean fuel marketing, approx. 215,000 tons. This reduces the decline in biodiesel marketing by approx. 100,000 tons when compared with 2009 and should reach a level of 2.45 million tons. In turn, this represents an approx. 8 percent share of the diesel market.

Graph 1 breaks the employment of biodiesel down by user groups and illustrates the radical change in biodiesel use in 2009, when compared with 2007. During 2007, approx. 1.7 million tons of biodiesel where employed by the trucks in the transport industry, while the demand on the part of passenger car owners was only around 96,000 tons. As an additive to diesel fuel, the maximum 5 volume percent permitted in 2007 represented approximately 1.4 million tons. On the other hand, in 2009, 2.3 million tons were already added as a result of the additive share being increased from 5 to 7 percent, and because changes in the tax regulations coupled with raw material price increases for biodiesel resulted in the clean fuel market shrinking to a total of 241,000 tons

In view of this situation, the UFOP began at the year's outset to intensely participate in the discussions surrounding an alteration to the energy tax law. As part of the calculations regarding

under compensation in conjunction with the tax relief (refer to Table 2) submitted to the Federal Government and to the Federal Parliament, the association was able to enter its recommendations for altering the tax code into the debate. Under discussion was a further reduction in the tax rate to 10 cents per liter. However, this debate occurred at the same time as the financial crisis so that, as part of the economic growth acceleration package, the respective taxes on biodiesel and vegetable oil fuel of 18.60 and 18.46 cents per liter for the period between 2010 and 2013 must, today, be regarded as a success. However, this resolution is also subject to an annual overcompensation examination. The Federal Government will present its report to parliament annually at the beginning of September.

In view of the introduction of the GHG quotas beginning in 2015, the question of a marketing strategy arises, which would result in an improved utilization of biodiesel production capacities while simultaneously opening improved options for the bioethanol sector in Germany. A joint memorandum containing the following points related to the future design of the additive regulations governing biofuels has been entered into the political debate by the UFOP, together with the Federal Association of the German Bioehtanol Industry (BDBe), and the German Biofuel Industry Association (VBD):

- The biofuel rate currently limited to 6.25 percent until 2014 should be increased to 7 percent by 2011 and, should then be increased to 10 percent in annual increments by 2020.
- The current requirement to decrease greenhouse gas emissions from fuels, which does not take effect until 2015, will be brought forward to 2013, and will be fixed at 4.5 percent.
- Until 2020, the greenhouse gas reduction requirement increases in 0.5 percent increments to a total of 8 percent (s. Graph 2, page 5).

However, in order to attain this objective, larger shares of biofuel that exceed the standards set forth in EN 590 (B7) and EN 228 (E10) must be approved. For this reason, and starting in 2015, the voluntary addition of bioethanol to gasoline (E20), and the addition of 30 percent by volume to truck diesel fuel must be approved in the 10. BImSchV. This approval would permit the combined rate of greenhouse gas emissions from traffic to be reduced by 88 million tons by 2020. In turn this would permit the climate protection objective as well as the EU objective of a 10 percent share of renewable energy in traffic to be achieved more quickly and more efficiently than is the case with the current laws. The current biofuel rate in Germany is a mere 6.25 percent. Beginning in 2015, this biofuel rate is to be replaced by the requirement to reduce traffic greenhouse gas emissions by, initially, only 3 percent. Depending on the GHG efficiency of the added biofuels, this may actually represent a decline in the demand for biodiesel. The question of volume scenarios (including hydrotreated vegetable oils – HVO) under which this objective can be attained thus arises.

Table 2: Report on Tax Relief for Biodiesel as a Clean Fuel Over/Under Compensation Development (Non-Integrated Facilities)

Price, in EURO, per liter	2006 Jan. – Jul.	2006 Aug. – Dec.	2007 Jan. – Jun.	2007 Jul. – Dec.	2008 Jan. – Jun.	2008 Jul. – Dec.	2009 Jan. – Jun.	2009 Jul. – Dec.
Rapeseed oil ex mill* (Average retail sale price (ex mill))	0.56	0.56	0.54	0.71	0.87	0.74	0.54	0.55
Refining (rapeseed oil cleaning and preparation)	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Esterification minus glycerin credit (rapeseed oil is converted into rapeseed oil methyl ester and glycerin)	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Logistics (shipping / storage / delivery, service station margin)	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Added technical expenses (decreased oil change intervals and oil filter changes)	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Excess consumption (lower energy content compared with fossil fuels)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Purchase incentive (incentive to consume biodiesel)	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Energy tax (as of August, 2006)	0.00	0.09	0.09	0.09	0.15	0.15	0.18	0.18
Total for biodiesel (excluding VAT) (theoretical biodiesel price when compared with fossil diesel)	0.90	0.99	0.97	1.14	1.36	1.23	1.06	1.07
Diesel (incl. energy tax, excluding VAT) (average service station price for fossil diesel)	0.97	0.95	0.94	1.02	1.14	1.09	0.88	0.92
Over compensation (+) Under compensation (-)	**+0.07**	**-0.04**	**-0.03**	**-0.12**	**-0.22**	**-0.14**	**-0.18**	**-0.15**

*) as of 2007, with a 25% share of soybean oil

Sources: AMI Market Special Oil Cultivation + Biofuels, UFOP Market Information Oil Cultivation and Biofuels, VBD Member Questionnaire

Options for meeting the 6.25 calorie percent total quota

Scenario 1
7% by volume of biodiesel = 2.189 million tons
5 % by volume ethanol = 1.094 million tons
2.1% by volume HVO[1] = 0.579 million tons

[1]hydrotreated vegetable oil

Scenario 2
7% by volume of biodiesel = 2.189 million tons
9.4% by volume ethanol = 2.048 million tons

Scenario 3
6.7% by volume biodiesel = 2.089 million tons
10% by volume ethanol = 2.189 million tons

Scenario 2: The volume of ethanol additive increases by 950,000 tons at the expense of HVO.
Scenario 3: The volume of ethanol additive increases a further 140,000 tons compared with the current biodiesel additive.

HVO – a Perspective?

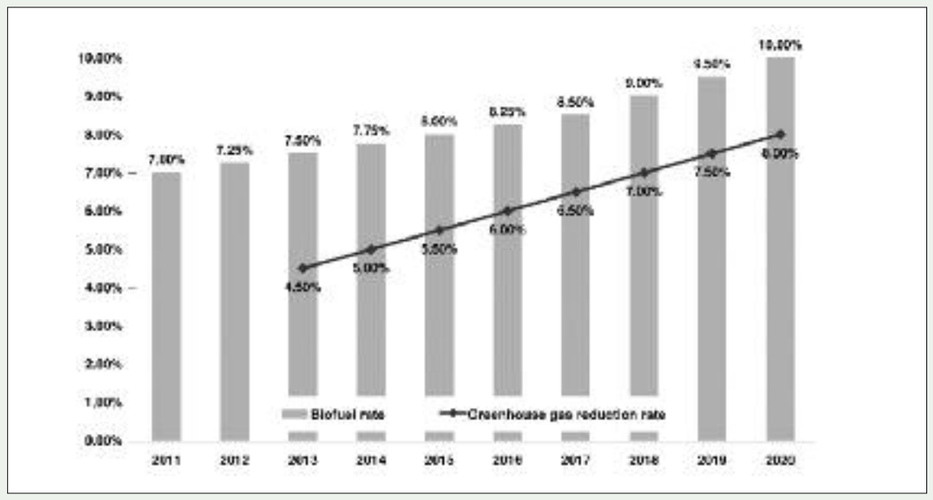
From the point of view of raw material producers, the question arises as to whether the hydrotreatment of vegetable oils (HVO) should be developed into a European-wide strategy. Against this background, the UFOP promotes intended projects to employ biodiesel and HVO as additives to diesel fuels, with the question of whether at best the proportion of biodiesel can be increased (refer to "Expert Committee on Biofuels and Renewable Raw Materials"). What must, however, be borne in mind with this strategic approach is the fact that, the production of HVO eliminates the raw material advantages of rapeseed oil for biodiesel manufacture. The inherent necessity of employing biodiesel based on rapeseed oil, particularly during the fall/winter/spring months (CFPP value/ease of flow), is eliminated.

From a chemical viewpoint, hydrotreatment causes vegetable oils to be practically “equalized”. However, when compared with palm oils from Asia or Columbia, rapeseed oil has a significant image advantage. The palm oil industry is subject to “ongoing criticism and monitoring” by environmental groups. In Germany, NGOs are continuously noting the origins of raw materials, with individual actions regarding their use for foodstuffs, such as the KitKat bar case at Nestlé being brought out. Therefore, in future, the employment of a given raw material will depend less on its price, but also on its image – this could present an opportunity for rapeseed oil.

And Rapeseed Oil Fuel?

While, despite extensive competitive restrictions, biodiesel manufacturers continue to remain open to the additive market both in Germany as well as throughout the other EU Member nations, marketing vegetable oil fuels has experienced a break. If, in 2007, 756,000 tons of vegetable oil fuel were still distributed, this figure is forecast to drop to only approximately 64,000 tons in 2010. The reasons for this include changes to the tax code, coupled with simultaneous increases in rapeseed oil prices. For several years, practically no passenger vehicles have been refitted to run on vegetable oil fuels. As the area with by far the greatest distribution potential, the same can also be said of the commercial vehicle sector. Against this background, the UFOP, the BDOel and the Technology and Promotion Center for Renewable Energy in Straubing, invited participants to an expert workshop at which a proper inventory with respect to the situation in the distribution markets for decentralized oil mills (rapeseed fuel, cook-ing oil, rapeseed animal feed cakes) could be undertaken so that the need for action and solutions could be discussed. During the time period of the report, the majority of decentralized oil mills were already closed.

Graph 2: Biofuel and Greenhouse Gas Reduction Rates



The Situation in the European Union

According to information from the European Biodiesel Board (EBB), approx. 9 million tons of biodiesel were manufactured during 2009 within the European Union (refer to Table 3) with a total consumption of 10.8 million tons (source: Kingsman). With 2.54 million produced tons, Germany leads France with its 2 million produced tons and Spain with 0.86 million tons. According to the EBB information, this stands in contrast with a production capacity of, by now, nearly 22 million tons. This indicates that, since 2008, capacity has been expanded by approx. 6 million tons. While German capacity has stagnated at approx. 4.9 million tons for several years, significant capacity expansions have taken place in Spain (4.1 million tons), France (2.5 million tons) and Italy (2.4 million tons). As a limiting factor to the EBB statistics it should, however, be noted that these production capacities also include values for the manufacture of hydrotreated vegetable oils (HVO). Thus, for example, the firm of Neste Oil AG in Finland currently has a production capacity of over 340,000 tons, with an additional 800,000 tons coming on line by the end of 2010 in the Netherlands. Based on these statistics, there exists an increasingly large gap between production capacity and actual production, currently amounting to approx. 12 million tons. From the point of view of the UFOP, this situation can only be reversed if the politically anchored volume goals in the individual member nations can, as quickly as possible, be adjusted to the appropriately modified European standard for diesel fuel as of 2011. This new standard permits an additive share of 7 percent by volume of biodiesel. This corresponds to a biodiesel volume of around 14 million tons (based on 200 million tons of diesel fuel used within the EU) and at least 7 million tons of RME or a corresponding demand for rapeseed oil (= approx. 17 million tons of seedlings or 4.8 million hectares of planted area).

Despite this, the majority of the biodiesel capacity remains untapped – the EU must export biodiesel to third countries. But exactly the opposite situation is actually the case. Imports to the EU (F.O. Licht: approx. 2 million tons), particularly of biodiesel from Argentina, continue to increase. No reversal of this trend can currently be discerned, as other third countries (the US) have their own problems with excess capacity.

Table 3: EU Biodiesel Production and Capacities (information given in millions of tons, estimated values)

	Biodiesel production***		Installed capacity**	
	2009	2008	2010	2009
Belgium	416	277	670	705
Bulgaria	25	11	425	435
Denmark/Sweden	233	231	527	352
Germany	2,539	2,819	4,933	5,200
Estonia	24	0	135	135
Finland*	220	85	340	340
France	1,959	1,815	2,505	2,505
Greece	77	107	662	715
Great Britain	137	192	609	609
Ireland*	17	24	76	80
Italy	737	595	2,375	1,910
Latvia	44	30	156	136
Lithuania	98	66	147	147
Luxembourg	0	0	0	0
Malta	1	1	5	8
The Netherlands	323	101	1,328	1,036
Austria	310	213	560	707
Poland	332	275	710	580
Portugal	250	268	468	468
Rumania	29	65	307	307
Slovakia	101	146	156	247
Slovenia	9	9	105	100
Spain	859	207	4,100	3,656
Czech Republic	164	104	427	325
Hungary	133	105	158	186
Cyprus	9	9	20	20
Total	**9,046**	**7,755**	**21,904**	**20,909**

* Includes hydro-diesel production ** Calculation based on 330 production days per facility and year, based on respective dates of 1 July, 2009, and 1 July, 2010
*** Margin of error: +/- 5 percent

While bioethanol complies with the requirements of the European Fuel Guidelines (2009/30/EG) as suitable for conversion for the market introduction of E10, the standards for E10 itself are merely in the initial stages of development. Due to concerns on the part of the motor vehicle and mineral oil industry, a rapid consensus to alter the European Diesel Fuel Standard and permit the introduction of B10 cannot be anticipated. On the contrary, the "Biofuel Roadmap" worked out between the German motor vehicle and mineral oil industry commercial associations and the biofuel industry and the mineral oil dealers, and the German Farmers Association, basically foresees the continued compromise of 7 percent by volume of biodiesel as an additive to conventional diesel fuel, with the option of the market introduction of 3 percent hydrotreated vegetable oils as a method of co-refining in the mineral oil refinery. A basic agreement on this consensus was confirmed during the association discussion held at the invitation of the BMELV on 05/21/2010. From the point of view of the UFOP, this "Biofuel Roadmap" serves as a certain example for the continued development of the biofuel strategy in the diesel market on the European level; after all, B7 is targeted at existing vehicles on the market, already equipped with first generation diesel particle filters and regeneration systems, thus representing a cur-rently justifiable compromise from the point of view of engine technology. The ADAC has announced its intention to test passenger vehicle fleets in daily traffic with respect to a possible dilution of engine oil.

Apparently, particularly in foreign European nations, investors have failed to note the quality developments which diesel fuel has undergone in the past years as a result of the engine technology requirements. On the other hand, the biodiesel industry must ask itself which qualitative improvements are necessary to permit additive shares of 10 percent or higher to be possible. The UFOP expert commission, "Biofuel and Renewable Raw Materials" addresses this topic. Within the context of the commission meeting during the report year, the UFOP presented, among other things, an intended project promoted at the University of Potsdam, whose intention it is to employ a catalytic process to shorten the methyl ester chain length in order to optimize the boiling point and, ultimately, the entire combustion behavior, including the reduction of engine oil dilution. Measured against its financial abilities, the UFOP is very committed to promoting research into the employment of biodiesel and vegetable oil fuels and, for some projects, to provide financial support with the assistance of the Fachagentur Nachwachsende Rohstoffe e. V. However, measured against the public funds provided for research in the area of so-called "second generation biofuels", funding of intended projects directed to promoting biodiesel is relatively modest. From the point of view of the UFOP, this situation is incomprehensible since, to date, it has already been determined that by 2020 the energy-based share of renewable energy in the transport sector must be at least 10 percent, and that this objective can only be achieved by first generation biofuels and bioethanol. This fact, repeatedly stated by the UFOP is confirmed by the current study by the German Biomass Research Center, in which the essential biofuel components and their anticipated availability are determined and compared with at the request of the WWF. The UFOP therefore promotes a factually-based balance in its political maneuverings and with respect to research funding, particularly since these R&D results contribute directly to ensure sales of locally-grown raw materials. However, the German and European biodiesel industry must also promote its own contribution. Measured against the foreseeable challenges, the UFOP criticizes the inadequate level of preparedness at the EU level to advance the establishment of a research network supported by the biodiesel industry. In this regard, the UFOP greets the activities carried out by the Arbeitsgemeinschaft Qualitätsmanagement e. V. whose efforts include, for example, an international meeting of biodiesel experts, the organization of roundtable tests, workshops, etc., in an attempt to spur on the establishment of such a network.

At both the national and European levels, the biodiesel industry must confront an increasingly international meshing in the trade of raw materials and biodiesel. The European biodiesel industry confronts this competition. However, it is quite right in criticizing third countries which employ subsidies to promote the export levels of biodiesel within the European Union. One example is the export tax policy of the Argentinean government. The export tax is reduced to the same extent that the processing required for the final product increases. Where biodiesel is produced from soybeans, the beans themselves are taxed relatively heavily, while the tax on the exported biodiesel is relatively low. As a result of this policy, exports of Argentinean biodiesel to the EU rose from 5,000 tons in mid-2008 to nearly 100,000 tons by July, 2009. Due to the current inability to accurately determine imports, more precise statistics are unavailable. Presumably, the actual import volume is far higher, since biodiesel is imported under a variety of customs tariff numbers, and can therefore not be directly assigned to fuel purposes.

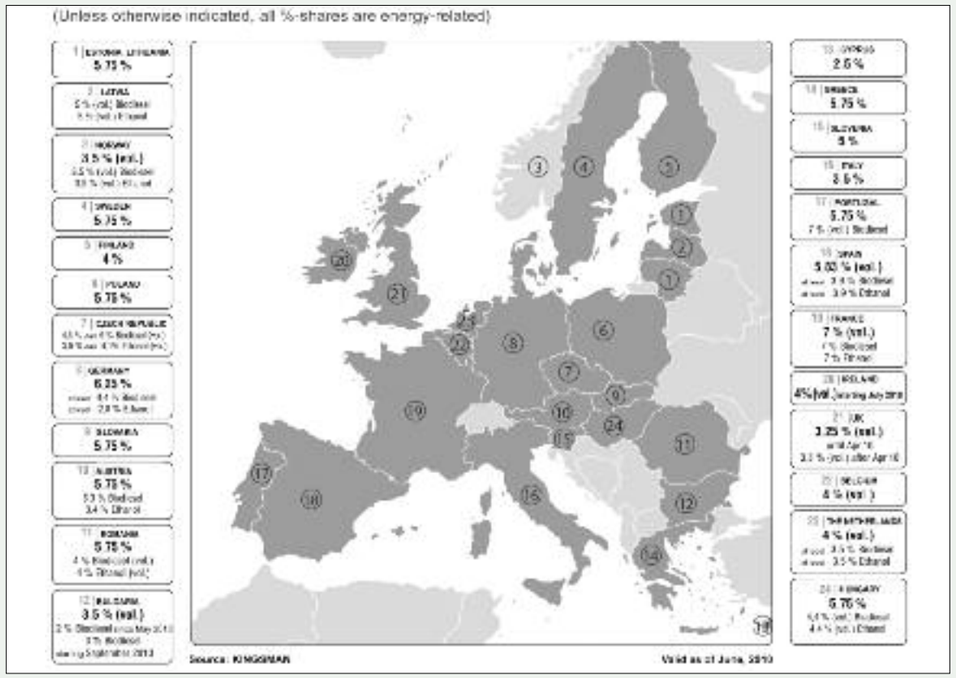
The United States carried out yet another form of state support when it came to export policies. This involved granting companies a tax break of 300 dollars per ton for biodiesel with diesel fuel blends, provided that at least 1 percent of the biodiesel was blended into the fuel ("blender credit"). These so-called "B99" biodiesel exports were finally ended as a result of the intervention of the EU commission (refer to the UFOP Report, 2008/2009. Pg. 26), however, the responsible customs authorities confiscated another 10,000 tons of biodiesel which had been exported to Italy under this subvention. The UFOP therefore demands that the EU commission inspects import volumes and possible circumvention stocks more stringently, whereby the required customs tariff number assigned to the import amount should be noted if the biodiesel in question is being imported for use as fuel.

National Mandates Support the European Biodiesel Market

Within the context of the European Guideline to Promote Biofuels (2003/30/EG) which went into effect in 2003, the member nations agreed to a nonbinding goal of 5.75 percent share of biofuel on the market by 2010. As a result of the debate related to climate protection and resources, this guideline was replaced by the guideline, Promoting the Use of Energy from Renewable Sources (2009/28/EG). This guideline with the mandatory goal that every member nation contributes at least a 10 calorie percent share of renewable energy in the transport sector by 2020, created the necessary pressure on the member nations to introduce additive quotas. In many of the member states, this additive quota is based on the 5.75 percent previously nonbinding objective in the first guideline mentioned above. However, only Germany, with an additive rate of 6.75 percent has set a palpably higher goal (refer to Graph 3).

In the opinion of the UFOP and with the exception of Germany and France, an adaptation of the additive quotas in 2011 is possible and, within the context of utilizing Europe's biodiesel capacities is urgently required. In 2011, the modified European Diesel Fuel Standard – EN 590 – will take effect. This will permit the inclusive addition of 7 percent by volume of biodiesel in diesel fuel. Additionally, a uniform additive level also makes sense, as diesel fuel is sold across all borders throughout the Euro-pean Union. Not only biodiesel is traded across all borders within the European Union, but, all the associated raw materials are marketed as well. And finally, not only does the result of the additive quotas on the European level as well as in third nations such as Argentina, the US and Malaysia result in increasing competition, producing a steady profit pressure since the relatively large number of biodiesel manufacturers (estimated at 245 in the EU) are confronted by a comparatively small number of consumers in the mineral oil industry. In contrast to bioethanol, there is no external protection for biodiesel imports to the EU. The same also applies to raw material dealers. Competitive pressure results in a corresponding optimization with regard to the raw materials employed for the production of biodiesel. Based on the requirements made on winter quality, standardized in the individual national fuel standards for the related climate zone, there is very little trading option among biodiesel fuels. Thus, palm oil methyl ester can only be added to a very small share of summer diesel. Thus, in summer, a so-called "FAME-0" quality (this means the CFPP value for the diesel fuel quality in the summer at 0 degrees Celsius) and, in winter, winter quality diesel is sold. A study carried out by Greenpeace at 80 public service stations noted significant differences in the raw material composition of winter and summer biodiesel, used as an additive to diesel fuel. Based on the results of the study carried out for Greenpeace, the share of rapeseed oil methyl ester was 92.1 percent in winter diesel, that of soy methyl ester was 5.1 percent, and palm oil methyl ester made up only 0.2 percent. The share of old fats which make up the biodiesel was 2.6 percent. In contrast to this, the following average raw material levels were found in summer diesel (2009): rapeseed oil methyl ester, 63 percent; soy methyl ester, 17 percent; palm oil methyl ester, 11 percent, and; the share of biodiesel manufactured from old fats was 9 percent. The raw material composition from other member states is not known. It can, however, be assumed that, in those member states such as Spain with a high biodiesel manufacturing capacity (4.1 million tons) and a low level of raw material supply (sunflower oil is too expensive), the share of imported oils employed for biodiesel manufacture would be relatively high. With 23.6 million tons of diesel fuel consumption (2009), Spain is the fourth largest diesel market in the European Union. At a national quota of 5.83 percent by volume, this corresponds to a mere 1.2 million tons to meet its quota obligation. The largest volume share would need to be exported. Yet Spain's biodiesel industry is characterized by a significant under utilization. The UFOP therefore reinforces the urgent need for a European-wide quality assurance policy for the manufacture and the employment of biodiesel in order to ensure winter quality in the corresponding member nations or climatic regions within the European Union.

Graph 3: European Biofuel Additive Quotas, 2010



However, the objective of the Greenpeace study was not to determine the diesel quality at public service stations, but instead to determine the quality of the employed raw materials. In particular, the question was one the quantities of palm and soybean oil in order to add the findings to the public debate concerning the origins of raw materials. This was required since with the introduction of the Renewable Energy Guideline (2009/28/EG), the European Parliament had forced through a joint decision-making process, which made certain sustainability criteria and evidence prerequisites for receiving tax credits or for addition to the obligatory quotas and for credits towards the availability of renewable power. The deadline for national implementation ends on 12/05/2010. The member nations are under pressure to act or, at least, to reach a decision regarding support for the development of privately operated certification offices, or to support their development through legal policies, or to establish state-controlled certification under federal mandates.

Germany Forges Ahead with the Implementation of the Biomass Sustainability Regulation

Once the EU guideline to Promote the Energy from Renewable Resources took affect in June, 2009, (Renewable Energy Guideline – 2009/28/EG), an intense discussion with respect to the designated deadlines set forth by the Federal Government for the transformation of the two drafts for sustainability legislation for "biofuels" and for "renewable power". Under intense public pressure from the tank, the plate and palm oil industry (in Germany, approx. 2,000 district heating facilities with an annual requirement for approx. 500,000 tons of palm oil are currently operating), the Environmental Commission of the German Federal Government chose 01/01/2010 as the date on which both regulations would come into force, with a transition period up to 06/30/2010, simultaneously forcing both the Federal Government and the biofuel branch to act, in view of the impending deadlines. In August and November, 2009, the biomass sustainability regulations came into force and, in the meantime, served the EU commission as a temporary prerequisite for a notification of their implementation at the national level. As the only EU member nation, Germany is enacting two regulations, as a result of the as timely as possible introduction mandated by the Sustainable Energy Law (EEG) for sustainability criteria as a prerequisite for obtaining the renewable resources bonus for district heating facilities. While the UFOP was successful in its cooperation with biofuel industry associations in demanding the implementation of this delay period (refer also to the UFOP Annual Report, 2008/2009, pg. 34), it nonetheless turned out that, even with this deadline delay, the amount of time gained was, from a practical standpoint, inadequate in order to present the documentation and evidence required under the regulations, starting from the raw material producers and reaching through to the oil mills and manufacturers. In addition, it was not until January, 2010, that the BLE gave preliminary recognition to the first International Carbon Certification System (ISCC).

By putting forth the following arguments, the UFOP put the Federal Government and the Federal Parliament under pressure to again delay the date of legal effectiveness until 12/05/2012, as mandated by the EU guideline:

1. More than 2,000 individual presenters must be certified in the period between January and June, 2010. The administration regulations contain no rules if a company applies for certification, but it cannot be granted due to the limited number of certification offices.

2. Without examination, the BLE's EDP system for preparing evidence of sustainability passes through every stage back to the start, including the major customs offices. Sensitive errors could occur as a result of faults.

3. The administration regulations foresee no transition rules for the biomass volumes already produced prior to the deadline date of 06/30/2010, nor does it take existing contracts which have already been concluded into account.

4. There is currently only a single certification system which has been temporarily approved by the BLE. At the time, no other certification systems were in the EU approval phase.

5. Measured against the number of facilities to be certified, there are far too few certification offices with a totally

inadequate number of employees.

6. Implementation requires a significant amount of preliminary information. Particularly affected is the area of agriculture. Approx. 300,000 producer operations must be informed of the requirement to submit an energy declaration which, if possible, should be provided to the agriculture authority as the initial interface prior to the 2010 harvest.

7. Implementation of the EU guideline is at best slow in other member nations (e.g., Great Britain), or is not proceeding at all (e.g., Poland). In the sense of ensuring free trade of goods throughout the EU, the 2010 harvest must be excluded from the sustainability certification. The question of how and if existing contracts can be met if proof of certification is a subsequent requirement, remains open. Free trade, particularly in rapeseed, is being hindered by the EU.

8. The UFOP assumes that, against this background, the member nations will achieve a grace period for the 2010 harvest. The implementation of the EU guideline must not only be contextually 1:1 at a national level, but the various deadlines must also be harmonized.

9. The EU commission has often failed to present its explanations of the guideline. In particular this affects the definition of green fields which are "worthy of protection", as well as the lack of so-called "standard values" for calculating the greenhouse gas balance, for example, for rye when employed for bioethanol production.

In Germany, more than 1 million hectares of rapeseed are used to generate biofuel. Rapeseed producers thus have much to lose if nearly all producing operations fail to present their self-declarations and if practically all producers are not certified by the end of 2010. The focus of the UFOP activities during the spring of 2010 dealt with the question of the administrative implementation of the evidentiary and requirement criteria, as well as with the approval of certification systems and monitoring offices in accordance with the cited regulations. The BLE limited its focus to the approval of certification systems and monitoring offices. For this, it established an expert committee to which the UFOP also belongs. Thus, the economy itself was challenged to develop a certification system and to qualify certification offices for the implementation.

Overview of the most important aspects of the Biomass Sustainability Regulations (BiomNach-VO) as they affect the agricultural industry:

1. Evidence of sustaining areas worthy of protection with a high level of natural protection, with large supplies of carbon and peat bogs – cutoff date 01/01/2008;

2. Evidence of sustained good surface management practices and cross-compliance (CC) in the EU. Implementation after approval of documentation and controls as part of the EU assistance program to avoid dual expenditure;

3. Greenhouse gas balances:
employment of standard values to minimize administrative expenses;

4. Introduction of a mass balance system.

The underlying principle behind the biomass sustainability concept lies in the employment of a mass balance system which includes the raw material quantities; that is, the harvest amount – e.g., rapeseed – is weighed in the conventional manner and is normally entered in the EDP system. What does the farmer need to do? Before delivering the harvest to the trader, the operator submits a self-declaration that his or her operation is in compliance with the cross-compliance requirements (CC), or that the harvest was not grown on areas worthy of protection. The 01/01/2008 cutoff date practically ensures that separate evidence of the raw material source should only be required for a few operations. The agricultural operation is only indirectly part of the certification system. The system actually begins with the agricultural trader (first interface), passes on to the processing (oil mill), and ends with the biodiesel manufacturer (final interface). It is the first recipient who is certified with respect to the self-documentation, including the producers' self-declarations. In accordance with BiomNach-VO, 3 percent of the agricultural operations must be examined with respect to their self-declarations, with this inspection being limited to an "on-site" inspection to determine whether the assistance certification for the operating bonus or the application for the subsequent year are available. In doing this, the operation provides evidence that it is in compliance with CC. The administrative challenge consists in the first recipients reaching an agreement to avoid double inspection, despite the fact, that at 3 percent, the random sample size is relatively small. Working with its members, the UFOP has been successful in lobbying for an implementation of the biomass sustainability regulations that are as administratively lean as possible. In doing this, the UFOP pursued its basic position that the operator's total planted area be included in the evidence. On the one hand, this allows the entire harvest to be recorded, for example, silo corn intended for biogas production in the future, and, on the other, because raw-material-related evidence represents a significantly greater bureaucratic effort. As an alternative, the farmer may still submit a raw-material-based self-declaration (for example, for only the area planted in rapeseed). This option was the product of an agreement between the German Agricultural Association and the State Farmers Associations.

Raw material quantities such as, for example, rapeseed, are correspondingly recorded by the first recipient and then marketed to the oil mill. In turn, the mill provides the rapeseed oil volume to the biodiesel manufacturer. The chain of evidence is therefore closed. This represents the prerequisite for the issuance of so-called "sustainability certificates" which form the foundation for the taxes filed for a corresponding amount of biodiesel fuel with a head customs office, or for the addition to the quota obligation at the biofuel quota office. Only the final interface, the biodiesel manufacturer, is permitted to issue sustainability certificates. The documentation requirements are directed at the administrative system which is already operational within the operations.

The short-term information requirement among the interfaces was therefore significant. Therefore, in January, 2010, the UFOP and the Arbeitsgemeinschaft Qualitätsmanagement Biodiesel e. V. (AGQM) issued invitations to two expert seminars and, in April, 2010, to an international seminar, related to the topic of the implementation of the biomass sustainability regulations.

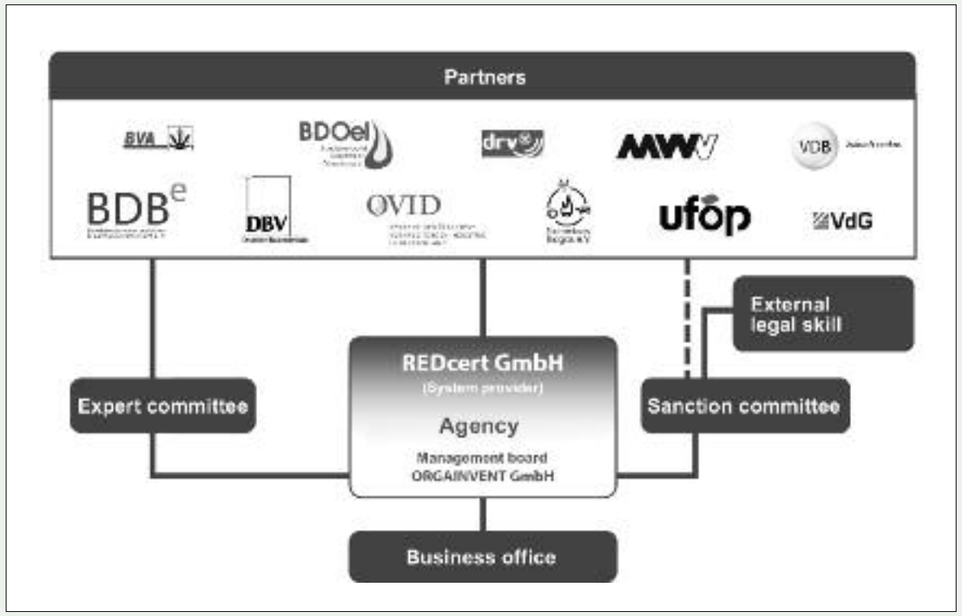
REDcert – The Certification System Supported by the Associations

In January, 2010, the affected economic associations agreed to create a certification system which would orient itself to the requirements stated previously and would thus comply with the demands of the biomass sustainability regulations. At the same time, system parameters which are already active within the agriculture industry for certification are also employed to generate synergistic effects. The objective was to create a common, efficient and lean cost certification system which could also be accepted by other member nations and, beyond this, which would gain the necessary degree of acceptance at the raw materials producer and agricultural trader stages. With the creation of REDcert, the affected economic groups commit to the responsibility of ensuring the sustainability of biofuels across all stages. The REDcert certification system was established on 02/26/2010. Aside from leading associations and organizations involved in the areas of German agriculture and the biofuel industry, the REDcert GmbH also includes the mineral oil association (refer to Graph 4).

The certification system's name is derived from the English designation for renewable energy directive certification. The GmbH is headquartered in Bonn where it has undertaken its activities and was fully recognized by the BLE on 07/20/2010. Due to the limited acceptance or approval for European biomass, REDcert also offers a high level of sustainability with respect to social standards and thanks to the applicable social and work legislation within the EU nations, particularly in view of the fact that, within the EU, the requirements of the International Labor Organization (ILO) with respect to third-country nationals are significantly exceeded. Every expansion of EU sustainability standards is automatically taken into account and applied by REDcert.

For more detailed information, including in English, please visit www.redcert.org.

Graph 4: REDcert – The Certification System Supported by the Associations



The BLE also gave its final approval to the International Sustainability & Carbon Certification (ISCC), the certification system which had been given financial support by the BMELV during its development phase. This certification system (www.iscc-system.org) is not merely directed at biomass verification in Germany or throughout the EU, but is pointed in particular at third-countries which are simultaneously leading agricultural producers and help control trade. Among others, these include Brazil, Argentina and Malaysia or Indonesia. On principle, the UFOP welcomes this initiative and the financial support, as Germany will bear a quality standard at an international level under this system, which sets out the criteria to be examined and the evidence and documentation to be provided with which the certification systems being developed by policy makers and biofuel operators in these countries must also comply. In the opinion of the UFOP, any "avoidance", for example of the ILO requirement, despite the nation in question having signed the agreement, must be prevented. The UFOP actively participated in the corresponding working groups during the development of the ISCC system.

At the same time, all certifications must face the challenge of public acceptance. As anticipated, environmental associations have already initiated a critical discussion with respect to the quality of the certification. The system operators must face this discussion and, within the context of their public relations work and transparency policies, must respond factually to it. UFOP is searching for a dialog in this respect by, for example, making the topic of sustainable biomass production and certification systems a central topic during the upcoming BBE/UFOP-Biofuel Conference, "Fuels of the Future, 2011", during the International Green Week in Berlin.

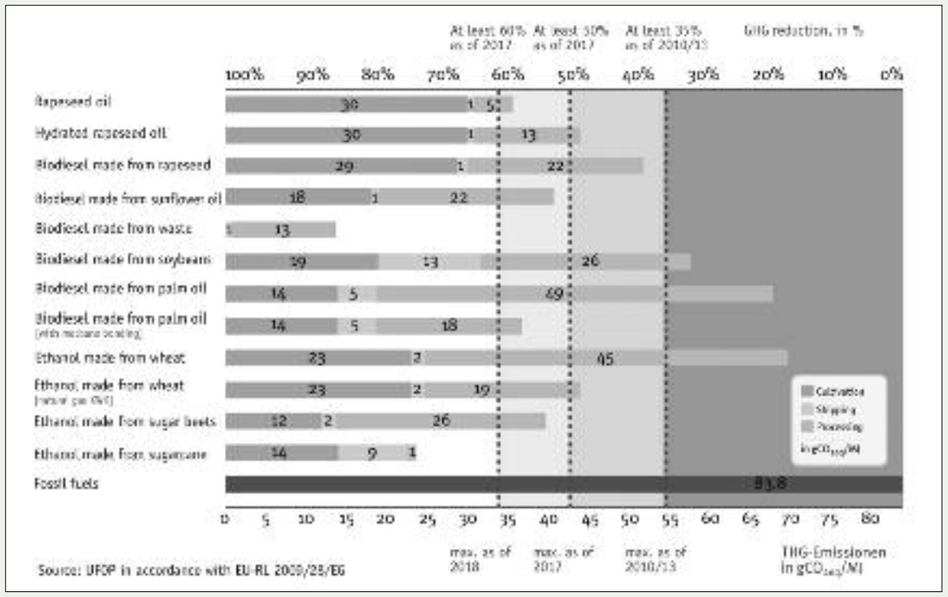
The Challenge of CO_2 Reduction!

Aside from the previously mentioned sustainability challenges, the renewable energy guideline (EE-RL) also regulates the challenges associated with the greenhouse gas reduction, evidence for which must be provided for the associated biofuel, for example, biodiesel, on the basis of the employed raw materials (rapeseed, soybean or palm oil). For simplification, the guideline is broken down into CO_2 per mega joule calculations for the reduction in biomass, raw materials processing (oil mills) and the shipping of biofuel, as well as the transport chain. The sum is set in relation to the CO_2 emissions of fossil fuels. Initially, the guideline mandates a greenhouse gas reduction (GHG) of at least 35 percent as the prerequisite for market access and, beginning in 2017, a minimum reduction of 50 percent. Finally, beginning in 2018, this figure rises to 60 percent for new facilities. Based on the standard figures for greenhouse gas reduction quoted in the EE-RL, rapeseed oil exhibits a reduction of 38 percent. The prescribed GHG reduction for the individual raw materials or the biofuel produced from them must, however, be viewed critically. Graph 5 illustrates that the GHG reduction of at least 50 percent prescribed for 2017 cannot be produced by biodiesel produced from rapeseed. Thus, rapeseed could not be employed in the fuel market, nor in district heating facilities as a heating oil replacement unless an increase in the required level of greenhouse gas reduction within the production chain can be adequately raised by that date. After all, nearly 1 million hectares of rapeseed are used to create energy in Germany. However, the biodiesel quota regulation calls for a conversion to a climate protection obligation as early as 2015 (refer to Graph 6). The described conversion to the GHG reduction obligations means that in its preliminary contracts, the mineral oil industry will be requiring evidence of GHG reduction by mid-2014. It follows that the pricing competition for the biofuel manufacturers will then no longer essentially be based on the costs for raw materials, processing and shipping, but also on the GHG efficiency of the biodiesel being offered. This then presupposes associated in-house calculations or operational optimization measures on the part of biodiesel manufacturers. It can therefore be anticipated that the preliminary stage – the oil mill – will need to provide GHG balances for individual facilities. It has been calculated that, for the greenhouse gas standard values quoted in the EU guideline (refer to Graph 5), existing facilities would levy a surcharge of 40 percent. With this "correction", the EU commission intends to motivate facility operators to determine facility-specific data with respect to their energy requirement and thus for greenhouse gas emissions. Beyond this, there is also the option of operating a district heating facility with biomass and utilizing the produced process steam to generate excess power and also add this value to the GHG reducing total. The employment of bioethanol generated from biogas/biomass has, according to a study of the German Biomass Research Center (Deutsches BiomasseForschungsZentrums (DBFZ)) carried out under the aegis of the UFOP, only a limited savings effect since methanol is extracted from natural gas. Natural gas already possesses significant greenhouse gas advantages when compared to petroleum.

Rapeseed Cultivation – Challenge to Reducing GHG

In view of this foreseeable change in the competitive conditions, the UFOP also charged the Deutsches BiomasseForschungsZentrum (DBFZ) with examining various approaches to improve the greenhouse gas situation with biodiesel made of rapeseed, in accordance with the requirements listed in Attachment V of the EU-RL (refer to UFOP Annual Report, 2009/2010, chapter 4, "UFOP Advisory Committee & Expert Advisory Committee"). The focus of these examinations was the question of evaluating every conceivable optimization option.

Graph 5: Standard GHG Emissions for Biofuels



Graph 6: Climate Protection Quotas for Biofuels as of 2015 (all entries in percent)

Year	Biofuel quota 2009 – 2010* Calc. %	Climate protection quota as of 2015 %	Net climate protection contribution** %	Biofuel in the mixture*** Calc. %
2008				3.40
2009	5.25			5.25
2010 – 2014	6.25			6.25
2015		3.0	50	6.00
2017		4.5	60	7.50
2020		7.0	70	10.00

* Total quota as of 2009

** It is assumed that the biofuel contribution to GHG reduction will increase from 50% to approx. 70% in 2020 compared with the minimum value in accordance with the EU guideline to promote renewable energy (new facilities, 60% as of 2017).

*** Calculated for 2008 from the addition of biodiesel and ethanol; for 2009 – 2014, in accordance with the biofuel quota; for 2015 – 2020, calculated from the climate protection quota and net climate protection contribution of biofuels.

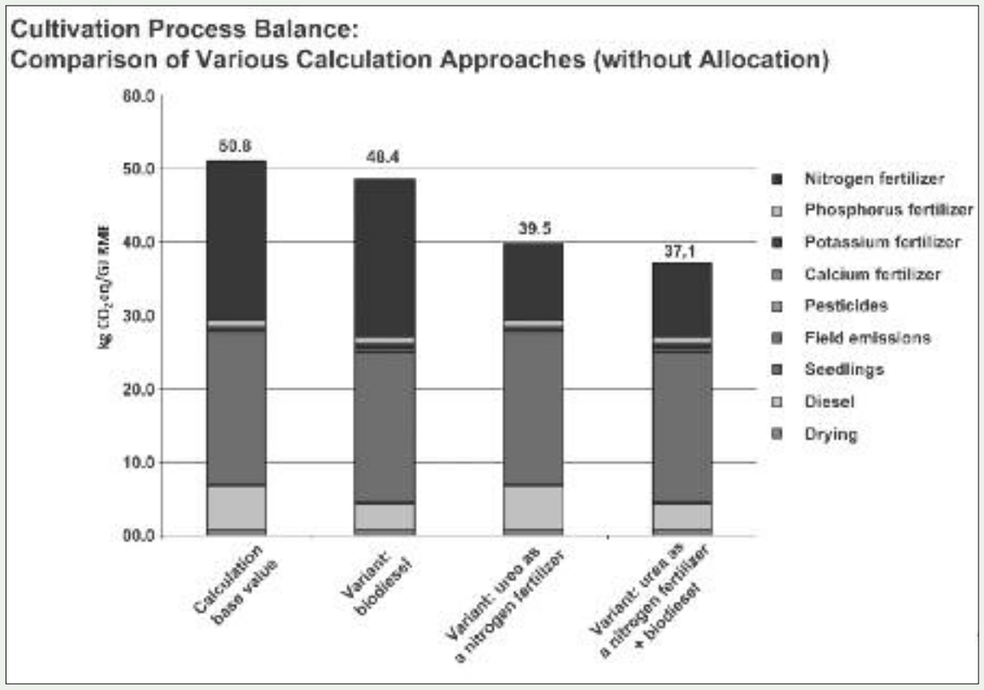
Graphs 7 and 8 illustrate the most effective approaches or the most important production factors for optimizing the GHG balance. The results of the study confirm that, there exist significant differences between the various N fertilizer types when it comes to the effort involved in cultivation. One alternative is the employment – to the extent possible and available – of organic fertilizers such as liquid manure, which simultaneously represents a multi-nutrient fertilizer. A challenge lies in reducing the laughing gas (N2O) emissions created by nitrogen fertilizers. The calculation is based on an assumed 1 percent N20 release per amount of nitrogen fertilizer employed (in accordance with the IPCC). For every kilogram of nitrogen fertilizer, this represents 0.0157 kilograms of N20 or 4.65 kilograms of CO_2 equivalent. An emission factor of 296 is applied to N20. Optimizing the fertilizer strategy does, however, have limits, particularly when it comes to rapeseed yield expectations.

Against this background, the UFOP is currently initiating and extensive, multi-year cooperative project with scientific institutions and state agencies to not only show the GHG reserves yielded by rapeseed cultivation, but to also inform practical applications as quickly as possible of these findings. It follows that time is of the essence with regard to the introduction of the GHG quota in 2015. The Federal Government's national Biomass Action Plan for Germany and, particularly, the increased focus of research strategies to optimize production techniques must be able to be measured against this challenge if rapeseed as an energy source for subsequent systems is to have any future hope of maintaining its present level of cultivation.

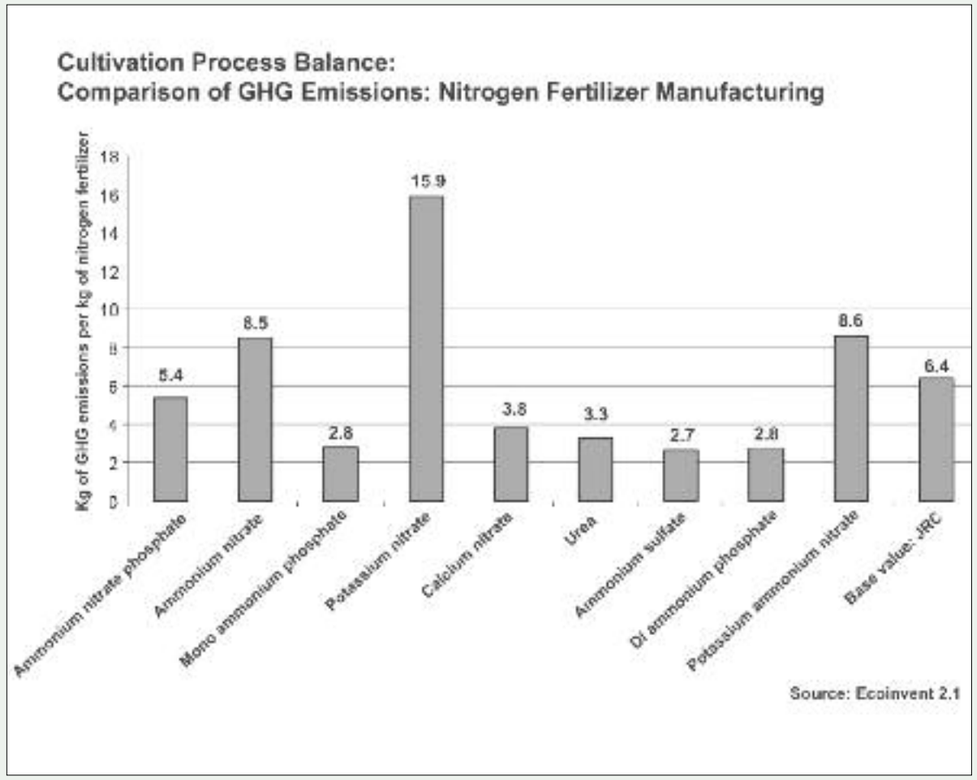
Situation for Soybean Diesel

A particular problem with regard to attaining the required GHG reduction (refer to Graph 5, page 13), exists for soybean oil and palm oil. Biodiesel manufactured from these raw materials does not comply with the required GHG minimum level of 35 percent. Market access within the European Union would therefore be practically closed to these raw materials or their associated biodiesel products if, as of 04/01/2013, the exception rule for GHG evidence which took effect on 01/23/2008 (protection for older facilities) were to expire. It is apparent that the methodology employed to calculate greenhouse gas balances would quickly assume a trade policy position.

Graph 7: Parameter Variation – Cultivation



Graph 8: Parameter Variation – Cultivation



Arguments with Brazil, Argentina and the US can be anticipated. Against this background, the United States Soybean Board has already ordered a study to be prepared for presentation to the EU commission. The UFOP has charged the DBFZ with the certification of the study. The certification's title is "Brief Expert Assessment to Evaluate the Life Cycle Impact on Soybean Production and Soy Industrial Products – Examination for Conformity with EU RED". The conclusion of the certification is that, while the legal methodology in accordance with EE-RL has been applied in a 1:1 ratio, several of the primary data must still be questioned as they are to an extent divorced from reality (for example, the low amount of methanol employed for biodiesel manufacturing). The study shows clearly that, aside from the conformity examination of the related methodology employed to calculate greenhouse gas emissions, there is a strong necessity to evaluate the source data. If, however, the EU Commission should accept this calculation, the "winner" of the GHG balance would already have been determined. Since, the study reaches the conclusion that GHG reduction for soybean diesel (source: USA) is 52 percent. Malaysia has also recognized this problem and is attempting, particularly in the area of palm oil production, to optimize the GHG emission. The Malaysian government has already announced an investment program with the objective of expanding the technology employed in Malaysian oil mills by utilizing the byproducts for biogas generation so that the methane currently released by the byproducts during the palm oil reclamation would no longer load the GHG balance of biodiesel production or be available for district heating facilities.

Public Relations

Biodiesel in Racing

In Germany, adding biodiesel to conventional diesel fuel has become a common practice. It has become standard for every diesel driver to fill up his or her personal or commercial vehicle with B7 fuel. For customers at service stations, there is no indication which biodiesel raw material they are using. And is for this reason that the object of UFOP public relations work is to communicate that rapeseed or rapeseed oil is the preferable raw material for biodiesel production. As a central PR project, for the past year, the association has been employing B30 fuel as part of the race car project of singer and driver SMUDO. While the term "Flower Power" biodiesel was common in the past, the UFOP is promoting the slogan: "Biodiesel – Rapeseed Power" with its use of the 30 percent biodiesel mixture.

Sebastian Vettel and SMUDO in Heppenheim

For this project, a spectacular Renault Mégane Trophy powered by a 2.0 liter dCi engine is being employed. Aside from the UFOP, the biodiesel commitment is also supported by the Arbeitsgemeinschaft Qualitätsmanagement Biodiesel e. V. (AGQM), which is responsible for ensuring that only quality assured biodiesel flows into the race car's tank. The project has a particularly high potential with regard to broad media coverage, as numerous television and countless newspaper articles have shown. One highpoint occurred in mid-July, 2010, when the car took part in "Sebastian Vettel's Home Run", with Formula 1 star

BioConcept car at Sebastian Vettel's home run in Heppenheim

Sebastian Vettel. With Smudo piloting the biodiesel Mégane alongside German Touring Car Champion Mattias Ekström and Sebastian Vettel in his Red Bull racer through the streets of Vettel's home town of Heppenheim.

BBBE/UFOP Expert Congress, "Fuels of the Future"

The international biofuel branch gathers annually in Berlin at the BBE/UFOP expert congress, "Fuels of the Future", to meet with representatives from politics and the economy and discuss strategies for the continuous development of various biofuel markets. The 7th overall congress was held between 11/30 and 12/01/2009 at the ICC in Berlin. Despite the difficult market environment, 450 representatives from 30 nations took part. This allowed the presenter once again to make the claim that the congress represents the guiding meeting for the future orientation of biofuel policies in Germany and throughout Europe.

BioConcept Car at the ICC being shown as part of the BBE/UFOP Congress "Fuels of the Future"

International Green Week, 2010

Every January, the primary subject of discussion in Berlin is agriculture, when the International Green Week opens its portals. Over the past years, nature.tec – a specialized display of renewable raw materials – has grown into a fixed component of the traditional fair. In 2010, the specialist's show concept was significantly expanded. From 01/15 to 01/24/2010, nature.tec displayed information and innovations covering every aspect of renewable raw materials on an area of 6,000 square meters in Hall 4.2. Under the common motto: "Sustainably Mobile with Biofuels", the UFOP shared a joint, 180 square meter area with the Federal Association of German Bioethanol Industry (Bundesverband der Deutschen Bioethanolwirtschaft e. V., BDBe), the German Biofuel Industry (Deutsche Biokraftstoffindustrie e. V., VDB), the Federal Association of Decentralized Oil Mills (Bundesverband Dezentraler Ölmühlen e. V., BDOel) and the Association of Oilseed Processing Industries in Germany (Verband der ölsaaten-verarbeitenden Industrie in Deutschland e. V., OVID). The joint presentation of the relevant German associations was intended particularly towards directing political attention. Numerous representatives from state and federal parliaments obtained information regarding vegetable oil, biodiesel, as well as bioethanol. The topic of sustainable production of raw materials for biofuel production was discussed with particular intensity within this context.

Joint biofuels trade show stand in the nature.tec hall at the IGW, 2010

Biofuel slot car track at the joint trade show stand

Dr. Klaus Kliem at the joint biofuels trade show stand during a political tour

Approval Brochure

In the spring of 2010, the UFOP, working hand-in-hand with the German Biofuels Industry Association (Verband der Deutschen Biokraftstoffindustrie e. V., VDB) and the Biodiesel Quality Management Working Committee (Arbeitsgemeinschaft Qualitätsmanagement Biodiesel e. V., AGQM), sent a questionnaire to the manufacturers of commercial vehicles. The result is the release of a public brochure containing the vehicle manufacturers' binding resolution to employ biodiesel. Nearly 10,000 copies of the brochure were distributed to potential biodiesel customers in the commercial vehicle market by members of the AGQM as well as the national bioenergy consulting office. All the information is also available on the internet pages of the participating associations. There, the reader can also find important supplementary information such as the actual approval terms of the individual vehicle manufacturer for practical handling when biodiesel is used in the vehicles.

Ongoing Press Work

Once again, during the time period covered by this report, traditional press work represented a core element of UFOP PR work. More than 40 press releases dealing with relevant partial aspects of biodiesel or biofuel were issued. Among these, the formulation of position papers and demands in connection with the biodiesel legislation, together with the subject of sustainability form the most important aspects of press work.

Overview of the Most Significant Press Releases Related to the Subject of Biodiesel & Co.

(period: July, 2009, through August, 2010)

08/03/2010

US Study on the Greenhouse Gas Balance for Soybean Biodiesel Creates Controversy

The German Biomass Research Center (Deutsches Biomasse-ForschungsZentrum (DBFZ)) has evaluated a current US study on the greenhouse gas balance (GHG balance) of soybean biodiesel.

06/23/2010

Small Biomethanol Contribution to Optimizing the CO_2 Balance of Biodiesel

Depending on the provision method and the employed raw materials, the substitution of methanol extracted from natural gas by biomethanol saves only between 2 percent and 3 percent of the overall emissions during biodiesel production.

06/10/2010

Long-term Study Regarding the Practical Employment of Antioxidants in Rapeseed Oil Fuel

A long-term study lasting from April, 2007, through the end of 2009 at the chair for piston engines and combustion engines of the University of Rostock examined the everyday employment of antioxidants in rapeseed oil fuel.

06/08/2010

European Additive Quotas for Biofuels, 2010

To date, the legally mandated additive quotas for biofuels have exhibited wide-ranging differences among various European nations.

05/21/2010

Biodiesel: Current Approval List for Commercial Vehicles Presented

A current list of all commercial vehicle manufacturers showing all the various vehicles which have been approved for operation with pure biodiesel (B100) or for use with an additive share of 30 percent (B30).

05/12/2010

Project Report Released on the Approval for DEUTZ Common Rail Engines in Commercial Vehicles to Operate with Euro IV Biodiesel

The granting of approvals is a prerequisite for future marketing of biodiesel as a clean fuel as well as an additive component for diesel fuel.

05/04/2010

AGQM and FAM Jointly Carry Out Round Robin Tests on Biodiesel and Rapeseed Oil Fuel

Round robin tests to examine the test procedures and the proper working methods of professional laboratory employees carried out by the Expert Committee for Mineral Oil and Fuel Standardization (Fachausschuss Mineralöl- und Brennstoffnormung (FAM)) of the DIN have a long history in the area of fuels and lubricants.

04/23/2010

International UFOP/AGQM Workshop: Sustainability of Biofuels

Germany moves forward at the EU level which, in accordance with 2009/28/EC, requires sustainable biomass production on a national level for the employment of liquid biomass as a fuel additive or for power generation.

04/01/2010

Biofuel Associations Present Recommendations to Update German Biofuel Regulation

German biofuel associations have come out in favor of tightening the obligation to reduce greenhouse gas emissions caused by traffic, and to combine it with the obligatory utilization quotient into a single, “combined quota”.

03/26/2010

Drop in Domestic Biodiesel Consumption During 2009

Based on official data obtained from the Federal Office for the Economy and Export Controls (Bundesamt für Wirtschaft und Ausfuhrkontrolle, BAFA), the Union for the Promotion of Oils and Protein Plants (Union zur Förderung von Oel- und Proteinpflanzen e. V., UFOP) has evaluated the domestic use of biofuels for the period between 2007 and 2009.

02/26/2010

“REDcert GmbH” Founded – Associations Develop Certification System

Leading associations and organizations in the German agriculture and biofuel industries have today founded the REDcert certification system.

02/10/2010

Requirements for Biomass Sustainability Ordinances Implemented

In reaction to the recently implemented requirements of the biomass sustainability ordinance, the German agricultural industry will develop its own certification system.

01/20/2010

UFOP Board Requests Ongoing Development of the Biodiesel Strategy

On the occasion of its first IGW meeting in 2010, members of the UFOP board discussed the need for a sustainability-oriented strategy for the sale of biodiesel and vegetable oil fuel.

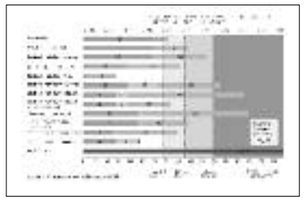
12/08/2009

No-Harm List for Oxidation Stabilizers for Biodiesel Expanded. Second Test Period Successfully Concluded

The employment of oxidation stabilizers for biodiesel components in B7 fuel is urgently recommended in the DIN 51628 requirements standard.

11/30/2009

Agriculture and Biodiesel Manufacturers Faced with Major Challenges through the Obligation to Reduce Greenhouse Gases



In most cases, the objective of lowering greenhouse gases through the employment of biofuels by, initially, 35 percent at least and, as of 2017, by 50 percent, cannot be met by the standard values listed in the EE guideline (2009/28/EG). What is required is an individual optimization of the GHG emissions based on raw materials, and stretching across the entire conversion chain. Cultivation is also affected if, by no later than 2017, a maximum of 41.9 g CO_2eq/MJ and, as of 2018, a maximum of 33.5 g CO_2eq/MJ for new facilities may not be exceeded.

11/30/2009

Reanimating the Biofuel Market – But do it Right! Biofuel Branch Unveils a Catalog of Measures in Berlin

After the decline in market share for biogenetic fuels in the traffic sector from 7.1 percent in 2007 to 5.9 percent in 2008, the new Federal Government led by the CDU, CSU and FDP has, in its coalition agreement, promised to reanimate the biofuel market. The draft of the growth acceleration legislation, the government has therefore determined to fix the current tax rate on pure biodiesel and vegetable oil fuel for the next three years, rather than increasing the energy tax.

10/24/2009

Coalition Corrects Biodiesel Tax

The governing coalition of the CDU, CSU and FDP has agreed to reanimate the biodiesel market. To do this, an urgently needed correction which will offer new perspectives to the German biodiesel economy will occur. The long-term employment of sustainably grown raw materials, particularly do-mestic rapeseed oil, must now guarantee acceptance and market success.

09/18/2009

Biofuel Report Confirms Existential Threat to Biodiesel and Vegetable Oil Fuel Manufacturers

The Federal Government’s latest biofuel report underlines the urgent need for action for an appropriate correction of and adjustment to the tax credits for the employment of biodiesel as a pure fuel and for vegetable oil fuels. This is the conclusion reached by the Union for the Promotion of Oils and Protein Plants (Union zur Förderung von Oel- und Proteinpflanzen e. V., UFOP) in its initial assessment. The UFOP is therefore already appealing to politicians to pass the report to the appropriate committees in the German Parliament during the next legislative session.

07/10/2009

Passenger Vehicles can be Safely Operated with B10 – If an Appropriate Regeneration Strategy is Employed

Under certain conditions, modern passenger cars can be operated with B10, with a biodiesel additive of 10 percent by volume. Previous manufacturers’ approvals have only permitted operation with B7 (7 percent addition). This is the result of fleet tests carried out by the German Biofuels Industry Association (Verband der Deutschen Biokraftstoffindustrie e. V., VDB), with the support of the Union for the Promotion of Oils and Protein Plants (Union zur Förderung von Oel- und Proteinpflanzen e. V., UFOP).

07/08/2009

UFOP Welcomes the Implementation of EU Fines against US Biodiesel

The UFOP welcomes the decision reached by the EU Finance Minister to levy anti-dumping fines on the importation of biodiesel from the United States as of 12 July. The mandatory surcharge ranges between 230 and 409 EURO per ton, depending on the individual US company in question.

Expert Committee for Biofuels and Renewable Raw Materials

As part of the meeting held 05/11/2010, the members initially informed themselves with respect to the implementation of the "Biofuels" biomass sustainability ordinance. The current state of ordinance conversion, as well as the tasks faced by the Federal Institute for Agriculture and Nourishment (Bundesanstalt für Landwirtschaft und Ernährung, BLE) and, for the latter, the procedures related to the recognition of certification systems and certification offices, as well as the extensive work carried out by the BLE in the form of a guideline explaining the ordinance and administrative requirements were explained. At the time of the meeting, the ISCC certification system had already received preliminary approval. The REDcert certification system developed by the biodiesel industry associations was in its approval phase. The focus of the presentation was on the documentation requirements with respect to biomass origin (among other things, self-declarations on the part of the farmer) and, more importantly, on the requirement for evidence of greenhouse gas reduction in accordance with the renewable energy guideline (2009/28/EG) as a future prerequisite for tax credits or to meet the quota requirement. The UFOP views the greenhouse gas reduction of 50 percent by 2017 as a significant challenge since, in contrast to biodiesel produced from palm or soybean oil, the total greenhouse gas balance for rapeseed oil methyl ester depends on the raw material cultivation and the associated greenhouse gas emissions, as it is on this that its competitiveness will depend if the greenhouse gas quota requirement is introduced in 2015.

It is possible that taxes on biofuels will be directed at this requirement as early as 2013. However, it remains open to which extent, and to what degree the tax levied on the GHG reduction potential will be anchored in law. As a result of the decision-making process related to the economic acceleration legislation, the energy tax on biodiesel was fixed at 18.6 cents per liter until 2012.

The UFOP underlined that a continuation of the Biofuel Roadmap is desirable, so that all participating economic areas (automotive, mineral oil, biofuel industry) can adjust themselves to a future biofuel strategy. In this context, the Memorandum for the Addition of Biofuels from the Biofuel Associations (BDB^e, UFOP and VBD) was mentioned. This so-called "combined quota" comprises a quantity and a greenhouse gas quota for biofuels and is intended to ensure that by 2012, biodiesel and bioethanol will be able to comply with the renewable energy guideline of 10 percent of the energy requirements in the transport sector being replaced by renewable energy.

Finally, the expert committee dealt with the state of standardization and the additional need for action with respect to rapeseed oil fuel. The current state of creating a final standard for rapeseed fuel in accordance with DIN 51605 was presented. The chairman of the DIN UA 632.2 subcommittee at the FAM/DIN is Dr. Edgar Remmele, TFZ, Straubing. The white paper on the standard will hopefully be published in October or November, 2010, so that the final standard can take the changes in fuel quality and designation ordinance (10. BlmSchV) expected to be introduced by the end of the year. Presented were the changes made to tighten the quality parameters for phosphorus, calcium and magnesium. These elements are a subject of constant discussion due to their negative interactions with currently employed emissions treatment systems. Aside from initiating corresponding round robin tests to validate the test methods for these elements, the research activities of the technology and research center for renewable raw materials in Straubing also concentrate on the question of options for aftertreatment process technology to further reduce the amount of these elements in rapeseed oil collected in decentralized pressing facilities. Results of tested processes that permitted a reduction in the range of 1 milligram per kilogram were presented, indicating that a simultaneous further test procedure development is needed in order to determine the actual element content. A test method for determining the trace element content in vegetable oils by means of optical emission spectroanalysis (ESA) with an inductively coupled plasma (CP OES) was presented. At the time this report was being collected, the standard was still in its objection phase.

The topic of phosphorus and metal content was also the focus of the subsequently presented project. The UFOP has requested that the ASG Analytik-Service Gesellschaft mbH evaluate the metal, sulfur and phosphorus content of biodiesel. The impulse for this request arose from the expert commission against the background of a planned project funded by the UFOP and leading to the approval of Euro IV DEUTZ engines as the result of the project, to be operated with a final 30 percent share of biodiesel. The limitation on this approval was not due to the engine involved, but rather on its exhaust gas aftertreatment system. Within the context of product liability, this limitation can be considered to be a precautionary requirement since, in the opinion of the UFOP, the quality of biodiesel is far higher in Germany. The basis for the evaluation is the database of the Arbeitsgemeinschaft Qualitätsmanagement Biodiesel e. V. which currently holds more than 3,500 full analyses of biodiesel samples. An interim report based on the initial raw data evaluations was presented. The final report with regard to this intention will be published by the end of 2010.

Further minor components of biodiesel which determine its quality include impurities which occur naturally in oil vegetables. In turn, these include so-called phytosteroles. Sterylglycosides (SG) and acyl-sterylglycosides (ASG) have been suspected of negatively affecting the filtration ability of biodiesel, even as an additive to diesel fuel. This problem is being addressed by a study carried out by AGQM and the Association of the Oil Cultivation Processing Industry in Germany (OVID), and financed by the American Soybean Association – International Marketing. The objective of this study was to examine the typical situation of the oil mill processing chain and to identify technical measures which would result in a significant reduction of ASG and SG during oil recovery and refining. In the study, the ASG and SG content of soybean and rapeseed oil from various process steps during vegetable oil manufacture were examined. The samples from these manufacturing phases were converted to biodiesel and the contents of ASG and SG were again determined. Raw oil from soybeans contained more ASG and SG than raw oil from rapeseed. Its share is reduced during oil cultivation processing or refining, so that both oil types produce readily filtered biodiesel subsequent to sludge removal and bleaching. The oil mills participating in this study provided valuable information with regard to possible process technology-related reduction methods of these secondary components and are able to offer their biodiesel customers a correspondingly high oil quality. As a reverse conclusion of the report, it should be noted that biodiesel facilities can also be retrofitted with corresponding process steps to prepare the raw materials prior to reesterification, thus permitting vegetable oils with a variety of raw mate-rial qualities to be utilized in a given facility. In this context, the expert committee members were presented with another project promoted by the UFOP which deals with the development of a process in which nanoparticles are embedded in the surface structure so that sterylglycosides can be extracted according to the "key-and-lock" principle by fitting into the surface structure where they are briefly bound and can be loosened as part of a rinsing step. The objective of this process is the development of a process to eliminate biodiesel filtration of compounds with a negative influence which is also cost effective and exhibits a low energy requirement. The process is being developed by the Fraunhofer Institut für Grenzflächen- und Bioverfahrenstechnik IGB, in Stuttgart.

Within the context of further report presentation of studies promoted by the UFOP which were underway during the report year, Dr. Ulrike Schümann of the University of Rostock presented the results of her project on practical applications of the employment of antioxidants in rapeseed oil fuel. The results of the "warehouse study" subproject are currently available as a final report on the UFOP homepage. The presentation focused on the report on the practical test carried out on two tractor engines. No negative effects on the engines by the employed antioxidant were determined. At the same time, longer oil change intervals were possible. Neither tractor exhibited any need for a premature lubricant oil change. The researchers did, however, have negative comments with regard to the ease of handling the additive and, in particular, of the process employed in manufacturing the rapeseed/antioxidant mixture. The user cannot be expected to employ a powdered antioxidant, since mixing problems have been found to occur during the manufacture of the parent solution during practical applications since this requires vigorous stirring or pumping. It was therefore suggested to the antioxidant manufacturer that the additive be offered in a suitable parent solution.

Markus Winkler, DEUTZ AG, presented the preliminary results of the continuous durability tests on EU COM III B emission levels DEUTZ Agripower engines with the SCR system for approval of biodiesel. In his introduction, the presenter initially spoke of the development of emission legislation requirements for off-road vehicles and the exhaust gas aftertreatment strategies available and those pursued by DEUTZ AG.

Markus Winkler clearly explained that the technological challenges lay not merely in the development of appropriate engines and exhaust gas aftertreatment systems, but, in the area of compact tractors, also in the design of their spatial arrangement or the possibilities of those systems which already exist based on tractor design. The particular objective of this project was a reduction in the NOx efficiency at low SCR system operating temperatures. It is assumed that this reduction efficiency can be traced to uncombusted biodiesel on the catalyzer surface. However, the phenomenon can be reversed by the SCR catalyzer being fully combusted at higher exhaust temperatures. Neither, within the context of the preceding projects, was any poisoning from calcium and sodium observed during the field tests. Due to the fact that tractor engines are generally subject to enormous loads, corresponding results are anticipated to help clarify the previously described question. Legislation provides for the challenges to be met by the test profile. At this exhaust gas level, a dynamic test cycle must, for the first time, be conducted. The SCR systems must be monitored. Beyond this, the exhaust gas level also views that the emission threshold values must be maintained over the engine's service life (8,000 hours of operation) to gain practical approval. In this context, the question of whether a reference fuel would be required to obtain approval was posed.

With regard to the problem of exhaust gas treatment for passenger vehicles, there is also the question of engine oil dilution. Gunter Braungarten from the Institute for Mobile Systems at the University of Magdeburg presented the results of a proposed project to optimize late injection in order to reduce oil dilution when running on B7, B10 and B30. The reason for this continuing project is the UFOP proposed project being carried out at the same institution to examine engine oil dilution for B10 with delayed injection in the regeneration mode. The basic problem lies in the fact that the fuel is not completely evaporated in the cylinder but portions are transferred to the oil pan via the cylinder wall and the oil film which coats it.

By optimizing delayed injection by means of a so-called “multiple delayed injection”, a test is to be carried out to determine whether this problem can be solved in this manner and if equally greater additive amounts are possible without the need for a premature oil change. The project comes to the result that the unevaporated portion of the fuel increases with an increasing RME portion in the fuel and that, therefore, the total fuel input to the engine oil during the engine’s regeneration mode increases too. With respect to the total fuel input in the regeneration mode, no significant difference between five and six injections was detected for B10. The difference between six and seven injections of B30 indicated a 94 percent in fuel input increase over B7 and, for seven injections, approximately 70 percent higher when compared to B7. The RME input was, however, disproportionally greater. The cause is RME’s higher boiling progress, when compared with diesel fuel. However, splitting the delayed injection, the total fuel and thus the biodiesel input, can be significantly reduced. B7: increase by approximately 20 percent; B10: by approximately 22 percent; B30: by approximately 27 percent.

No additional reductions in fuel input during delayed injections by the employment of additional optimization measures can be anticipated for the engine used in the project. However, from the institute’s perspective, an optimization of the delayed injection in the area of the output stroke can result in a significant reduction in the fuel injection into the engine oil. The question arises of whether an optimization of the delayed injection located on the primary injector can produce an additional reduction in the biodiesel input to the engine oil. This does, however, presuppose that the engine management system permits an independent alteration of the first and second delayed injection so that, in particular, a reduction in fuel injection onto the cylinder walls can be achieved.

Within the context of a scholarship funded by the UFOP, Christoph Pabst at the vTI Braunschweig Technical College examined the interactions between fuel mixtures with a high biogenity content on engines equipped with SCR exhaust gas aftertreatment systems. The purpose of the test was to study the biodiesel compatibility with modern aftertreatment systems such as those currently installed in Euro V engines and which are scheduled for use in future Euro VI engines. As Christoph Pabst noted, the literature contains practically no results on this topic, which differs greatly from results for diesel fuel. The available results cannot be traced back to systematic, scientific examinations, but instead should, at best only be assessed as individual results. For example, statements such as the claim that mixing diesel fuel with biodiesel will lead to lower regeneration temperatures and therefore possibly simplify filter regeneration can be found. Christoph Pabst presented the first engine tests. Test runs using reference diesel fuel and a B20 blend (RME) in an ESC and a World Harmonized Stationary Cycle (WHSC) test. It was found that the engine with the aftertreatment system fell significantly short of the Euro IV threshold value during the ESC test. The Euro V value of 2 g/kWh is not, however, reached with respect to NOx emissions. It should also be noted that while the emissions in raw exhaust gas increased when the B20 blend was employed, the values after the catalyzer exhibited no significant difference. Comparing the results taken after the aftertreatment system with the raw values, it becomes clear that the nitrous oxides and the hydrocarbons can be markedly reduced. Christoph Pabst further noted that the WHSC test is new and is currently being introduced internationally. Within the context of the ongoing tests, the WHSC test was only compared with the ESC test when diesel fuel was involved. The new test cycle resulted in increases in the emissions of CO, HC and NOx and, it follows, that reaching or complying with the required legal exhaust gas threshold values is made more difficult by this cycle.

Prof. Dr. Meyer of the University of Potsdam reports on the status of the proposed project to reduce the boiling point curve of biodiesel by metathesis. The intended objective is to create biodiesel with a boiling and therefore combustion curve similar to that of diesel fuel by catalytically shortening the formers chain. This could possibly provide a solution to the problem of engine oil dilution discovered at the University of Magdeburg and present a method of minimizing this through an optimized delayed injection. A variety of commercially available catalysts to perform metathesis were presented. However, these result in product mixtures that depend on the type of catalyst and the amount of employed catalyst. Initial examinations confirm that the boiling point behavior can be considerably improved by this procedure, but the problems of catalyst separation and the optimization of the reaction conditions still remain. A subsequent study should attempt to determine how this process can be implemented from a process technology aspect. The engine tests will be carried out at the technical college with the cooperation of Coburg University.

Proposed UFOP Projects

Short Study to Evaluate the Metal, Sulfur and Phosphorus Content of Biodiesel

Project guidance: ASG Analytik-Service GmbH, Trentiner Ring 30, 86356 Neusäss

Duration: March, 2010, to April, 2010

The automotive industry sees the metal and phosphorus content as a critical criterion with respect to the service life of exhaust aftertreatment systems. An increased metal content (Ca, Mg, K, Na) results in an increase in the ash content of the particle filter and thus to a reduction in the maintenance interval (particle filter cleaning). Phosphorus is an element which is also referred to as “catalyst poison” since it produces an irreversible film on the coating, thus, depending on its concentration in the biodiesel and on the engines use profile, not only reducing the catalyst transformation rate but also, as shown by another UFOP sponsored project, even increases the carcinogenic share of the exhaust gas.

Within the context of establishing quality manufacturing, the biodiesel industry is particularly concerned with further decreasing these elements in biodiesel. The fact that no evidence of the qualitative progress can be provided by corresponding test methods with regard to the actual content represents a problem.

Against this background, the value for phosphorus currently cited in the European biodiesel standard, EN 14214, is 4 mg/kg (as opposed to the earlier level of 10 mg/kg), and a value of only 2 mg/kg is being discussed. With regard to the metal content, the highest permissible values for “ash formers” such as K and Na as well as Ca and Mg is 5 mg/kg. However, the results of the AGQM quality examinations confirm that, as a rule, the analysis values for the cited elements lie at the very limits of current analyses. Critically noted by the automotive industry with regard to the cited elements is the lack of evaluation of test studies for the cited elements that take the threshold values in accordance with the required standard for biodiesel into account, leading to the conclusion that a significant contamination of the particle filters can be anticipated.

For this reason, the applicant noted the DEUTZ AG project (continuous operational testing on a test stand with B100 EURO IV – UFOP 2008/2009 annual report, pg. 57) sponsored by the UFOP. Within the context of this proposed project, it was stated that, taking the indicated highest values for metal content volumes defined in biodiesel standard EN 141214 into account, these have already been implemented for the employment of B100, provided that the approval for clean fuels is granted for engines operating without exhaust aftertreatment systems. In the case of engines operating with exhaust aftertreatment systems, the approval would be limited to a maximum 30 percent share of biodiesel in the diesel fuel.

This project, for the first time, carried out an extensive evaluation of the metal and phosphorus content in biodiesel based on the largest internationally known database. This includes the analytical results collected by the AGQM over the past 10 years (approximately 3,500), together with supplementary analytical results available to the Analytik-Service GmbH. Again for the first time, this study forms an internationally cited overview which will provide a properly prepared overview of the measured concentrations of the cited elements. And finally, the preparation of this study is based on a recommendation of the DEUTZ AG, which, with regard to the evaluation of the biodiesel quality for the cited elements also indicates the need for a correction of the actual quality situation.

The final report is expected to be submitted by the end of 2010.

Screening Suitable Monomer Liquefier Systems and Secondary Examinations for the Molecular Detection of Acrylated Sterylglycosides (ASG)

Project sponsorship: Fraunhofer Institut für Grenzflächen- und Bioverfahrenstechnik IGB, Nobelstraße 12, 70569 Stuttgart

Duration: April, 2010, to July, 2010

In Germany, biodiesel has been employed as a fuel alternative for more than 20 years. As a result of developments in fuel quality, as well as engine developments against the background of increasing emission requirements, the last 5 years have observed a phenomenon described as nonspecific “filter offset”.

The introduction of Euro 3 engines also resulted in the development of new fuel filters which are characterized particularly by the significant reduction in their pore diameters. This resulted in frequent engine operation problems in truck fleets caused by filter buildup. In the past, this phenomenon only arose when clean fuels were used. However, over the past 3 years, clogged filters have increasingly also been reported from public service stations.

Since then, the so-called sterylglycosides which are a natural component of vegetable oils or biodiesel have been determined to be a possible cause.

The objective of the project is to develop surface-active nanoparticles which can reversibly bond these substances (“key-and-lock” principle), to significantly improve the filtration ability of biodiesel and, to develop new approaches for the conversion into a process which can be integrated into existing biodiesel facilities.

Optimization of the Internal Engine Delayed Injection in the Regeneration Mode of a Passenger Vehicle Diesel Engine, in Order to Reduce Oil Dilution when Operating with the Mixed Fuels, B7, B10 and B30

Project sponsorship: Otto-von-Guericke-Universität Magdeburg, Institut für Mobile Systeme – Lehrstuhl Kolbenmaschinen, in Zusammenarbeit mit der Volkswagen AG, Wolfsburg

Duration: August, 2009, to April, 2010

The continued introduction of biodiesel and the stabilization of the rapeseed cultivation area at the current level are significantly influenced by whether the current 7 percent by

volume addition of biodiesel in diesel fuel is not only increased, but whether engine-related technical assurances of the continuous harmlessness at this addition level can be provided, that is, that the engines can be approved by the automotive manufacturers. The altered fuel quality guideline published in the European Union's official gazette anticipates that member nations will work rapidly towards a diesel standard to permit the introduction of B10. Basically, with this objective, the commission has given the CEN a mandate.

In other member nations such as France, certain requirements even allow B30 to be approved for fleet use.

The project intends to not only increase the knowledge related to the employment of biodiesel as an additive component with regard to the standardization process being initiated for the introduction of B10, but to also examine whether a higher additive share (B30) remains harmless.

The reason for this proposed project lies in the so-called "delayed injection" to reduce engine oil dilution. VW has developed a "multistage" delayed injection to basically reduce cylinder wall contact by the fuel. This objective is particularly important to biodiesel as it is only incompletely evaporated from the engine oil.

Long-term Durability Tests and Field Tests Using Emission Class IIIB DEUTZ-Agripower Engines Equipped with SCR Systems for Biodiesel Approval

Project sponsorship: DEUTZ AG, Entwicklungswerk Porz, Bereich Technologie-Entwicklung, Ottostraße 1, 51145 Cologne

Duration: May, 2010, to September 2011

Increasingly critical voices are being heard from the motor vehicle industry with regard to the employment of biodiesel as a clean fuel, but also with respect to its employment as an additive with larger shares (>7 percent), noting the contamination by so-called "ash formers" (in biodiesel: dissolved metals such as K, Na, Mg and Ca). Measures are underway to deny approval or to defeat any increase in the additive level (B10, B30, etc.). Politicians are now even employing this discussion to ask questions regarding the option of increasing the additive content on biodiesel (for example, B30). To this extent, there exists an urgent need for action to offer a proper evaluation of the employment of biodiesel as a clean fuel and, in the end, as an additive for modern engines operating with an SCR exhaust gas aftertreatment system.

The project's objective is directed at the employment of biodiesel as a clean fuel and, therefore, simultaneously also addresses the question of the use of biodiesel as an additive. At the same time, the question of the significance of phosphorus content on the service life of the SCR system is also examined. Phosphorus is also viewed as an element which must be critically assessed with regard to future approval on the part of the motor vehicle industry (see above). Within the context of this proposed project, biodiesel is used in the currently most up-to-date off-road engines (not tied to traffic). By no later than 2011, these engines will be be placed in agricultural equipment in order to meet the mandated emission standard. Time pressure on this proposed project is correspondingly high. DEUTZ AG is among the world's largest manufacturers of diesel engines. It should also be noted that DEUTZ AG manufactures engines for the commercial vehicle area (Volvo trucks, among others). To this extent, the proposed project also possesses an important signaling effect for the employment of biodiesel in the shipping industry.

Scholarship for Systematic Studies on the Interaction Between Fuels with a High Biogenity Content, Using Engines Equipped with SCR as an Example

Project sponsorship: Institut für Agrartechnologie und Biosystemtechnik, Johann Heinrich von Thünen-Institut (vTI), Bundesallee 50, 38116 Braunschweig

Duration: January, 2010, to December, 2011

The Euro 4 exhaust gas standard has been in place throughout Europe since 2005. At MAN, compliance is achieved by the use of the PM CAT, and, at Mercedes-Benz, by SCR (Selective Catalytic Reduction) technology. Until now, Mercedes-Benz has approved its systems for biodiesel. How development will proceed depends, not the least, on the ongoing developments in biofuel additives. If a desire to continue to offer fuels with a high biogenity content, appropriate fuel mixtures must be developed. It is unclear whether SCR systems are compatible with biodiesel and its blends in every instance.

Test stand construction has been completed, the initial measurement results are available.

Examination of Hydrotreated Vegetable Oils (HVO), Biodiesel and Diesel Fuel (DF) in a Euro VI Engine

Project sponsorship: vTI, Braunschweig, Hochschule Coburg, Steinbeis-Transferzentrum Biokraftstoffe

Duration: April, 2010, to December, 2010

Not merely passenger vehicle manufacturers, but the commercial vehicle industry are currently facing intense time pressure in order to be able to offer EURO 6 emission level engines by 2011. EURO 6 exhaust level makes high demands of engine developers to optimize exhaust aftertreatment and on fuel manufacturers to improve fuels, particularly in view of reducing operating expenses which tends to lead to extending maintenance intervals. With regard to engine compatibility in conjunction with the required exhaust aftertreatment, no results or experiences related to biodiesel as a clean fuel or as an additive are currently available.

The objective of this project is to employ test stand cycles to study the emissions or possible interactions.

Fleet Test with Hydrotreated Vegetable Oil and Biodiesel Blends, as well as to Study Exhaust Quality

Project sponsorship: vTI, Braunschweig, Hochschule Coburg, Steinbeis-Transferzentrum Biokraftstoffe

Duration: April, 2010, to March, 2011

As an alternative substitute to diesel fuel, the motor vehicle industry basically prefers hydrotreated vegetable oil (HVO) instead of biodiesel. The chemical fuel properties permit an addition to diesel fuel at any desired ratio. Not the least against the background that, in Germany, the employment of vegetable oil as part of the process to create HVO (co-refining), the UFOP objective must be to open a sales window for rapeseed oil in as timely a manner as possible. Due to the far reaching significance of the employment of vegetable oils as a raw material for the manufacture of HVO, this option must be tested, in particular, for rapeseed oil as a sales market.

The scientific objective of the proposed project is to prove the suitability of hydrotreated vegetable oils (HVO) for fleet operations of series vehicles and, simultaneously, to carry out exhaust and efficiency studies on passenger vehicles from several emission classes. Individually, the exhaust studies are not merely limited to hazardous materials, but also to unlimited components, fine particle emissions and mutagenicity. Such extensive exhaust tests are unknown for a fleet examination with HVO and biodiesel additives.

Beyond this, experience shall be gained regarding how and the extent to which blends of hydrotreated vegetable oils and biodiesel influence an extension of the oil change intervals and can therefore contribute to extending sustainable mobility while protecting resources.

One important element of this combined proposed project (carried out in cooperation with, among others, VW, OMV, Neste Oil), is the accompanying PR work. In particular in this regard, the UFOP will contribute to the promotion of domestic rapeseed as a raw material.

Members of the Expert Committee for Biofuels and Renewable Raw Materials

Valid as of: August, 2010

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Table 1: Domestic Biofuel Consumption, in 1,000 t

	2006	2007	2008	2009
Biodiesel additive	934,7	1,423.3	1,612.8	2,276.3
Biodiesel clean fuel	N.A.	1,821.3	1,082.5	240.6
Total for biodiesel	-	**3,244.6**	**2,695.3**	**2,516.9**
Vegetable oil	N.A.	755.8	401.4	99.9
Total for biodiesel & vegetable oil	-	**4,000.5**	**3,096.7**	**2,616.9**
Diesel fuel	29,134.0	29,058.8	29,905.6	30,936.2
% share of additives	3.2 %	4.9 %	5.4 %	7.4 %
Total for diesel & biodiesel & vegetable oil	**N.A.**	**31,635.9**	**31,389.4**	**31,276.8**
% share of biodiesel & vegetable oil	N.A.	12.6 %	9.9 %	8.4 %
Bioethanol ETBE	448.3	366.2	366.9	202.3
Bioehtanol additive	63.5	88.6	250.9	692.7
Bioethanol E 85	-	6.1	8.5	9.0
Total for Bioethanol	**511.8**	**460.0**	**625.0**	**902.5**
Diesel and bioethanol fuels	22,604.0	21,243.0	20,568.5	20,240.2
% share of bioethanol	2.3 %	2.2 %	3.0 %	4.5 %

Source: Federal Office for the Economy and Export Controls, AMI

Table 2: Monthly Domestic Biofuel Consumption, in 1,000 t

	Biodiesel additive			Biodiesel clean fuel			Total for biodiesel			Vegetable oil (VOIL)			Bioethanol		
	2007	2008	2009	2007	2008	2009	2007	2008	2009	2007	2008	2009	2007	2008	2009
January	92.91	135.05	125.55	131.28	64.93	14.12	224.19	199.98	139.67	29.67	25.84	8.62	41.29	40.41	66.45
February	98.19	117.40	176.07	122.29	37.15	27.22	220.47	154.55	203.29	79.63	24.16	4.68	37.32	38.06	59.62
March	107.19	122.26	181.10	150.94	73.75	37.29	258.13	196.01	218.39	45.70	20.52	5.81	47.49	52.92	78.66
April	111.98	135.35	195.36	144.83	84.91	28.10	256.81	220.26	223.46	45.66	28.38	8.40	43.03	51.10	86.73
May	117.07	130.45	194.28	158.47	114.10	16.10	275.54	244.56	210.38	37.77	32.44	6.19	37.47	53.72	79.74
June	122.29	137.81	192.06	146.17	139.25	14.05	268.46	277.05	206.11	99.99	38.30	8.37	39.95	45.20	77.70
July	119.85	143.87	203.74	171.38	120.95	20.01	291.23	264.82	223.75	68.54	33.31	8.93	39.21	50.30	89.40
August	133.89	133.63	209.86	133.05	111.74	21.23	266.93	245.37	231.09	90.79	49.66	8.83	38.97	49.55	77.09
September	129.10	139.32	204.82	178.07	111.42	31.47	307.17	250.74	236.29	61.37	44.09	11.99	34.90	46.24	75.62
October	127.71	149.92	194.01	188.73	114.81	21.71	316.45	264.73	215.72	74.63	41.49	11.11	34.54	63.28	68.81
November	132.71	130.71	211.37	158.83	59.31	21.43	291.54	190.02	232.80	58,59	28.02	8.54	29.23	61.84	66.20
December	130.46	137.06	184.35	137.25	50.14	12.49	267.71	187.20	196.84	63.51	35.17	7.70	36.61	72.38	71.42
Average	**118.61**	**134.40**	**189.38**	**151.77**	**90.21**	**22.10**	**270.39**	**224.61**	**211.48**	**62.99**	**33.45**	**8.26**	**38.33**	**52.08**	**74.79**

Source: Federal Office for the Economy and Export Controls, AMI

Table 3: Biodiesel Exports, in t

	Biodiesel imports		Biodiesel exports	
	2008	2009	2008	2009
January	9,458	12,612	18,372	25,155
February	35,123	19,303	54,525	50,060
March	29,340	10,598	33,589	42,983
April	52,399	19,645	41,708	30,021
May	72,735	90,666	53,982	30,357
June	73,299	84,338	17,076	32,380
July	103,861	87,188	97,299	51,940
August	117,906	124,193	82,163	72,752
September	67,989	92,788	61,518	103,007
October	41,186	68,306	120,427	83,787
November	25,669	56,136	53,989	83,500
December	30,186	111,039	70,491	69,523
Total	**659,150**	**776,812**	**705,138**	**675,465**

Source: Federal Office of Statistics, AMI

Table 4: EU Production Capacities for Biodiesel, in 1.000 t

	2004	2005	2006	2007	2008	2009
Germany	1,088	1,903	2,681	4,361	5,302	5,200
France	502	532	775	780	1,980	2,505
Italy*	419	827	857	1,366	1,566	1,910
The Netherlands	-	-	-	115	571	1,036
Belgium	-	55	85	335	665	705
Luxembourg	-	-	-	-	-	-
Great Britain	15	129	445	657	726	609
Ireland*	-	-	-	6	80	80
Denmark	44	81	81	90	140	140
Greece	-	35	75	440	565	715
Spain	70	100	224	508	1,267	3,656
Portugal	-	-	146	246	406	468
Austria	100	125	134	326	485	707
Finland*	-	-	-	-	170	340
Sweden	8	12	52	212	212	212
Estonia	-	10	20	35	135	135
Latvia	-	5	8	20	130	136
Lithuania	-	10	10	42	147	147
Malta	-	2	3	8	8	8
Poland	-	100	150	250	450	580
Slovakia	-	89	89	99	206	247
Slovenia	-	17	17	17	67	100
Czech Republic	-	188	203	203	203	325
Hungary	-	-	12	21	186	186
Cyprus	-	2	2	6	6	20
Bulgaria	-	-	-	65	215	435
Rumania	-	-	-	81	111	307
EU-27	**2,246**	**4,228**	**6,069**	**10,289**	**16,000**	**20,909**

Note: Calculations based on 330 working days per year per facility; * = as of 2007 incl. production capacities for hydrotreated vegetable oil (HVO); Source: European Biodiesel Board, national statistics, AMI

Table 5: EU Biodiesel Production, in 1,000 t

	2004	2005	2006	2007	2008	2009
Germany	1,035	1,669	2,662	2,890	2,819	2,539
France	348	492	743	872	1,815	1,959
Spain	13	73	99	168	207	859
Italy	320	396	447	363	595	737
Belgium		1	25	166	277	416
Poland		100	116	80	275	332
The Netherlands			18	85	101	323
Austria	57	85	123	267	213	310
Portugal		1	91	175	268	250
Denmark/Sweden	71	72	93	148	231	233
Finland*				39	85	220
Czech Republic	60	133	107	61	104	164
Great Britain	9	51	192	150	192	137
Hungary				7	105	133
Slovakia	15	78	82	46	146	101
Lithuania		5	7	9	30	98
Greece		3	42	100	107	77
Latvia	5	7	10	26	66	44
Rumania			10	36	65	29
Bulgaria			4	9	11	25
Estonia		7	1	0	0	24
Ireland*			4	3	24	17
Slovenia		8	11	11	9	9
Cyprus		1	1	1	9	9
Malta		2	2	1	1	1
Others	0	30	30	34	84	0
EU-27	**1,933**	**3,191**	**4,890**	**5,713**	**7,755**	**9,046**

Note: * = as of 2007 incl. production capacities for hydrotreated vegetable oil (HVO); Source: European Bio-diesel Board, national statistics, AMI

Table 6: Biodiesel Production Capacities in Germany

Operator/Facility	Location	Capacity (t/year)	
ADM Hamburg AG – Hamburg plant	Hamburg	580,000	●
ADM Hamburg AG – Leer plant	Leer	120,000	●
ADM Mainz GmbH	Mainz	275,000	●
Bioeton Kyritz GmbH	Nordhorn	80,000	●
BIO-Diesel Wittenberge GmbH	Wittenberge	120,000	●
Bio-Ölwerk Magdeburg GmbH	Magdeburg	255,000	●
BIOPETROL ROSTOCK GmbH	Rostock	200,000	●
BIOPETROL SCHWARZHEIDE GmbH (formerly Biodiesel Schwarzheide)	Schwarzeheide	150,000	●
Biowerk Oberlausitz GmbH	Sohland	50,000	
Biowerk Sohland GmbH	Sohland	50,000	●
BKK Biodiesel GmbH	Rudolstadt	4,000	
BKN Biokraftstoff Nord AG (formerly Biodiesel Bokel)	Bokel	35,000	
Cargill GmbH	Frankfurt/Main	300,000	●
DBE Biowerk GmbH	Tangermünde/Regensburg	99,000	
Delitzscher Rapsöl GmbH & Co. KG	Wiedemar	4,000	
EAI Thüringer Methylesterwerke GmbH (TME)	Harth-Pöllnitz	55,000	●
ecodasa GmbH	Burg	50,000	
ecoMotion GmbH	Lünen	212,000	●
Emerald Biodiesel Ebeleben Gmbh	Ebeleben	90,000	
Emerald Biodiesel Neubrandenburg GmbH	Neubrandenburg	40,000	
EOP Biodiesel AG	Falkenhagen	130,000	●
G.A.T.E. Global Altern. Energy GmbH	Halle	58,000	
HHV Hallertauer Hopfenveredelungsgesellschaft mbH	Mainburg	7,500	●
KFS-Biodiesel GmbH	Cloppenburg	30,000	
KL Biodiesel GmbH & Co. KG	Lülsdorf	120,000	
LPV Landwirtschaftliche Produkt-Verarbeitungs GmbH	Henningsleben	5,500	●
Louis Dreyfus commodities Wittenberg GmbH	Lutherstadt Wittenberg	200,000	●
MBF Mannheim Biofuel GmbH	Mannheim	100,000	●
NEW Natural Energie West GmbH	Neuss	260,000	●
Nehlsen GmbH	Grimmen	33,000	
Osterländer Biodiesel GmbH & Co.KG	Schmölln	4,000	
Petrotec GmbH	Südlohn	85,000	
LubminOil	Lubmin	60,000	
Rapsol GmbH	Lübz	6,000	●
Rapsveredelung Vorpommern	Malchin	38,000	●
Rheinische Bioester GmbH	Neuss	150,000	
Südstärke GmbH	Schrobenhausen	100,000	
SüBio GmbH	Themar	4,000	
TECOSOL GmbH (formerly Campa)	Ochsenfurt	75,000	●
Ullrich Biodiesel GmbH/IFBI	Kaufungen	35,000	
Verbio Diesel Bitterfeld GmbH & Co. KG (MUW)	Greppin	190,000	●
Verbio Diesel Schwedt GmbH & Co. KG (NUW)	Schwedt	250,000	●
Vesta Biofuels Brunsbüttel GmbH & Co. KG	Brunsbüttel	150,000	
Vital Fettrecycling GmbH, Werk Emden	Emden	100,000	
Vogtland Bio-Diesel GmbH	Großfriesen	2,000	
Total capacity for 2010		**4,962,000**	

Note: ● AGQM member; Source: UFOP, FNR, VDB, AGQM / some names abbreviated.

DBV and UFOP recommend procuring biodiesel from members of the working committee.

Quality Management Biodiesel e. V. (AGQM); production capacity of AGQM Members = 3,609,000 tons; valid as of: 08/01/2010.

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